WHINFELL HOLME WASTE WATER TREATMENT WORKS, DESILTING AND SYPHON ACCESS TRACK

Brougham, Cumbria

Archaeological Watching Brief Report

Oxford Archaeology North

February 2012

United Utilities

Issue No: 2011/1205
OA North Job No: L10391
NGR: NY 54500 29500

Document Title: WHINFELL HOLME WASTE WATER TREATMENT WORKS, DESILTING AND SYPHON ACCESS TRACK, BROUGHAM,CUMBRIA

Document Type: Watching Brief

Client Name: United Utilities

Issue Number: 2011/1205
OA Job Number: L10391
National Grid Reference: NY 54500 29500

Prepared by:	Andrew Bates	Alastair Vannan
Position:	Project Officer	Supervisor
Date:	February 2012	
Checked by:	Alison Plummer	Signed.....
Position:	Senior Project Manager	
Date:	February 2012	
Approved by:	Alan Lupton	Signed.....
Position:	Operations Manager	
Date:	February 2012	

Oxford Archaeology North
Mill 3, Moor Lane Mills
Moor Lane
Lancaster
LA1 1GF
t: (0044) 01524 541000
f: (0044) 01524 848606
w: www.oxfordarch.co.uk
e: info@oxfordarch.co.uk

Janus House
Osney Mead
Oxford
OX2 0EA
t: (0044) 01865 263800
f: (0044) 01865 793496

Oxford Archaeology Limited is a Registered Charity No: 285627

CONTENTS

SUMMARY

United Utilities proposed the construction of a new access track, approximately 400m in length, running west from the Whinfell Holme Waste Water Treatment Works, east of Penrith, Cumbria (NGR NY 54625 29520), to a syphon located within the River Eamont (NGR NY 54200 29470). In view of the potential archaeological sensitivity of the area, the Historic Environment Officer at Cumbria County Council's Historic Environment Service (CCCHES) recommended that an archaeological watching brief should be undertaken during the groundworks associated with the development.

Oxford Archaeology North (OA North) was commissioned by United Utilities to undertake this work, which was completed in July 2011. The groundworks entailed the removal of approximately 0.3m of modern topsoil along the route of the access track, and also over a turning area adjacent to the River Eamont. For the most part, however, the works did not penetrate below the modern topsoil; consequently, no archaeological features or deposits were observed during the watching brief, and no finds were recovered.

ACKNOWLEDGEMENTS

OA North would like to thank United Utilities for commissioning the project, and Grisdale Construction Ltd for their co-operation during the works. Thanks are due to Jeremy Parsons, Historic Environment Officer with CCCHES, and to the staff of the Cumbria Historic Environment Record (HER) in Kendal.

For OA North, Andrew Bates and Andrew Frudd undertook the watching brief, and Alastair Vannan provided rapid background research. Andrew Bates and Alastair Vannan also compiled the report, and Mark Tidmarsh produced the drawings. The project was managed by Alison Plummer, who also edited the report with Alan Lupton.

1. INTRODUCTION

1.1 CIRCUMSTANCES OF THE PROJECT

1.1.1 United Utilities proposed the construction of a new access track, extending west for approximately 400m from the Whinfell Holme Waste Water Treatment Works, east of Penrith, Cumbria (NGR NY 54625 29520), to a syphon in the River Eamont (NGR NY 54200 29470; (Fig 1)). In view of the archaeological sensitivity of the area (*Section 3*), the Historic Environment Officer at Cumbria County Council's Historic Environment Service (CCCHES) recommended that an archaeological watching brief should be undertaken during the groundworks associated with the trackway construction. OA North was commissioned by United Utilities to undertake the watching brief, which was completed in July 2011.

1.2 LOCATION, TOPOGRAPHY AND GEOLOGY

1.2.1 Whinfell Holme Waste Water Treatment Works, which is situated approximately 1.5km east of Penrith, lies within the parish of Brougham. The new access track crossed the gently sloping flood plain on the east bank of the River Eamont, to the north-east of Brougham Castle, at approximately 110-115m Above Ordnance Datum (AOD) The surrounding area comprises an undulating landscape of mixed farmland and woodland, with rough pasture on the higher ground (Countryside Commission 1998).

1.2.2 The underlying solid geology consists of pink, Permo-Triassic sandstone (*ibid*). This is sealed by glacial till, which was moulded into drumlins and formed basin mires (*ibid*), and alluvial deposits of sand, silt, and clay are also present in the river valleys (British Geological Survey 2011). The overlying soils comprise typical calcareous brown earths (Ordnance Survey 1983); these are mostly light and easily worked, and would have had considerable agricultural potential in the past (Wilmott 2004, 2)

2. METHODOLOGY

2.1 WATCHING BRIEF

2.1.1 The work undertaken by OA North was consistent with the relevant standards and guidance provided by the Institute for Archaeologists (IfA 2001), and generally accepted best practice. The groundworks comprised the removal of up 0.3m of modern topsoil along the line of the access track, which was *c* 2.5m wide and ran roughly east/west for approximately 400m, from the treatment works to the River Eamont, A similar depth of topsoil was also stripped from a turning area adjacent to the river (Fig 2). The soil strip was undertaken using a 14-ton 360° mechanical excavator fitted with a 1.65m-wide, toothless ditching bucket. A permanent archaeological presence was maintained during the groundworks, and the resulting spoil was scanned for finds.

2.1.2 All deposits encountered were recorded on *pro forma* recording sheets, using a system adapted from that used by the English Heritage's Centre for Archaeology. An archive of digital and monochrome photographs was also compiled.

2.2 FINDS

2.2.1 No finds were recovered during the course of the watching brief.

2.3 ARCHIVE

2.3.1 The results of the archaeological work will form the basis for a full archive prepared to professional standards, in accordance with current English Heritage guidelines (English Heritage 2006). The project archive will be deposited with the Cumbria County Record Office in Kendal.

2.3.2 The Arts and Humanities Data Service (AHDS) online database, *Online Access to index of Archaeological Investigations* (OASIS) will be completed as part of the archiving phase of the project.

3. HISTORICAL BACKGROUND

3.1 INTRODUCTION

3.1.1 The following section presents a summary of the historical and archaeological background of the Brougham area. This is presented by historical period, and has been compiled in order to place the study area into a wider archaeological context. For ease of reference, a table of the principal archaeological and historical periods in Britain is also presented (Table 1).

Period	Approximate Date Range
Palaeolithic	30,000-10,000 BC
Mesolithic	10,000-4000 BC
Neolithic	4000-2500 BC
Bronze Age	2500-700 BC
Iron Age	700 BC-AD 43
Roman	AD 43-410
Early medieval	AD 410-1066
Late medieval	AD 1066-1540
Post-medieval	AD 1540-1750
Industrial	AD-1750-1901
Modern	AD 1901-present

Table 1: Summary of archaeological and historical periods

3.2 THE PREHISTORIC PERIOD

3.2.1 The Penrith/Brougham area is a natural meeting point for several overland routes (Wilmott 2004, 2), which, in addition to its rich agricultural potential, made it a favoured location for settlement in prehistory and, indeed, in all subsequent periods. The route across Stainmore, utilised today by the A66 trunk road, has served as one of the principal trans-Pennine routes since at least Roman times, and was probably an important communication route in prehistory (Vyner 2001). The present road runs immediately to the south of the sewage works.

3.2.2 The area contains one of the highest concentrations of prehistoric monuments in Cumbria, including, at Eamont Bridge, the neolithic/early Bronze Age henges of Mayburgh, King Arthur's Round Table, and the Little Round Table (Hodgson and Brennand 2006, 39). These monuments, located *c* 2km south-west of the Roman fort and medieval castle at Brougham, together form one of the most important groups of prehistoric ritual sites in the region. Additionally, several neolithic stone axes have been found in the area (Fell 1972a; James 2006, 29), and early Bronze Age Beaker burials are known from Moorhouse Farm and Clifton Hall (*ibid*; Oliver *et al* 1996, 127). A small early Bronze Age cremation cemetery and several other broadly contemporary features have also been excavated on Leacet Hill, *c* 2.5km south-east of Brougham (James 2006), and a small assemblage of neolithic pottery and flints was found during salvage excavations of a Romano-British cemetery, located *c* 400m east of the Roman fort (Fell 1972a). Ring ditches of presumed prehistoric date have been recorded by aerial photography in this area (*op cit*,

36-7), and others have been photographed from the air at Frenchfield, north of the River Eamont (Fell 1972b, 64).

3.2.3 Direct evidence for Iron Age settlement in the area is sparse, but field systems and ditched enclosures of likely Iron Age and/or Romano-British date are known from aerial photographic surveys undertaken west and south-west of the sewage works (Higham and Jones 1975, 26-7, fig 5; 1985, 64-5, fig 31; LUAU 1997). They include a rectilinear enclosure with associated linear and circular features, which lie immediately south of the route of the access track Three linear earthworks of unknown origin were also recorded to the west of the sewage works (LUAU 1993, 27). One of these was tested by evaluation trenching, but nothing of archaeological interest was identified. The southern end of one of these features lies immediately adjacent to the route of the access track.

3.3 THE HISTORIC PERIOD

3.3.1 ***Romano-British:*** The political situation in what is now northern England at the time of the Roman invasion of southern Britain in AD 43 is little understood, but is likely to have been considerably more complex than the picture presented by the Roman historian Tacitus, our only historical source, who was writing at the turn of the first and second centuries AD. According to Tacitus, much of the region was occupied by the Brigantes, reputedly the most populous tribe in the province (*Agricola* XVII.2; Birley 1999). In the second century, the Greek geographer, Ptolemy, further stated that Brigantian territory extended from sea to sea (Harding 2004, 23), but it now seems likely that this was a somewhat generous view, and that the tribe's territory on the eve of the Roman invasion may have been confined largely to lands east of the Pennines (*ibid*). Elsewhere in the North, several other 'native' groups recorded by Roman writers or attested on inscriptions have been represented as members of an extended Brigantian confederation (Shotter 2004, 111-12), but there seems to be no reason why they could not have been independent polities.

3.3.2 The territory of one of these groups, the Carvetii, appears to have been located in north-east Cumbria, perhaps centred on the lower Eden valley (Edwards 2006, 225). It has been postulated that a possible defended enclosure of presumed Iron Age/Romano-British date at Clifton Dykes, *c* 2km south of the Roman fort at Brougham, may have been the tribal centre (*civitas Carvetiorum*) (Higham and Jones 1975, 10-11). However, the precise character and significance of this site has been questioned (Edwards 2006, 222-3), and a milestone from the Brougham area makes it clear that Carlisle was the tribal capital by the early third century AD (Edwards and Shotter 2005).

3.3.3 Within a few years of the invasion of AD 43, the Brigantian queen, Cartimanua, seems to have entered into a treaty with Rome (Hanson and Campbell 1986, 73), thereby gaining her people 'favoured nation' status, and avoiding military occupation of Brigantian territory. The stance taken by potentially autonomous peoples such as the Carvetii is not known. However, the fact that the North West was not subjected to military occupation any

earlier than 'Brigantian' lands to the east, suggests either that these groups were also on friendly terms with Rome, or that, at the least, they took a neutral position, giving the Roman army no pressing reason to occupy their territories at the earliest opportunity.

3.3.4 Everything changed, however, in *c* AD 69 when Cartimandua's former consort, Venutius, who was by this time actively hostile towards Rome, finally ousted the queen, who had to be rescued by Roman troops (Tacitus *Annals* XII.40; Jackson 1937). Following this, Brigantian territory was invaded and within a short space of time the whole region, including much of the North West, had been occupied by the Roman army (Shotter 2002a, 83–4).

3.3.5 The present A66 is held to follow the line of an important Roman road across Stainmore (road 82; Margary 1973, 433-6), between Scotch Corner and Brougham. It seems highly probable that this route would have been utilised by the Roman army during their initial penetration of the area *c* AD 70 (Shotter 2000b, 192). A series of Roman marching camps across Stainmore supports this hypothesis, and another (undated) camp is located *c* 375m north-east of Brougham itself (Welfare and Swan 1995).

3.3.6 The fort at Brougham (*Brocavum*; Rivet and Smith 1981, 284) occupied an important tactical and strategic location, controlling the crossing of the River Eamont at a major road junction. For this reason, it has long been presumed to be an early foundation (Collingwood 1922, 140; Shotter 2004, 62). However, there is currently a marked lack of evidence for a military presence at Brougham before the early third century AD. The visible, stone-built, fort has not been excavated, but epigraphic evidence indicates considerable military activity in the third century (Birley 1932), and pottery recovered from the site in the early 1930s (*ibid*) demonstrates continued occupation into the late fourth century at least.

3.3.7 Archaeological excavation and antiquarian evidence indicate that an extramural settlement existed on at least three sides of the stone fort - on the north at Frenchfield, beyond the River Eamont (Martin and Reeves 2001); on the south, immediately outside the fort's south gate (Zant in prep); and on the east. Road improvement works in the 1960s, *c* 400m east of the fort, also exposed part of a third-century cremation cemetery, which was excavated under salvage conditions (Cool 2004).

3.3.8 In the vicinity of the sewage works, the many crop marks that have been identified by aerial photography to the west and south-west (*Section 3.2.3*), some of which are likely to have extended across the route of the access track, may represent field systems and settlement enclosures of prehistoric and Romano-British date, but without excavation, they cannot presently be dated or adequately characterised. However, Roman pottery and cast lead plugs of possible Roman date were discovered during an archaeological evaluation immediately to the south of the sewage works (LUAU 1996). These might have been associated with three ditches, which were found within this area, which could represent part of a Romano-British field system (*op cit*, 14; LUAU 1993, 25).

3.3.9 ***Early medieval period:*** evidence for activity pre-dating the Norman Conquest is rare in the North West. Place-names and stone sculpture provide the main indicators of early settlement, though the area around Brougham has yielded rather better evidence for occupation at this time than many other parts of the region. Indeed, the possibility that the modern name represents a survival of the Roman *Brocavum* (Birley 1932, 138; Rivet and Smith 1981, 284), suggests continuity of occupation long into the post-Roman period.

3.3.10 Of particular significance is the probable seventh- to eighth-century settlement at Fremington, approximately 1.3km south of the sewage works, which was excavated in 1991 (Oliver *et al* 1996). This site contained four sunken-floored buildings, a post-built structure, a possible pottery kiln and a number of other features. Evidence for textile production, in the form of loom weights, spindle whorls, and possible wool-comb fragments, was also found (*op cit*, 151-7). Post-built structures recorded during excavations approximately 700m south of the sewage works in 1997 (LUAU 1997) remain undated, although the similarity of these to the Fremington structure suggests that they are likely to be of broadly similar date. The existence of an early Christian site at Ninekirks, approximately 2km north-east of the study area, which might date to the beginning of the fifth century AD, has also been postulated (*eg* Bouch 1955), and a large enclosure has been identified there from aerial photographs (Oliver *et al* 1996, 169).

3.3.11 The proximity of these sites to the important Roman (and almost certainly pre-Roman) route from the Eden valley over the Stainmore Pass may indicate that this was still acting as a conduit for people, trade, and ideas in the seventh-eighth century. In the mid-tenth century, Eric Bloodaxe, the Norse king of York, was reputedly killed and buried on Stainmore (Bailey 2001), probably whilst leading an army over the pass. By implication, therefore, the old Roman road was still an important route at this time, as it clearly was in the twelfth century, when castles were built along it (*Section 3.3.14*). The *Anglo-Saxon Chronicle* records that, in AD 926, a treaty was agreed between the English king, Athelstan, Constantine, king of the Scots, and others, *aet Aemontum* (Oliver *et al* 1996, 130). Whilst this could refer to a location on or near the River Eamont, there are other possibilities (*ibid*).

3.3.12 ***Medieval period:*** The great medieval castle at Brougham, situated at the north-west corner of the Roman fort, was seemingly established by Robert de Vieuxpont (or Veteripont) in the early thirteenth century (Summerson *et al* 1998, 9-10), though the architecture of the keep has more in common with late twelfth-century castles (*ibid*; Williams 1992, 106). Thereafter, the castle was occupied throughout the Middle Ages, with major periods of building occurring under the lordship of the Cliffords during the late thirteenth-early fourteenth centuries (Summerson *et al* 1998, 139) and the late fourteenth century (*ibid*). The castle is believed to have been destroyed in 1403 by a Scottish raid (Rollinson 1978), and was not fully restored until the mid-seventeenth century, when Lady Anne Clifford, the last of the Clifford line, re-

instated the castle as the ancestral seat (Summerson *et al* 1998, 140; Clare 1981).

3.3.13 South-west of the castle was the medieval village of Brougham. This seems to have been established in the early thirteenth century, when the original village was relocated to allow the expansion of Robert de Vieuxpont's hunting grounds (Cumbria Historic Environment Record 2846). Brougham Hall, which lies south-west of the castle, was established in the fourteenth century, but was rebuilt in 1829 (Collingwood 1947).

3.3.14 That the trans-Pennine route on which Brougham was positioned retained its importance into the later medieval period is clear; in the twelfth century, castles were built at Bowes (Co Durham) and Church Brough (Drury 1998), almost certainly to police the route, and subsequently at Brougham itself. King John used the Stainmore crossing in 1206, and Edward I is known to have used it twice, in 1280 and 1300, on his way into Scotland (Hindle 1977, 86-90). The road appears on the fourteenth-century Gough Map (cf Hindle 1977, fig 2), and there is evidence that it remained in use as an important drove road in the medieval and post-medieval periods (Drury 1998). At Brougham, the extant bridge over the River Eamont dates to the early nineteenth century (see below), but the Castle Ford (le Castlewath) at Brougham is recorded as early as 1380 (Summerson *et al* 1998, 21)

3.3.15 ***Post-medieval, industrial, and modern periods:*** Brougham Castle remained in use from the late medieval period to the late seventeenth century (James I stayed there in 1617 (Summerson *et al* 1998, 47-8)), seemingly suffering intermittent periods of neglect, followed by phases of major repair work and others of general 'care and maintenance' (*op cit*, 140). It seems to have suffered little more than neglect during the English Civil Wars (*op cit*, 50-3), and was subject to a major restoration by Lady Anne Clifford, the last of the Clifford line, in the third quarter of the seventeenth century (*op cit*, 140). However, following Lady Anne's death in 1676, the castle passed to the earls of Thanet, and, after a period of continued maintenance, was gutted and allowed to fall into ruin during the eighteenth century (*ibid*). The village south-west of the castle was removed in the late seventeenth century to make way for a park attached to Brougham Hall (Clare 1981; Summerson *et al* 1998, 66). The stone-built bridge over the River Eamont at Brougham, called Brougham Castle Bridge on the Ordnance Survey First Edition map of 1863 (Summerson *et al* 1998, 4, fig 2), was built in 1813, as evidenced both by a date stone in the bridge parapet, and by documentary records (*op cit*, 70).

3.3.16 Sometime between 1863 and 1900 (OS 1863; OS 1900) a rifle range was established in the fields to the south-west of the sewage works, though the most conspicuous development in this area comprised the construction of the Water Treatment Works themselves between 1900 and 1916 (OS 1900; OS 1916). By 1957, a line of pylons had been installed to the west of the works, including one close to the route of the access track (OS 1957), which might have disturbed adjacent deposits. The OS mapping of 1968 (OS 1968) shows that a pipeline had by that time been inserted, running between the River Eamont and the sewage works. This followed a very similar route to that of the

new trackway, and is therefore likely to have caused severe ground disturbance in this area.

4. RESULTS

4.1 INTRODUCTION

4.1.1 The archaeological watching brief was undertaken in accordance with the methodology outlined in *Section 2*. A maximum depth of 0.3m of topsoil was removed along the route of the access track (measuring *c* 400m long and up to 2.5m wide). A similar depth of topsoil was also removed for a turning area adjacent to the River Eamont (Fig 2).

4.2 RESULTS

4.2.1 For the most part, the groundworks did not penetrate below the base of the modern topsoil (Pl 1), and the upper surface of the underlying natural subsoils was not, therefore, exposed over most of the area investigated. Limited exposure of orange-brown clay and cobbles occurred for a distance of *c*.10m along the line of the access track adjacent to the sewage works (Pl 2), but no archaeological features were seen cutting into this deposit. The line of the access track also cut across a palaeochannel of the River Eamont, still visible in the landscape (Pl 3), but here too, the groundworks did not penetrate beneath the base of the modern topsoil in this area. No finds were recovered during the course of the archaeological works.

Plate 1: Topsoil stripping along the route of the access track, looking west

Plate 2: Topsoil stripping along the access track adjacent to the sewage works, looking west, showing limited exposure of natural clay and cobble subsoil

Plate 3: The access track crossing the palaeochannel (visible in the background as an earthwork), looking south-west

5. CONCLUSIONS

5.1 An archaeological watching brief was maintained during groundworks associated with the construction of an access track and turning area at Whinfell Holme Waste Water Treatment Works. For the most part, the groundworks did not penetrate below the base of the modern topsoil, and, consequently, no features or deposits of archaeological significance were recorded, and no finds were recovered.

6. BIBLIOGRAPHY

6.1 PRIMARY SOURCES

Ordnance Survey, 1863, 6-inch: 1 mile map, Cumberland, first edn

Ordnance Survey, 1900, 6-inch: 1 mile map, Cumberland, second edn

Ordnance Survey, 1916, 25-inch: 1 mile map, Cumberland

Ordnance Survey, 1957, 6-inch: 1 mile map, Cumberland

Ordnance Survey , 1968, 25-inch: 1 mile map, Cumberland

Ordnance Survey, 1983 *Soil survey of England and Wales, soils of northern England*, 1:250000

6.2 SECONDARY SOURCES

Bailey, R N, 2001 The Rey Cross background, in Vyner 2001, 118-20

Birley, A (trans), 1999 *Tacitus: Agricola and Germany*, Oxford

Birley, E, 1932 Materials for the history of Roman Brougham, *Trans Cumberland Westmorland Antiq Archaeol Soc*, n ser, **32**, 124-39

Bouch, CML, 1955 A Dark Age coin from Ninekirks, Brougham, *Trans Cumberland Westmorland Antiq Archaeol Soc*, n ser, **55**, 108-11

British Geological Survey, 2011 *Geoindex onshore*, http://maps.bgs.ac.uk/GeoIndex, accessed 29th June 2011

Clare, T, 1981 *Archaeological sites of the Lake District*, Ashbourne

Collingwood, RG, 1922 A note on *Brocavum*, *Trans Cumberland Westmorland Antiq Archaeol Soc*, n ser, **22**, 140-2

Collingwood, RG, 1947 *A guide to the Roman Wall*, fourth edn, Newcastle upon Tyne

Cool, HEM, 2004 *The Roman cemetery at Brougham, Cumbria, excavations 1966-67*, Britannia Monog, **21**, London

Countryside Commission, 1998 *Countryside Character volume 2: North West*, Northampton

Drury, D, 1998 Stainmore, Cumbria, archaeological investigations on the A66 Stainmore to Banks Gate Road improvement scheme, *Trans Cumberland and Westmorland Antiq Archaeol Soc*, n ser, **98**, 119-32

Edwards, BJN, 2006 The 'caput Carvetiorum' and the putative god of the tribe, *Trans Cumberland Westmorland Antiq Archaeol Soc*, 3 ser, **6**, 221-6

Edwards, BJN, and Shotter, DCA, 2005 Two Roman milestones from the Penrith area, *Trans Cumberland Westmorland Antiq Archaeol Soc*, 3 ser, **5**, 65-77

English Heritage, 2006 *Management of Research Projects in the Historic Environment (MoRPHE)*, London

Fell, C, 1972a Neolithic finds from Brougham, *Trans Cumberland Westmorland Antiq Archaeol Soc*, n ser, **72**, 36-43

Fell, C, 1972b *Early settlement in the Lake Counties*, Clapham

Hanson, WS, and Campbell, DB, 1986 The Brigantes: from clientage to conquest, *Britannia*, **17**, 73-89

Harding, DW, 2004 *The Iron Age in northern Britain: Celts and Romans, natives and invaders*, Abingdon

Hindle, BP, 1977 Medieval roads in the Diocese of Carlisle, *Trans Cumberland Westmorland Antiq Archaeol Soc*, n ser, **77**, 83-95

Higham, NJ, and Jones, GDB, 1975 Frontiers, forts and farmers: Cumbrian aerial survey, 1974-5, *Archaeol J*, **132**, 16-53

Higham, NJ, and Jones, GDB, 1985 *The Carvetii*, Gloucester

Hodgson, J and Brennand, M, 2006 The prehistoric period resource assessment, in M Brennand (ed) *The archaeology of north-west England: an archaeological research framework for the north-west region. Volume 1: resource assessment*, Archaeol North-West, **8**, Manchester, 23–58

IfA, 2001 *Standard and guidance for the collection, documentation, conservation and research of archaeological materials*, Reading

Jackson, J (trans), 1937 *Tacitus: Annals 4-6, 11-2*, Harvard

James, R, 2006 A Bronze Age enclosure and cremation cemetery at Leacet Hill, Brougham, *Trans Cumbria Westmorland Antiq Arch Soc*, 3 ser, **6**, 27-43

LUAU, 1993 *North Western ethylene pipeline, English section, archaeological studies 1988-1993, final report*, unpubl rep

LUAU, 1996 *Oasis sewer requisition, Cumbria: evaluation report*, unpubl rep

LUAU, 1997 *Oasis sewer requisition, Cumbria: excavation report*, unpubl rep

Margary, ID, 1973 *Roman roads in Britain*, third edn, London

Martin, G, and Reeves, J, 2001 *Report on an archaeological investigation on land between the A66 and Frenchfield Farm, Penrith, Cumbria*, Carlisle Archaeol, unpubl rep

Oliver, T, Howard-Davis, C, and Newman, RM, 1996 A post-Roman settlement at Fremington, near Brougham, in J. Lambert (ed.) *Transect through time: the archaeological landscape of the Shell North Western Ethylene Pipeline*, Lancaster Imprints, **1**, Lancaster, 127-69

Rivet, ALF, and Smith, C, 1981 *The place-names of Roman Britain*, London

Shotter, DCA, 2000a Roman Britain and 'The Year of the Four Emperors', *Trans Cumberland Westmorland Antiq Archaeol Soc*, 3 ser, **1**, 79–86

Shotter, DCA, 2000b Petillius Cerialis in northern Britain, *Northern Hist*, **36**, 189-98

Shotter, DCA, 2004 *Romans and Britons in north-west England*, third edn, Lancaster

Summerson, HRT, Trueman, M, and Harrison, SA, 1998 *Brougham Castle: a survey and documentary history*, Cumberland Westmorland Antiq Archaeol Soc, Res Ser, **8**, Kendal

Rollinson, W, 1978 *A history of Cumberland and Westmorland*, London

Vyner, B E, 2001 *Stainmore: the archaeology of a North Pennine pass*, Tees Archaeol Monog Ser, **1**, Hartlepool

Welfare, H, and Swan, VG, 1995 *Roman camps in England: the field archaeology*, London

Williams, JH, 1992 Excavations at Brougham Castle, 1987, *Trans Cumberland Westmorland Antiq Archaeol Soc*, n ser, **87**, 105-21

Wilmott, T, 2004 Roman Brougham in its regional setting, in Cool 2004, 2-8

Zant, J, in preparation *The Roman civil settlement at Brougham, Cumbria: excavations 2007-8*

7. ILLUSTRATIONS

7.1 LIST OF FIGURES

7.2 LIST OF PLATES

AP*L10391*MAT*Sept 2011

Figure 1: Site location

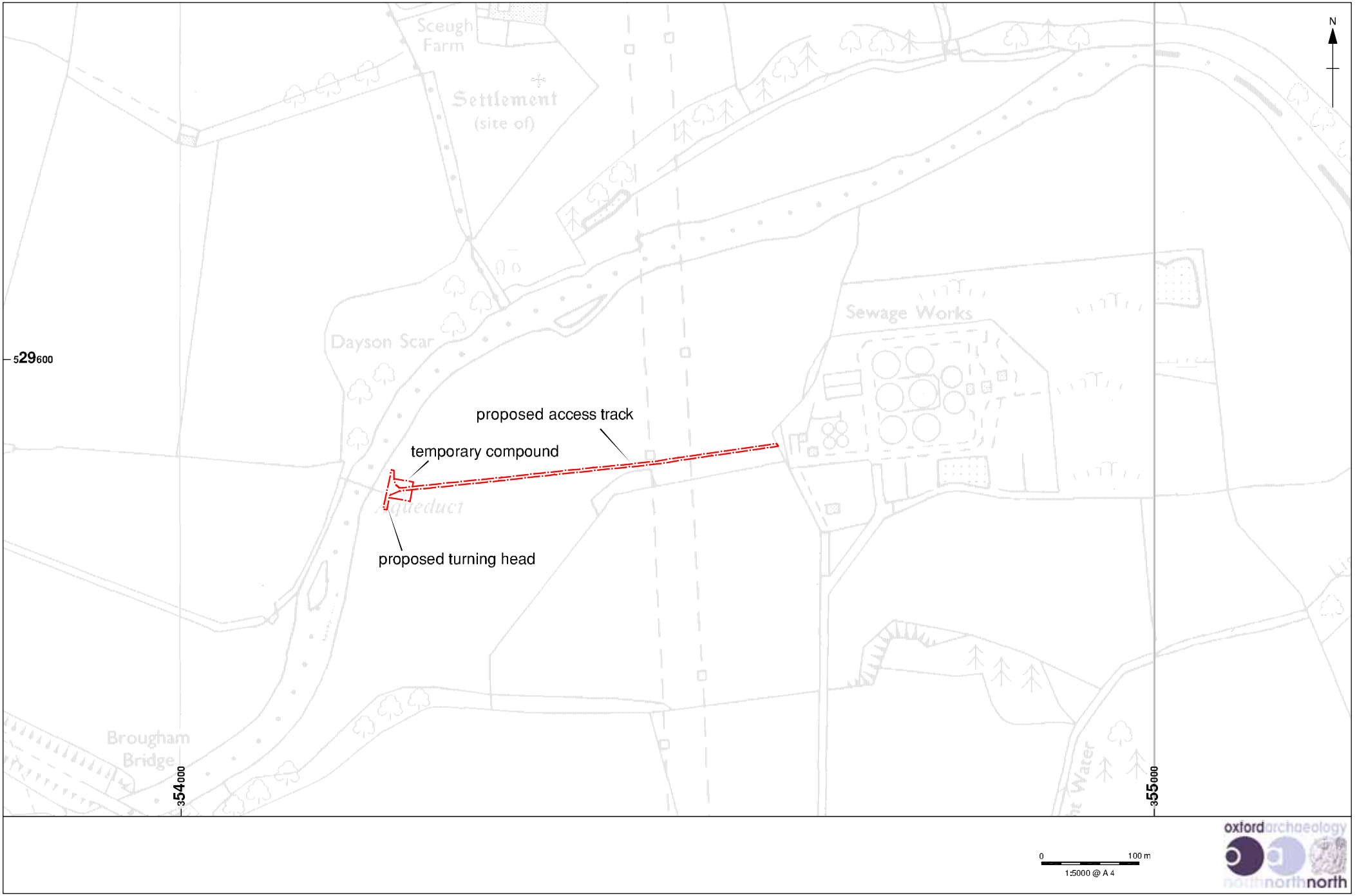

Figure 2: Site plan