



Plumpton Wastewater Treatment Works, Plumpton, Penrith, CUMBRIA

Archaeological Rapid Desk-Based Assessment and Evaluation



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SUMMARY

United Utilities has submitted proposals (Planning reference 3/07/9010) for the construction of a wastewater treatment centre on an area of land to the north-west of Plumpton, Penrith, in Cumbria (NGR NY 4915 3752). The site lies within an area of archaeological potential, being in the vicinity of Romano-British sites, including Old Penrith Roman fort, and, following advice from Cumbria County Council's Historic Environment Service (CCCHES), Eden District Council requested that a programme of archaeological investigation should be undertaken to further inform the planning process. United Utilities commissioned Oxford Archaeology North (OA North) to undertake a rapid desk-based assessment and site visit, together with a programme of evaluation trenching, which was undertaken during September 2007.

The rapid desk-based assessment revealed that the 0.5km study area contained several Romano-British sites and a number of cropmarks that have not been closely dated; in addition, ten grade II listed buildings were also identified. None of these sites listed in the Cumbria Historic Environment Record (CHER) were within the proposed areas of development, although the potential for previously unknown sub-surface deposits of archaeological interest within the study area remained. With the exception of an embankment running along the eastern side of the field, within which the proposed wastewater treatment works will be built, the site visit did not identify any additional features of archaeological interest to those revealed by the rapid desk-based assessment.

The evaluation was undertaken in September 2007 and consisted of the excavation of four trial trenches that were positioned in order to examine the area of the proposed development. Whilst none of the trenches revealed any *in-situ* archaeological remains, a former river channel, likely to be an earlier course of the meandering River Peteril, which runs along the western boundary of the site, was observed in the southern part of the site of the proposed wastewater treatment works.

ACKNOWLEDGEMENTS

Oxford Archaeology North (OA North) would like to thank Matthew Baker of United Utilities for commissioning the project. Thanks are also due to Mr Turnbull, the landowner of Monk's Farm, Plumpton. OA North are also grateful to Jo Mackintosh of the CHER for her assistance, and to Jeremy Parsons of CCCHEs for his advice during the project.

The desk-based assessment and site visit were undertaken by Richard Lee. The fieldwork was undertaken by Richard Lee, Alastair Vannan, Annie Hamilton-Gibney and Daniel Taylor. The report was written by Richard Lee with the drawings produced by Mark Tidmarsh. The project was managed by Stephen Rowland, who also edited the report.

1. INTRODUCTION

1.1 CIRCUMSTANCES OF THE PROJECT

- 1.1.1 United Utilities (UU) has submitted proposals for the construction of a wastewater treatment works on an area of land to the north-west of Plumpton, Penrith, in Cumbria (NGR NY 4915 3752; Fig 1). The site lies within an area of archaeological potential and, following advice from Cumbria County Council's Historic Environment Service (CCCHES), Eden District Council requested that a programme of archaeological investigation should be undertaken to further inform the planning process. Accordingly, UU invited Oxford Archaeology North (OA North) to submit proposals to undertake a scheme of works in accordance with a verbal brief from CCCHES. Following the compilation of a project design (*Appendix 1*), UU commissioned OA North to undertake a rapid desk-based assessment, site visit, and programme of archaeological evaluation of the proposed development area.
- 1.1.2 The proposed development area lies to the east of the River Peteril and consists of a rectangular area with an extension for an outflow pipe, together covering c 0.45ha. Groundworks within the treatment site will comprise excavations for a series of subterranean tanks, chambers and manholes, together with associated areas of concrete paving and hard standing. The development will also involve the construction of a concrete access road, covering a further c 0.45ha, part of which will utilise the route of existing tracks.
- 1.1.3 A rapid desk-based assessment was undertaken in order to provide an historical and archaeological background of the study area that would inform the subsequent field work and provide a context within which to interpret the results. A site visit was undertaken in order to establish the presence of any visible features of archaeological interest within the footprint of the proposed development. A programme of evaluation trenching targeted the area of the proposed treatment works to assess the presence, extent, depth and condition of any sub-surface remains.
- 1.1.4 This report sets out the results of the rapid desk-based assessment, site visit, and evaluation in the form of a short document, outlining the findings, followed by a statement of the archaeological potential and significance of the locale of the proposed wastewater treatment works, and an assessment of the impact of the proposed works.

2. METHODOLOGY

2.1 INTRODUCTION

2.1.1 The CCCHES-approved OA North project design (*Appendix 1*), was adhered to in full, and the work was consistent with the relevant standards and procedures of the Institute of Field Archaeologists, and generally accepted best practice.

2.2 DESK-BASED ASSESSMENT

2.2.1 A study area with a radius of 0.5km, extending from the site of the proposed wastewater treatment works, was examined in detail in order to provide an understanding of the historical and archaeological background of the area and to provide a context within which to interpret the results of the subsequent fieldwork. The principal sources of information consulted were historical and modern maps of the Plumpton area and information held by the Cumbria Historic Environment Record (CHER), as well as published and unpublished secondary sources.

2.2.2 ***Cumbria County Council's Historic Environment Record (CHER)***: the CHER, maintained by Cumbria County Council and held in Kendal, is a database of all known archaeological sites in Cumbria, was consulted to establish the sites of archaeological interest within the study area.

2.2.3 ***Cumbria County Record Office (CRO)***: the County Record Office in Carlisle was visited to examine maps relating to the study area. Both published and manuscript maps were consulted, as well as secondary published sources and unpublished primary sources.

2.2.4 ***Oxford Archaeology North***: OA North has an extensive archive of secondary sources, as well as numerous unpublished client reports on work carried out both as OA North and under its former title of Lancaster University Archaeological Unit (LUAU). These were consulted where relevant.

2.3 SITE VISIT

2.3.1 A site visit was undertaken on the 24th of September 2007. The principal aim of this visit was to enable familiarisation with the site and to examine any potential constraints to the execution of the evaluation. The visit also provided an opportunity to establish the presence of any visible features of archaeological interest within the footprint of the proposed development, and to relate the existing topography and land use to research findings.

2.4 EVALUATION TRENCHING

2.4.1 CCCHES required that a total area of 240m² should be archaeologically investigated through linear trial trenching, representing 5% of the proposed wastewater treatment works footprint. This was achieved by the excavation of four trenches, each measuring 30m long by 2m wide (Fig 2). A total station

was used to set out the trenches in reference to the Ordnance Survey (OS) grid and in accordance with the approved trench location plan. The trenches were excavated by a machine using a toothless ditching bucket, operating under archaeological supervision to the surface of the uppermost archaeological horizon, or the natural geology. The bases and sides of the trenches were hand-cleaned with hoes and trowels and any features of potential archaeological interest were investigated by hand.

- 2.4.2 Recording of the results comprised descriptions and preliminary classifications of each revealed feature or deposit on *pro-forma* sheets, a plan of the location of each trench, and plans and section drawings drawn at appropriate scales. An indexed photographic record was maintained using black and white print and colour slide formats, with digital photography for presentation purposes.

3. ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

3.1 LOCATION, TOPOGRAPHY AND GEOLOGY

- 3.1.1 The site lies to the north-west of Plumpton, and to the north of Penrith. The proposed development site lies on agricultural land to the immediate east of the meandering River Peteril, and to the west of the A6, which follows the route of a former Roman road up the major communications route of the Eden valley to Carlisle and Hadrian's Wall. Historically, the area was in Cumberland but, since 1974, has lain within the county of Cumbria. The Eden Valley, is characterised by a mixture of undulating mixed farmland and sandstone hills, with woodland and lowland heath vegetation (Countryside Commission 1998, 38). Currently, the land of the development site is principally used for cattle pasture.
- 3.1.2 The solid geology comprises Penrith and Brockam New Red Sandstone (Doubleday 1901, 8-9; Higham 1986, 6) and the local drift geology is sand and gravel of glacial origin. The drift geology is overlain by well-drained loamy soils, and '*enjoys something of a rain shadow status*' (Higham 1986, 8) which makes it attractive to arable cultivation.

3.2 HISTORICAL AND ARCHAEOLOGICAL BACKGROUND

- 3.2.1 **Prehistoric Period:** although there are no known prehistoric sites located directly within the proposed development area, the wider region contains numerous examples of sites of prehistoric origin. Monumental architecture, suggestive of activity during the Neolithic and Bronze Age, is widespread within the Eden Valley, although, evidence for domestic occupation is typically absent. Conspicuous examples of this include the well-known stone circle of Long Meg and her Daughters, which lies within 8km to the east of the study area, and the henges of Mayburgh and King Arthur's Round Table, which lie approximately 8km to the south of Plumpton. Areas of domestic occupation associated with the Neolithic and Bronze Age are not as well represented in the archaeological record in Cumbria as the monumental sites that demonstrate a presence at this time.
- 3.2.2 Within 3km to the north of the study area, at Low Plains Quarry, four cremations of probable Bronze Age date were discovered during archaeological excavations (OA North 2005). Further watching briefs and excavation at Low Plains Quarry in 2007 revealed two putative burnt mounds of probable Mid- to Late- Bronze Age date and several ditches and pits of probable prehistoric origin (OA North forthcoming). Remains of Neolithic and Bronze Age date have been discovered at Lazonby Fell, which is an area of unploughed heathland, lying approximately 4.5km to the north-east. These remains include cairns, and findspots of vessels and flints, as well as dense concentrations of prehistoric rock art (Lambert 1996).
- 3.2.3 The study area lies within the territory suggested to have been controlled by the *Carvetii* at the time of the Roman Conquest (Shotter 2004, 4). It has been

suggested that the tribal centre associated with the *Carvetii* during the Late Iron Age might have been to the south of the study area, in the locale of Brougham and possibly at Clifton Dykes (*op cit*, 16–17). The area around Penrith has been described as providing some of the best agricultural land in the region (*ibid*) and there is a potential for Iron Age rural sites within this area. Evidence of Iron Age rural activity has been demonstrated within 2km to the north-east of the study area, at Lazonby Fell Plantation. Excavation revealed trackways, field boundaries, and a stone-walled hut, associated with a kidney-shaped enclosure (LUAU 1994, 53). Iron Age activity in the wider locale has also been suggested by the discovery of a corn-drying kiln at Low Plains Quarry which was dated by the presence of a fragment of a lignite bracelet (OA North 2007).

- 3.2.4 Evidence for prehistoric activity within the study area is attested by several sites located around the periphery of the proposed development. To the west of the River Peterill, on land belonging to Mr Turnbull of Monks House Farm, is a standing stone of probable Bronze Age date (CHER 904). This is approximately 1.75m high and is now located in a prominent but inaccessible position between the M6 motorway and the West Coast railway line (Clare 1973). The monument is known as the Hallrigg Standing Stone, due to the proximity of Hallrigg Farm (Megalithic.co.uk 2007). A short distance to the south-east of the standing stone, a Bronze Age axe hammer (CHER 4887) was found in *c* 1927 and is now in the Ashmolean museum. At the north of the study area, a pygmy cup (CHER 4997), probably deriving from a Bronze Age burial, was found during excavations at Old Penrith Roman Fort in 1778 (Simpson and Young 1951, 171). A series of cropmarks of uncertain date (CHER 5264, 5265, 6270, 6693, 13797) lie within the study area and, although it is likely that many of these relate to Romano-British activity, it is possible that some of the cropmarks could be associated with Iron Age settlement. None of these sites fall within the actual development area.
- 3.2.5 **Romano-British Period:** evidence of Romano-British activity around Plumpton is the main component of the archaeological record for the study area. The Roman fort at Old Penrith, identified as *Voreda*, is a Scheduled Ancient Monument (SAM no 249; CHER 2920) and is located at the north of the study area. The SAM description states that the preservation of the ditches and the platform defining the fort, also formerly known as Castlesteads (Haverfield 1913, 177), is good and that archaeological excavation has revealed evidence of buildings associated with an extra-mural civilian settlement, or *vicus*, which lies to the south and west of the fort. Traces of buildings are visible within the fort and numerous finds, including altars, tombstones, inscribed stones, quernstones, a bronze steelyard, and coins dating from the Hadrianic (AD 117–38) to Tetricon (271–4) periods have been discovered. The ditches of the fort survive to *c* 5m in width with the rampart rising 3m above the ditch bottom.
- 3.2.6 A number of significant finds have been made in association with the fort. An irregular block of red sandstone was located in the east gateway of the fort site in July 1990 (CHER 15479). The block had been roughly chiselled on the back and dressed along one edge, with the weathered remains of figurative or

decorative work in relief on the front face (Richardson 1990, 27). Also found close to the Roman Fort, in 1980, was a penannular brooch, located in shingle by the River Peterill and dating to the first century AD (Richardson 1990, 23). A Roman altar was found in 1908 during ploughing (CHER 6376); the present location of the altar is unknown, but it was reported as being discovered in the locale of the Roman fort of *Voreda*. It is described in the CHER entry as being 5ft (1.52m) high, 2ft (0.6m) wide, and 1ft (0.3m) thick and has representations of sacrificial axes on the sides.

- 3.2.7 *Voreda* is not the only Roman fort in the immediate region, and a Roman marching camp named Galley Gill (SAM no 23667; CHER 2921) is located on the edge of high ground overlooking the River Peteril approximately 400m to the north-west of the study area. According to the SAM description, limited excavation across the defences of the north-east side of the camp in 1977 found a V-shaped outer ditch 2.6m wide, approximately 1m deep and containing Black Burnished ware pottery, which is only found in northern England from c AD 120 onwards. The camp is one of many lying adjacent to the Roman Road connecting the Vale of York with Carlisle (RCHME 1995) and a second example (SAM no 23668; CHER 2922) lies less than 1km to the north of the study area. The SAM description states that aerial photographs show a rectilinear ditch enclosing an area approximately 180m by 110m, with *tutuli*, or earthen mounds with ditches, defending each of the four entrances. A third Roman camp (SAM no 23666; CHER 975) is located within 1km to the south of the study area. The SAM entry describes the camp as occupying an area 390m by 360m that survives mainly as sub-surface features that are visible as cropmarks on aerial photographs. The eastern side of the camp retains partial earthworks that are visible above the ground surface, including three *tutuli*.
- 3.2.8 All of the camps lie adjacent to the western side of the current A6 road, which runs from north to south through the study area. The current road retains the line of the main Roman road from Manchester to Carlisle (CHER 11055; Margary 1973, 392, 7e) and, although there has been no archaeological excavation of the road within the study area, the HER entry describes excavations undertaken further to the south, which revealed a cobbled cambered surface retained by kerbs of large cobbles. Approximately 500m to the south-east of the study area, and to the eastern side of the A6, Salkeld Gate Roman Fortlet is visible as a cropmark (SAM 23673; CHER 976). The cropmark measures 36m along the northern side, however, the extent of the remaining sides are not visible.
- 3.2.9 A series of cropmarks of uncertain date are known within the study area (CHER 5264, 5265, 6270, 6693, 13797), although these are only visible on aerial photographs. Some of these cropmarks, such as CHER 5264, are associated with the Old Penrith field system and are referred to as dykes or enclosures. In most cases, however, they are described simply as cropmarks. Several Romano-British rural sites are also known from the areas surrounding forts in the Penrith area (Shotter 2004, 138) and it is possible that some of these cropmarks may relate to such settlement. It has been suggested that the high agricultural quality of the land in this area would have made this an

attractive area for rural settlement during the Romano-British period, and that such land may have been appropriated by the authorities for the use of discharged Roman soldiers (*op cit*, 139).

3.2.10 **Early Medieval and Medieval Periods:** little is known about the history of the area following the end of Roman administration *c* 410 AD, although by the seventh-century the area is likely to have been subsumed by the Anglian kingdom of Northumbria. There is little settlement evidence pertaining to this period, although a sunken floored building, which are characteristic elements of Anglian and Anglo-Scandinavian settlements, has been identified at Fremington, near Brougham (A Lupton pers com). Approximately 8km to the north of the study area a group of early tenth-century Viking burials were discovered in the Eden Valley, at Cumwhitton (OA North 2004). Another Viking burial, furnished with spurs, bridle fittings, spears, a shield, an axe, a ritually bent sword, and bone combs, was discovered beneath a cairn at Hesketh-in-the-Forest, which lies to the north-west of the study area (Edwards 1992; Higham 1986). Within Penrith itself, are a number of examples of Anglo-Scandinavian sculpture, including hog-backed tombstones and cross shafts within the parish church. Scandinavian influence is also attested in the wider area by placename elements, such as *-by*, meaning village, which is present in Lazonby, *-thwaite*, meaning clearing, which occurs in Calthwaite, and *-thorpe*, meaning settlement, which is present in Melkinthorpe (Mills 1998). There are no known significant post-Conquest medieval sites in the immediate area, although Penrith is likely to have been an important centre. The current landowner, Mr Turnbull, lives at a post-medieval farmstead named Monk's House (CHER 41507), which was shown on the first edition Ordnance Survey map of 1863. A number of locations use the prefix 'Monk's', such as Monks Cottage, which suggests possible monastic connections in the area, however, no further evidence has ever been found.

3.2.11 **Post-Medieval Industrial:** the rural character of the study area appears to have remained largely unchanged from the mid-nineteenth century until the present day, according to depictions of the area from historic map sources. Most of the buildings within the study area were concentrated along the line of the current A6 and within the village of Plumpton Walls, which is situated at the southern end of the study area. The most obvious deviation from the agricultural character of the study area is the Penrith to Carlisle railway line, which runs through the western part of the study area. A train station (CHER 10992) was once located in Plumpton village, however, the station buildings are now in private ownership, with the station house being used for domestic purposes.

3.2.12 Ten grade II listed buildings, dating to the post-medieval period, are located within the study area. Plumpton Church of St John the Evangelist (CHER 23947) dates to 1907; however, an eighteenth century font (CHER 23848), situated within the garden of remembrance of the church, is described in the HER entry as deriving from a forerunner of this building. Salkeld Gate (CHER 23950) is a late eighteenth-century house and Lowstreet Cottage (CHER 23960) also has eighteenth century origins, and features a date stone that is inscribed '1728'. Lowstreet House (CHER 23958) dates to the late eighteenth

century and is associated with a barn (CHER 23959) that has a date stone inscribed '1794'. A roadside monument (CHER 23951), named Byrnes Monument, records where a local constable named Joseph Byrne was shot and killed by three burglars whom he was attempting to arrest in 1885. A Lych Gate (CHER 23849), located to the south of the church, is inscribed as a memorial to the First World War.

3.3 MAP REGRESSION ANALYSIS

- 3.3.1 **Plumpton Wall Tithe 1844:** this map shows the township of Plumpton Wall, in the Parish of Lazonby, in the County of Cumberland (Fig 3). Little change was evident from the present layout of the study area, with some alteration to the position of field boundaries comprising the main visible changes. The farms of Monk's House and Romanway are depicted with fewer out-buildings than are currently present, but are named.
- 3.3.2 The site of the proposed wastewater treatment works corresponds to land within Field 177 on the tithe map. The tithe apportionment indicated that this field was a meadow owned by John Simpson, a well-known and majority landholder in Plumpton, and was occupied by Robert Thompson. Romanway, within Field 181, was listed as a 'House and Garden', which was also owned by John Simpson and occupied by Robert Thompson. Monk's House, where the current landowner of the proposed development site lives, was named on the tithe map as Garth Building and was owned by William Blamire and occupied by John Taylor. William Blamire was another of the major owners of land in the vicinity of Plumpton.
- 3.3.3 **First Edition Ordnance Survey Map of 1863:** this map (Fig 4) was produced at a scale of 25" to one mile and depicts the study area in a similar way to the tithe map of 1844, but with a greater degree of detail. Both Monk's House and Romanway were named on this map. The layout of some of the field boundaries, and of the buildings at Romanway, is shown differently to the depiction on the tithe map, and additional buildings are shown at Monk's House. A field boundary to the south-west of Romanway that had been depicted on the tithe map is indicated on the 1865 OS map only by a partial line of trees. No changes are evident within the area of the proposed wastewater treatment works from the tithe map.
- 3.3.4 **Second Edition Ordnance Survey Map of 1900:** this map (Fig 5) was produced at a scale of 25" to one mile and showed few changes to the first edition map. The position of an east/west orientated trackway, running westward from Romanway, is depicted as being positioned slightly further south than on the previous map, and extending further to the west. Part of the line of this trackway will be followed by the access road that is associated with the proposed development. The map depicts slight changes, and additions, to the buildings at Romanway and Monk's House and the village of Plumpton is also shown to have expanded slightly, in comparison to the earlier depictions. The boundaries of the field in which the proposed wastewater treatment works is situated has expanded slightly from the earlier representations, and conforms with the present field perimeter.

3.3.5 **Ordnance Survey Map of 1990 at 1:10000:** with the exception of the slight expansion of Plumpton village, few obvious changes appear to have occurred within the study area between the publication of the third edition Ordnance Survey map and the map of 1990.

3.4 SITE VISIT

3.4.1 **Site of the Proposed Wastewater Treatment Works:** a site visit was made on the 24th September 2007. This concentrated on the footprint of the proposed wastewater treatment works and was intended to examine the area for any previously unknown sites of archaeological interest, as well as identifying any potential constraints to the execution of the evaluation. The visit also provided an opportunity to relate the existing topography and land use to the results of the rapid desk-based assessment.

3.4.2 The field was under pasture at the time of the visit and the ground was largely waterlogged. An embankment was observed at the eastern side of the area, with a dry-stone wall running along the top. At the southern end of the area, a former river channel was visible as a linear grassed hollow running adjacent to the western side of the embankment. A concrete manhole cover, associated with an existing water treatment filter was present in the southern part of the area. No further features of archaeological interest were observed.

4. EVALUATION RESULTS

4.1 RESULTS

- 4.1.1 **Introduction:** four trenches measuring 30m long by 2m were excavated within the area of the proposed wastewater treatment works on the 27th September 2007 (Fig 2). These trenches were excavated by machine during a period of wet weather and the subsequently high water table made conditions on site difficult.
- 4.1.2 **Trench 1:** Trench 1 measured 30m, from north-east to south-west, by 2m, and was excavated to a maximum depth of 0.95m (Plate 1). The stratigraphy exposed within the trench consisted of a 0.22m thick layer of topsoil (**1004**), overlying a 0.26m thick layer of subsoil (**1003**), which overlay a 0.17m thick layer of alluvial sand (**1002**). Beneath these deposits lay the natural drift geology (**1001**) at a depth of approximately 0.95m (118.77m AOD). Three ceramic field drains, running from north-west to south-east, were exposed within the trench. The trench was bisected by a stone-lined field drain (**1005**; Plate 2), with an east to west alignment. The drain lay 0.6 m below the current ground surface, was 0.4m deep and 0.5m wide, and ran downhill towards the River Peterill below the present ground level.
- 4.1.3 **Trench 2:** this trench measured 30m, from east to west, by 2m, and was excavated to a maximum depth of 1.1m. The stratigraphy exposed within the trench consisted of a 0.13m thick layer of topsoil (**1011**), overlying a 0.14m thick layer of subsoil (**1010**), which overlay a 0.45m thick riverine deposit (**1009**). This deposit comprised alluvial silty sand with a bluish-grey clay component, which, in turn, overlay an earlier, 0.43m thick, alluvial deposit (**1008**), that filled the base of a former river channel (**1023**) (Fig 6; Plate 3).
- 4.1.4 At the western end of Trench 2, two field drains with north-west/south-east alignments were revealed. One of these utilised a modern ceramic pipe, whilst the other was stone-lined, with red sandstone blocks (**1013**), lining the cut of the drain (**1012**). The sandstone slabs varied in size, with maximum dimensions of approximately 0.28m x 0.59m. Natural deposits of drift geology were observed at a depth of between 1.1m and 2.14m (119.57m to 118.53m AOD) below the present ground level.
- 4.1.5 **Trench 3:** Trench 3 measured 30m, from north-east to south-west, by 2m and was excavated to a maximum depth of 0.88m. The stratigraphy exposed within the trench consisted of a 0.22m thick layer of topsoil (**1014**) overlying a 0.18m layer of subsoil (**1015**), which overlay a 0.18 m thick alluvial deposit (**1016**). Deposit **1016** was a greyish-green, soft, silty sand, with a small clay component. Approximately 40% of the deposit consisted of fine sand mixed with shingle-like gravel. This deposit merged with the underlying drift geology (**1017**), which consisted of very mixed silty sand with small pieces of sandstone and small boulders, measuring over *c* 0.3m in diameter. A sandstone-lined field drain, and a possible stone-filled soakaway, were located at the northern end of the trench (Plate 4). Natural deposits of drift geology

were observed at a depth of approximately 0.75m (118.5m AOD) below the present ground level.

- 4.1.6 **Trench 4:** Trench 4 measured 30m, from north-west to south-east, by 2m, and was excavated to a maximum depth of 0.85m. The stratigraphy exposed within the trench consisted of a 0.3m thick layer of topsoil (**1018**) overlying a 0.35m layer of subsoil (**1019**), which overlay a deposit of natural drift geology (**1020**) that appeared to include small patches of alluvial deposits. A modern ceramic field drain ran from east to west at the southern end of the trench. Natural deposits of drift geology were observed at a depth of approximately 0.75m (118.5m AOD) below the present ground level.

5. DISCUSSION AND IMPACT

5.1 CONCLUSION

- 5.1.1 The rapid desk-based assessment was able to demonstrate that, whilst several Romano-British sites are known within a 0.5km radius of the development site, none of these would be directly affected by the development. No sites of archaeological interest were identified by the DBA within the proposed development area, including the route of the proposed access road.
- 5.1.2 The evaluation trenching did not reveal any deposits of archaeological interest within the proposed development site, although evidence of the changing natural environment was encountered. The pervading influence of the River Peteril within the local landscape was evident from the results of the evaluation trenching. In addition to the discovery of a former course of the river, the nature of this low-lying land as a periodic flood plain was suggested by the occurrence of alluvial deposits, such as **1017** in Trench 3. This consisted of a palaeochannel (**1023**) that was observed within Trench 2 (Fig 6; Plate 3), running from north to south along the eastern side of the field. This was, presumably, part of the former course of the River Peterill, which currently runs 35m to the west of the identified palaeochannel. The current course of the river within the study area has changed little from at least the late post-medieval period, as indicated by depiction on the 1844 tithe map (Fig 3).
- 5.1.3 At the southern end of the field outside of the investigated area the current course of the river is visible within the topography, adjacent to the sloping embankment along the eastern side of the field. It is not clear from current evidence whether the river channel has naturally migrated westwards over time, or whether it was intentionally diverted to its current location. Surprisingly, Trench 4, to the south of the proposed wastewater treatment works, did not pick up the alignment of the palaeochannel, as may have been anticipated. This suggests that the alignment of the river changes somewhere to the south-east of Trench 2. It is possible, therefore, that the sloping embankment at the eastern side of the field has encroached over the top of the in-filled river channel.

5.2 IMPACT

- 5.2.1 The results of the evaluation suggests that the site of the proposed wastewater treatment works is devoid of significant archaeological features and that the proposed development will not have a significant impact on the archaeological record in this area. The area that will be used for the construction of an access road may be of greater archaeological potential than the footprint of the wastewater treatment works, as the palaeochannel in the later area could have destroyed any earlier features, and also limited the construction of identifiable features, prior to the complete silting of the river. Topsoil stripping associated with the construction of the road could impact upon unknown sub-surface features of archaeological interest.

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7. ILLUSTRATIONS

7.1 FIGURES

Figure 1: Location Map

Figure 2: Trench plan

Figure 3: Extract from the Plumpton Wall tithe map of 1844

Figure 4: Ordnance Survey Map, 1863, first edition 1:2500, Sheet XLIX.3

Figure 5: Ordnance Survey Map, 1900, Second Edition 1:2500, Sheet XLIX.3

Figure 6: South-facing section of palaeochannel (**1023**) in Trench 2

7.2 PLATES

Plate 1: Trench 1 and the embankment, looking north.

Plate 2: Stone lined drain Trench 2.

Plate 3: Section of the palaeochannel (**1023**) visible in Trench 2, looking south

Plate 4: Sandstone-lined field drain and cobble lined soakaway in Trench 3.

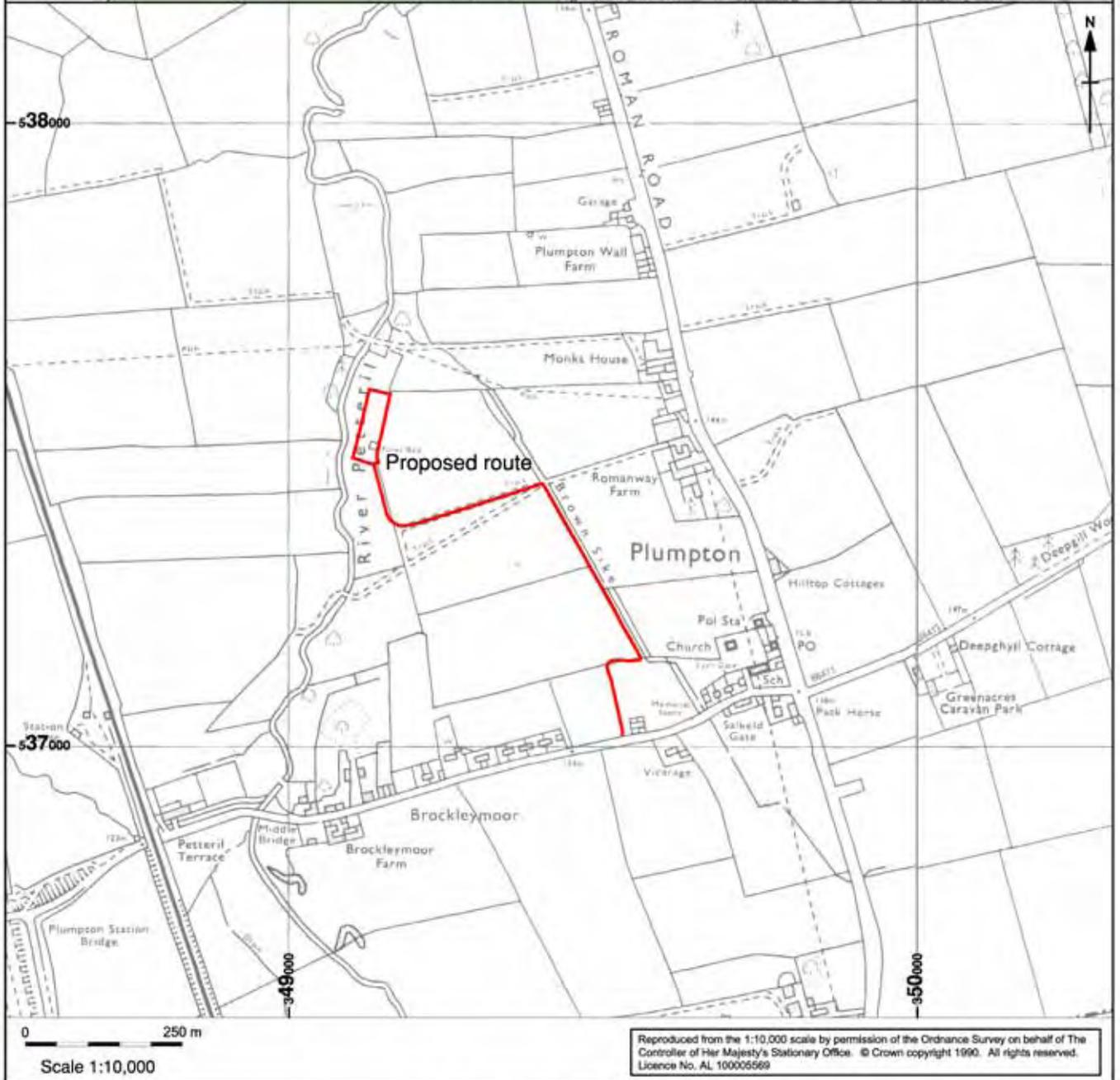
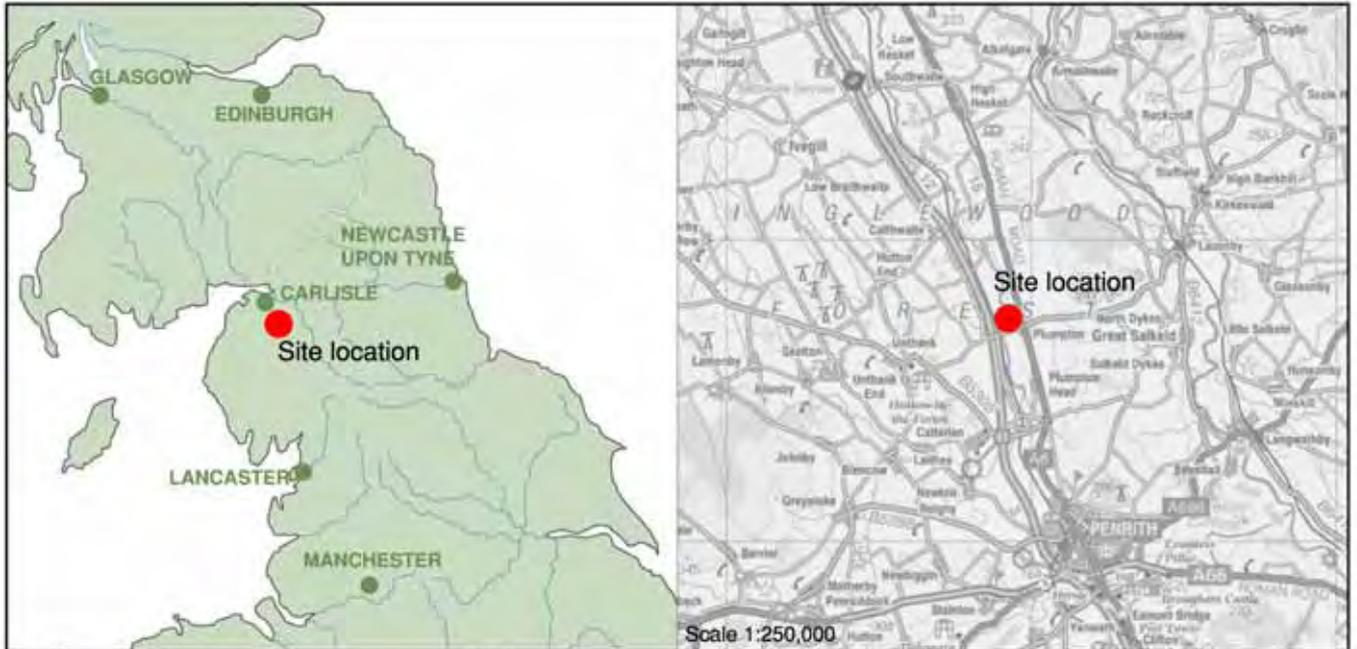


Figure 1: Site Location



Figure 3: Extract from the Plumpton Wall tithe map of 1844

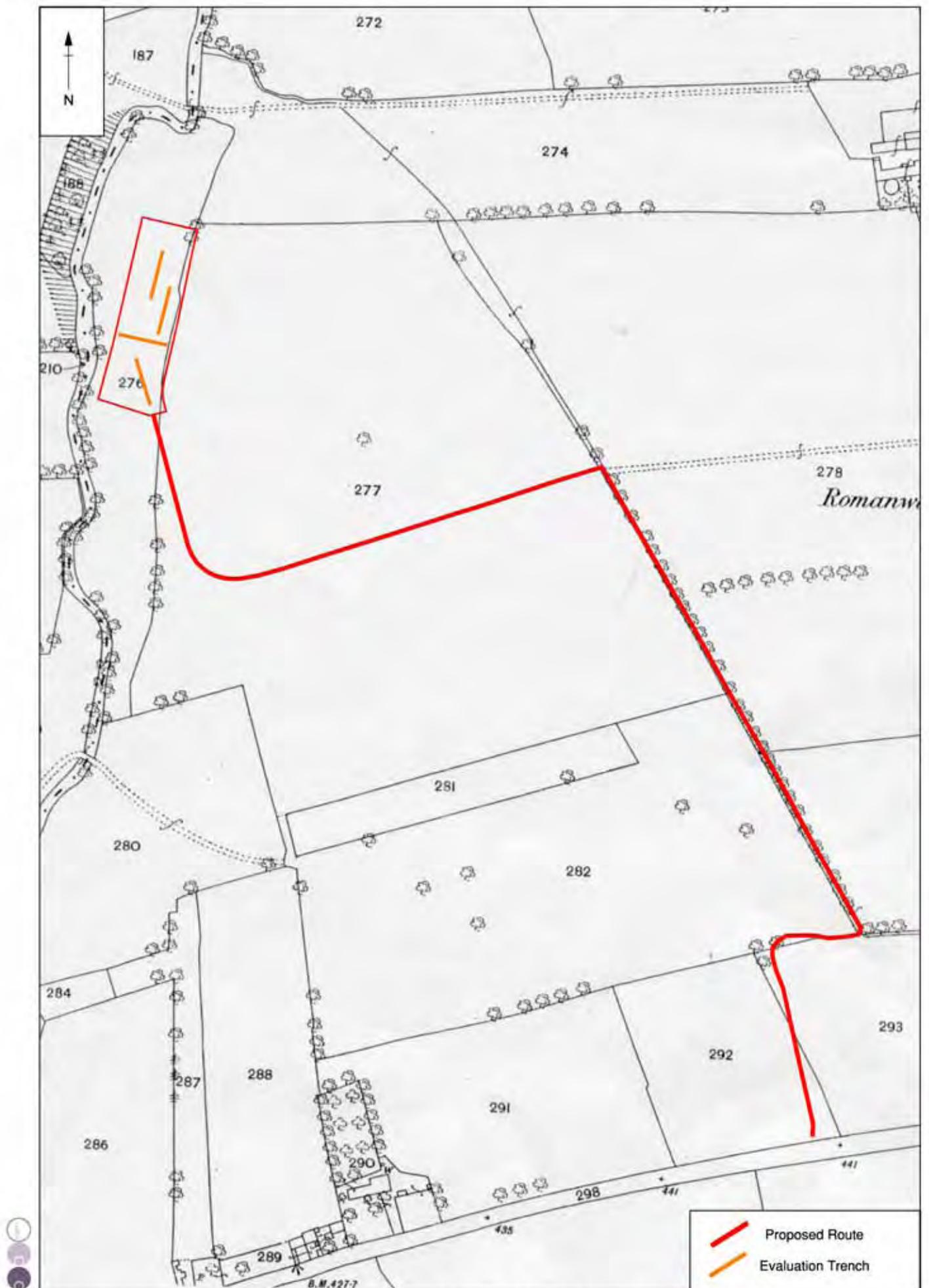


Figure 4: Ordnance Survey Map, 1863, first edition 1:2500, Sheet XLIX.3

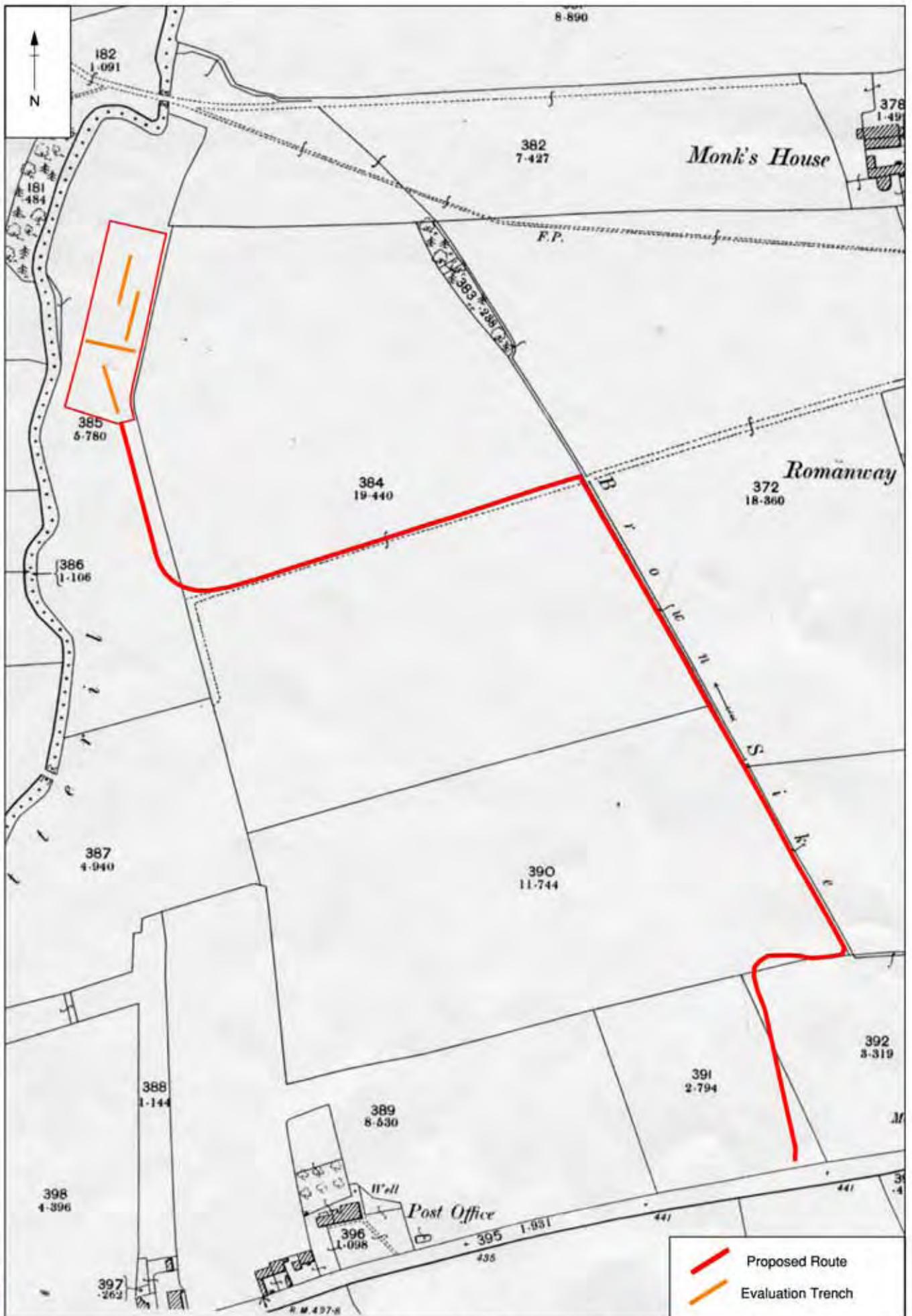


Figure 5: Ordnance Survey Map, 1900, Second Edition 1:2500, Sheet XLIX.3



Figure 6: South-facing section of palaeochannel **1023** in Trench 2



Plate 1: Trench 1 and field embankment (east), looking north.



Plate 2: Stone lined culvert in Trench 2.



Plate 3: Trench 3, section of the river channel and fills looking south.



Plate 4: Sandstone lined drain in Trench 3.

APPENDIX 1: PROJECT DESIGN

PLUMPTON WASTEWATER TREATMENT WORKS, PLUMPTON, PENRITH, CUMBRIA

Archaeological Evaluation and Rapid Desk-Based Assessment: Project Design



Oxford Archaeology North

September 2007

United Utilities

NGR: NY 4915 3752

Planning reference 3/07/9010

OA North Ref No: L9913

1. INTRODUCTION

1.2 PROJECT BACKGROUND

1.2.1 United Utilities (hereafter UU, or the 'client') has submitted proposals for the construction of a wastewater treatment works on an area of land to the north-west of Plumpton, Penrith, Cumbria (NY 4915 3752; planning reference 3/07/9010). The site lies within an area of archaeological potential and, following advice from Cumbria County Council's Historic Environment Service (CCCHES), Eden District Council requested that a programme of archaeological investigation should be undertaken to further inform the planning process. Accordingly, UU invited Oxford Archaeology North (OA North) to submit proposals to for the undertaking of a scheme of works in accordance with those requested by CCCHES. The following document represents a project design for a rapid desk-based assessment, site visit and evaluation to be undertaken prior to the enactment of any development on site and has been compiled in accordance with written communication from CCCHES.

1.2.2 The proposed wastewater treatment works will be constructed within a rectangular area with an extension for an outflow pipe, together covering *c* 0.45ha, and will also involve the construction of a concrete access road, covering a further *c* 0.45ha, partly newly-built, and partly utilising the route of existing tracks. Groundworks within the treatment site will comprise excavations for a series of subterranean tanks, chambers and manholes, together with associated areas of concrete paving and hard standing. The focus of the present fieldwork will concentrate on the area of the treatment works itself and, dependent upon the results of the fieldwork and desk-based research, further archaeological works may be carried out both within this area and along the routes of the access roads (Jeremy Parsons *pers comm*).

1.3 ARCHAEOLOGICAL BACKGROUND

1.3.1 The proposed development site lies on agricultural land to the immediate east of the meandering River Peterill, and to the west of the A6, which follows the route of a former Roman road up the major communications route of the Eden Valley to Carlisle and Hadrian's Wall. Approximately 600m to the north-east of the development site and adjoining the A6 is Old Penrith Roman Fort (CHER 2920). The fort was certainly in occupation in Hadrianic times, and appears to have an associated civilian *vicus* extending to the north and west, identified from aerial photography. There are also two marching camps within close proximity to the fort, Galley Gill, about 1km north-north-west, and Knowe Farm, 800m further north along the A6, whilst a third, irregularly shaped fort is located at Plumpton Head, about 2km south of the development area, and a fortlet lies on the east side of the A6 1.5km to the south-east. Earlier activity in the area is indicated by the presence of a prehistoric standing stone (CHER 904), whilst (probably agricultural) cropmarks of uncertain date also lie within the near vicinity of the proposed development site (CHER 6270, 6693, 13797).

1.4 OXFORD ARCHAEOLOGY NORTH

1.4.1 OA North has considerable experience of Penrith, having undertaken much work within the Southend Road area very recently, including an evaluation and survey of the Two Lions Inn, and a survey of the former Sunlight Buildings, together with a desk-based assessment of the area. Further afield, OA North has undertaken a great number of small and large scale projects throughout Northern England during the past 24 years, including work in Carlisle, Appleby, Kendal, Penrith, and other towns in Cumbria. Evaluations, assessments, watching briefs and excavations have taken place within the planning process, to fulfil the requirements of clients and planning authorities, to very rigorous timetables.

1.4.2 **OA North has the professional expertise and resources to undertake the project detailed below to a high level of quality and efficiency. OA North is an Institute of Field Archaeologists (IFA) registered organisation, registration number 17, and all its members of staff operate subject to the IFA Code of Conduct (1994).**

2 OBJECTIVES

- 2.1 The programme of work aims to evaluate the archaeological resource and potential for further archaeological deposits, in order to determine their extent and nature of the remains that may be threatened by the proposed development. This information will be used by CCCHEs to determine any requirements for mitigation of the proposed development. The required stages to achieve these ends are as follows:
- 2.2 **Rapid desk-based assessment: to provide a rapid desk-based assessment of the site to identify the archaeological potential and provide a context for any remains that may be located during the trenching (in accordance with the IFA standards (1999a)).**
- 2.3 **Archaeological Evaluation: to undertake evaluation trenching of c 240m² of the proposal area to determine the quality, extent and importance of any archaeological remains on the site (in accordance with the IFA standards (1999b)).**
- 2.4 **Report and Archive:** a report will be produced for the client within twelve weeks, unless a report submission deadline is agreed with the client at the time of commission. An archive will be produced to English Heritage guidelines (MAP 2 (1991)).

3 METHOD STATEMENT

3.1 RAPID DESK-BASED ASSESSMENT

- 3.1.2 **Introduction:** a rapid desk-based assessment is often undertaken as the first stage of a programme of archaeological recording, prior to further intrusive investigation in the form of trenching. It is not intended to reduce the requirement for evaluation, excavation or preservation of known or presumed archaeological deposits, but it will provide an appraisal of archaeological constraints and a guide to any requirement for further archaeological work.
- 3.1.3 The following will be undertaken as appropriate, depending on the availability of source material. The level of such work will be dictated by the time scale of the project. The results will be analysed using the set of criteria used to assess the national importance of an ancient monument (DoE 1990). This aids in the presentation of the significance or otherwise of the site, and assessment during the planning process.
- 3.1.4 **Documentary and Cartographic Material:** this work will include consultation of the Cumbria County Historic Environment Record (CHER, formerly the Sites and Monuments Record (SMR)) in Kendal, as well as the County Records Office in Carlisle. A review of all known and available resources of information relating to the site of the proposed development, and the study area consisting of 1km radius centred on the site. The aim of this is to give consideration not only to the application site, but also its setting in terms of historical and archaeological contexts. These include;
- published and unpublished documentary sources
 - data held in local and national archaeological databases
 - printed and manuscript maps
 - place and field-name evidence
 - evidence for township, ecclesiastical and other ancient boundaries
 - other photographic/illustrative evidence
- 3.1.5 **Cumbria HER:** the CHER is a database of known archaeological sites within the County. It also holds an extensive library of published materials for consultation.
- 3.1.6 **County Record Office, Carlisle:** the office in Carlisle holds the main source of primary documentation, both maps and documents, for the site and its surrounding area. For the requirement of the rapid desk-based assessment, it will be necessary to consult only the historic maps.
- 3.1.7 **Map regression analysis:** a cartographic analysis will be undertaken to:

- aid investigation of the post-medieval occupation and land-use of the area and its development through to its modern-day or most recent use. This provides one method of highlighting areas of potential archaeological interest,
- locate areas where any recent developments on site, of which there is no longer any evidence, may have impeded or disturbed below-ground archaeological remains.

3.1.8 Particular emphasis will be on the early cartographic evidence and will include estate maps, tithe maps, and Ordnance Survey maps through to present mapping where possible.

3.1.9 **Site visit:** during the desk-based assessment, the site will be visited in order to relate the existing topography and land use to research findings. Any surface features of potential archaeological interest will be noted. It will also provide an understanding for areas of impact by the proposed redevelopment or areas of disturbance, and access to site.

3.2 ARCHAEOLOGICAL EVALUATION

3.2.1 The programme of trial trenching will establish the presence or absence of any previously unsuspected archaeological deposits and, if established, will then test their date, nature, depth and quality of preservation. In this way, it will adequately sample the threatened available area.

3.2.2 **Trenches:** the evaluation is required to examine a minimum sample of 5% of the mains development area. This corresponds to 240m², which will be investigated through the excavation of four trenches, each 30m long by 2m wide. A preliminary trench location plan is provided with this project design, although the exact configuration and location of the trenches will be determined by the desk-based assessment and site visit.

3.2.3 **Methodology:** any topsoil and modern overburden will be removed by machine (fitted with a toothless ditching bucket) under archaeological supervision to the surface of the first significant archaeological deposit. This deposit will be cleaned by hand, using either hoes, shovel scraping, and/or trowels depending on the subsoil conditions, and inspected for archaeological features. All features of archaeological interest must be investigated and recorded unless otherwise agreed by CCCHES.

3.2.4 The trenches will not be excavated deeper than 1.2m to accommodate health and safety constraints, without shoring or stepping out of the trench sides. Should this be required, this may be costed as a variation should an additional day on site be necessary.

3.2.5 All trenches will be excavated in a stratigraphical manner, whether by machine or by hand. Trenches will be located by use of a total station, or gps, and altitude information will be established with respect to Ordnance Survey Datum.

3.2.6 Any investigation of intact archaeological deposits will be exclusively manual. 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. It is hoped that in terms of the vertical stratigraphy, maximum information retrieval will be achieved through the examination of sections of cut features. All excavation, whether by machine or by hand, will be undertaken with a view to avoiding damage to any archaeological features, which appear worthy of preservation *in situ*.

3.2.7 All information identified in the course of the site works will be recorded stratigraphically, using a system, adapted from that used by Centre for Archaeology Service of English Heritage, with sufficient pictorial record (plans, sections, colour slides and monochrome

- contacts) to identify and illustrate individual features. Primary records will be available for inspection at all times.
- 3.2.8 Results of all field investigations will be recorded on *pro forma* context sheets. The site archive will include both a photographic record and accurate large scale plans and sections at an appropriate scale (1:50, 1:20 and 1:10). All artefacts and ecofacts will be recorded using the same system, and will be handled and stored according to standard practice (following current Institute of Field Archaeologists guidelines) in order to minimise deterioration.
- 3.2.9 **Environmental Sampling:** environmental samples (bulk samples of 40 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). An assessment of the environmental potential of the site will be undertaken through the examination of suitable deposits by the in-house palaeoecological specialist, who will examine the potential for further analysis. The assessment 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. The costs for the palaeoecological assessment are defined as a contingency and will only be called into effect if good deposits are identified and will be subject to the agreement of CCCHES and the client.
- 3.2.10 Advice will also be sought as to whether a soil micromorphological study or any other analytical techniques will enhance the understanding of the site formation processes, including the amount of truncation to buried deposits and the preservation of deposits within negative features. Should this be required the costs for analysis have been provided as a contingency.
- 3.2.11 **Faunal remains:** if there is found to be the potential for discovery of bones of fish and small mammals a sieving programme will be carried out. These will be assessed as appropriate by OA North's specialist in faunal remains, and subject to the results, there may be a requirement for more detailed analysis. A contingency has been included for the assessment of such faunal remains for analysis.
- 3.2.12 **Human Remains:** any human remains uncovered 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. CCCHES 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.
- 3.2.13 **Treatment of finds:** all finds will be exposed, lifted, cleaned, conserved, marked, bagged and boxed in accordance with the United Kingdom Institute for Conservation (UKIC) *First Aid For Finds*, 1998 (new edition) and the recipient museum's guidelines.
- 3.2.14 **Treasure:** any gold and silver artefacts recovered during the course of the excavation will be removed to a safe place and reported to the local Coroner according to the procedures relating to the Treasure Act, 1996. Where removal cannot take place on the same working day as discovery, suitable security will be employed to protect the finds from theft.

- 3.2.15 All identified finds and artefacts will be retained, although certain classes of building material can sometimes be discarded after recording if an appropriate sample is retained on advice from the recipient museum's archive curator.
- 3.2.16 **Contingency plan:** a contingency costing may also be employed for unseen delays caused by prolonged periods of bad weather, vandalism, discovery of unforeseen complex deposits and/or artefacts which require specialist removal, use of shoring to excavate important features close to the excavation sections etc. This has been included in the Costings document and would be in agreement with the client.
- 3.2.17 The evaluation will provide a predictive model of surviving archaeological remains detailing zones of relative importance against known development proposals. In this way, an impact assessment will also be provided.

3.3 REPORT

- 3.3.1 One bound and one unbound copy of a written synthetic report will be submitted to the client, and three copies to the Cumbria HER within twelve weeks of completion of the completion of the fieldwork, unless an alternative deadline is agreed with the client beforehand. It will present, summarise, and interpret the results of the programme detailed above in order to come to as full an understanding as possible of the archaeology of the development area. The report will include;
- a site location plan related to the national grid
 - a front cover to include the planning application number 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 of the site
 - a statement, where appropriate, of the archaeological implications of the proposed development
 - monochrome and colour 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
 - plans and sections showing the positions of deposits and finds
 - an index to the project archive
- 3.3.2 **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.

3.4 ARCHIVE

- 3.4.1 The results of all archaeological work carried out will form the basis for a full archive to professional standards, in accordance with Appendix 3 of the current English Heritage guidelines (*Management of Archaeological Projects*, 2nd edition, 1991) and UKIC (1990). This archive will be provided in the 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.

4 HEALTH AND SAFETY

4.1 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 Manual compiled by the Standing Conference of Archaeological Unit Managers (1997). A written risk assessment will be undertaken in advance of project commencement and copies will be made available on request to all interested parties.

4.2 Full regard will, of course, be given to all constraints (services etc) during the evaluation as well as to all Health and Safety considerations. OA North provides a Health and Safety Statement for all projects and maintains a Company Safety policy. As a matter of course the field team will use a Cable Avoidance Tool (CAT) prior to any excavation to test for services. However, this is only an approximate location tool. Any **information regarding services**, i.e. drawings or knowledge of live cables or services, within the study area and held with the client should be made known to the OA North project manager prior to the commencement of the evaluation.

4.3 A portable toilet with hand washing facilities will be provided and located on or adjacent to the site unless the client would prefer to arrange alternative facilities. This is costed as a contingency.

4.4 Any known contamination issues or any specific health and safety requirements on site should be made known to OA North by the client or main contractor on site to ensure all procedures can be met, and that the risk is dealt with appropriately.

4.5 Should areas of previously unknown contamination be encountered on site the works will be halted and a revision of the risk assessment carried out. Should it be necessary to supply additional PPE or other contamination avoidance equipment this will be costed as a variation.

5 OTHER MATTERS

5.1 ACCESS

5.1.1 Liaison for basic site access will be undertaken through the client and it is understood from advice from the client that there is access for both pedestrian and plant traffic to the site.

5.2 REINSTATEMENT

5.2.1 It is understood that there will be no requirement for reinstatement of the ground beyond backfilling. The ground will be backfilled so that the topsoil is laid on the top, and the ground will be roughly graded with the machine.

5.3 FENCING/HOARDING REQUIREMENTS

5.3.1 It is understood from the client that there is no requirement to provide fencing for the excavated area, as the land should be free of public ingress and livestock.

5.4 PROJECT MONITORING

5.4.1 Whilst the work is undertaken for the client, CCCHEs will be kept fully informed of the work and its results and will be notified a week in advance of the commencement of the fieldwork. Any proposed changes to the project design will be agreed with CCCHEs in consultation with the client

5.5 INSURANCE

- 5.5.1 OA North has a professional indemnity cover to a value of £2,000,000; proof of which can be supplied as required.

5.6 WORK TIMETABLE

- 5.6.1 **Rapid desk-based assessment:** approximately two days will be required for this element.
- 5.6.2 **Archaeological Evaluation:** it is anticipated that this element would require three days.
- 5.6.3 **Report:** the final report will be submitted to the client within twelve weeks, unless an earlier deadline is agreed beforehand.
- 5.6.4 **Archive:** the archive will be deposited within six months.

5.7 STAFFING

- 5.7.1 The project will be under the direct management of Stephen Rowland (OA North Project Manager) to whom all correspondence should be addressed.
- 5.7.2 The rapid desk-based assessment will be undertaken by Richard Lee (OA North Project Officer), who will also direct the evaluation with the assistance of two archaeologists. All OA North Project Officers and Supervisors are experienced field archaeologists capable of carrying out projects of all sizes.
- 5.7.4 Assessment of the finds from the evaluation will be undertaken under the auspices of OA North's in-house finds specialist **Christine Howard-Davis** (OA North finds manager). Christine has extensive knowledge of finds from many periods, but particularly from the local area, being involved with the Carlisle Millennium Project.
- 5.7.6 Assessment of any palaeoenvironmental samples will be undertaken by or under the auspices of **Elizabeth Huckerby MSc** (OA North project officer). Elizabeth has extensive knowledge of the palaeoecology of the North West through her work on the English Heritage-funded North West Wetlands Survey.

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APPENDIX 2: CONTEXT REGISTER

Context Number	Trench Number	Context Description
1001	1	Natural drift geology
1002	1	Alluvial sand
1003	1	Subsoil
1004	1	Topsoil
1005	1	Cut of stone culvert
1006	1	Fill of stone culvert
1007	2	Natural drift geology
1008	2	Alluvial sand
1009	2	River channel deposit
1010	2	Subsoil
1011	2	Topsoil
1012	2	Cut for sandstone drain
1013	2	Sandstone drain
1014	3	Topsoil
1015	3	Subsoil
1016	3	Layer of alluvium
1017	3	Natural drift geology
1018	4	Topsoil
1019	4	Subsoil
1020	4	Natural drift geology
1021	2	Stone layer
1022	2	Fill of cut 1012
1023	2	Cut for river channel