



CARLISLE WASTEWATER TREATMENT WORKS, WILLOW HOLME INDUSTRIAL ESTATE, CUMBRIA

Rapid Desk-Based Research and Watching Brief



Oxford Archaeology North

July 2008

United Utilities

Issue No: 2008/09-815

OAN Job No: L9972

NGR: NY 3881 5651

Planning Application No:
1/07/9012

Document Title: CARLISLE WASTEWATER TREATMENT WORKS,
WILLOW HOLME INDUSTRIAL ESTATE,
CUMBRIA

Document Type: Rapid Desk-Based Research and Watching Brief

Client Name: United Utilities

Issue Number: 2008/09-815
OA Job Number: L9972
Site Code: WH08

National Grid Reference: NY 3881 5651

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SUMMARY

United Utilities proposed the construction of two kiosks at Carlisle Wastewater Treatment Works, Willow Holme Industrial Estate, Carlisle, Cumbria (centred on NGR NY 3881 5651). The proposed development area lies a short distance to the north of Hadrian's Wall, a Scheduled Monument (SM no. CU2819) and a World Heritage Site, and consequently, a condition was placed on planning consent for the proposed development, comprising a programme of archaeological works (Planning Application No. 1/07/9012). Cumbria County Council Historic Environment Service (CCCHES) recommended that a rapid archaeological desk-based research be undertaken to cover the application area in advance of the proposed development. In addition, a watching brief during the course of ground works for the construction of the two kiosks was also recommended. Oxford Archaeology North (OA North) was subsequently commissioned by United Utilities to undertake this work, which was conducted in February 2008. No archaeologically significant structures or features were observed during the course of these works.

ACKNOWLEDGEMENTS

Oxford Archaeology North (OA North) would like to thank United Utilities for commissioning the project. In addition, OA North would like to thank the staff of Cumbria County Council Historic Environment Record for their help and assistance.

Kathryn Blythe undertook the rapid desk-based research, whilst Thomas Mace undertook the watching brief and wrote the report. Mark Tidmarsh produced the drawings. Alison Plummer managed the project and also edited the report.

1. INTRODUCTION

1.1 CIRCUMSTANCES OF THE PROJECT

- 1.1.1 United Utilities proposed the construction of two kiosks at Carlisle Wastewater Treatment Works, Willow Holme Industrial Estate (centred on NGR NY 3881 5651). The proposed construction area lies adjacent to the south of the line of Hadrian's Wall, part of the "Frontiers of the Roman Empire" World Heritage Site (UNESCO serial id 430bis-001). This is a trans-national UNESCO (United Nations Educational, Cultural and Scientific Organisation) monument designation, which initially comprised the Hadrian's Wall complex and the German 'limes'. Hadrian's Wall and its associated features were first inscribed as a World Heritage Site in 1987. Hadrian's Wall is also protected as a Scheduled Monument (SM no. CU2819), although the proposed development lies outside of the scheduled area.
- 1.1.2 A condition was placed on planning consent (Planning Application No. 1/07/9012) for the proposed development, comprising a programme of archaeological works. Cumbria County Council Historic Environment Service (CCCHES) issued a brief for this work (*Appendix 1*), which recommended that a rapid archaeological desk-based research be undertaken to cover the application area in advance of the proposed development. A watching brief during the course of the ground works was also recommended.
- 1.1.3 United Utilities subsequently commissioned Oxford Archaeology North (OA North) to carry out this work. This report sets out the results of the rapid desk-based research and watching brief, outlining the findings in the form of a short document.

1.2 SITE LOCATION, GEOLOGY AND TOPOGRAPHY

- 1.2.1 Carlisle lies on the Cumberland Plain approximately 8 km above the tidal limit of the River Eden and some 13 km upstream of the Solway Firth. The historic city is situated on the south bank of the Eden close to its confluence with the River Caldew. The settlement grew up on a promontory of land extending roughly north to south, bounded by the floodplain of the Eden to the north and north-east, and to the west by the scarp above the Caldew. The existing stone castle has occupied the prominent bluff at the northern end of the scarp since the twelfth century. The proposed development area is located within Willow Holme, a large area of low-lying flood-plain situated in a loop of the River Eden west of its confluence with the Caldew.
- 1.2.2 The solid geology of the Carlisle area comprises soft, reddish Triassic St Bees sandstone of the Sherwood Sandstone Group, which lies above the Permian St Bees shales and is itself overlain and intercalated with the less extensive grey Kirklington sandstone (British Geological Survey 1982; McCarthy 1990, 1–2). Over most of the modern city centre the sandstone is covered by a thick deposit of orange-pink boulder clay.

- 1.2.3 The precise position of the main channels of the Eden and Caldew at any time in the past is difficult to determine, although in all likelihood the Eden lay further south than today and has gradually moved northwards through time, eating into the steep scarp of Etterby Scaur on the north bank and depositing a considerable depth of alluvial deposits to the south, over the Willow Holme area (Ferguson 1888, 167-8). That the upper part of this sediment has accumulated since Roman times was demonstrated by excavations in 1886, where the foundations of Hadrian's Wall were found beneath eight feet (c 2.4m) of alluvium (*op cit*, 171).

2. METHODOLOGY

2.1 RAPID DESK-BASED RESEARCH

- 2.1.1 The rapid desk-based research comprised a search of the archives and library held at OA North. Sites listed by the Cumbria County Council Historic Environment Record (CCCHER) and all known previous archaeological investigations in close proximity to the proposed development have also been integrated into the Archaeological and Historical Background.
- 2.1.2 ***Oxford Archaeology North***: OA North has an extensive archive of secondary sources relevant to the study area, as well as numerous unpublished client reports on work carried out both as OA North and in its former guise of Lancaster University Archaeological Unit (LUAU). These were consulted where necessary. Oxford Archaeology North has already undertaken desk-based research in advance of the laying of new sewers in the Willow Holme Industrial Estate (OA North 2008) as part of the Carlisle Flood Alleviation Scheme. Naturally, the collated archaeological and historical detail has a bearing here.

2.2 WATCHING BRIEF

- 2.2.1 The watching brief comprised the systematic examination and description of deposits exposed during the course of the ground works for the pair of kiosks. A monochrome and colour slide photographic record was maintained throughout.

2.3 ARCHIVE

- 2.3.1 A full professional archive has been compiled in accordance with current IFA and English Heritage guidelines (English Heritage 1991). The paper and digital archive will be provided in the English Heritage Centre for Archaeology format and will be submitted to the Cumbria Record Office, Cumbria County Council Historic Environment Service (CCCHES) and the Hadrian's Wall Archaeologist on completion of the project. The Arts and Humanities Data Service (AHDS) online database Online Access index of Archaeological Investigations (OASIS) will be completed as part of the archiving phase of the project. A copy will also be offered to the National Monuments Record.

3. ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

3.1 INTRODUCTION

- 3.1.1 The following section provides a summary of the historical and archaeological background of the City of Carlisle in general, and the Willowholme study area in particular. The summary has been compiled largely from secondary sources, and is intended to provide a context for the results of the archaeological works. It will be noted that there is a discrepancy in the spelling of *Willowholme* throughout the text. The area is correctly known as *Willowholme*, whilst the road is rendered as *Willow Holme*.

3.2 THE PREHISTORIC PERIOD

- 3.2.1 **Carlisle:** whilst a transient human presence during the late Mesolithic period is suggested by a small number of flints from the city centre (Caruana and Cherry 1994; Fell 1990, 96; Richardson 2000, 94), settlement at Carlisle appears to have commenced in the late Neolithic or early Bronze Age. Many stone artefacts attributable to this period, including a small number of Langdale axes, have been recovered from sites in the city (Fell 1990; in prep; Richardson 2000; Tolan-Smith in prep). With the exception of this material, however, physical evidence for prehistoric occupation remains sparse. At several sites, evidence for pre-Roman arable farming, in the form of shallow ard-marks scoring the surface of the natural subsoil, has been recorded (McCarthy 1990, 13-4; Charlesworth 1979; Caruana in prep; Zant in prep a). A cobbled track sharing the alignment of the ard-marks was also excavated at the northern Lanes (Zant in prep a). These features may represent the remains of an extensive system of arable fields and associated trackways situated close to a putative settlement. The relatively large flint assemblage suggests a late Neolithic or early Bronze Age *floruit* for the pre-Roman settlement, although the ard-marks have been interpreted by some as the remains of cord-rig cultivation, which is usually regarded as being a feature of the later Bronze Age or Iron Age (McCarthy 2002, 43). With the exception of an undated roundhouse of possible late Iron Age date excavated at the southern Lanes (McCarthy 2000, 17), there is currently little evidence for Iron Age activity in central Carlisle.
- 3.2.2 **Willowholme:** no evidence for prehistoric activity is known from Willowholme, which is perhaps unsurprising in view of the low-lying character of the area, its susceptibility to flooding even up to the present day, and the likelihood that any prehistoric levels that might exist lie buried beneath several metres of alluvium. It is conceivable, although there can be no proof, that the important ford at Etterby Wath, which is recorded from the medieval period onwards (Jones 1976, 82), originated at a far earlier date, possibly even as early as prehistoric times (HER No.41754). The only discovery of prehistoric remains within the study area was made in the early 1990s at the Cumberland Infirmary, which occupies a low hilltop site at the south-west corner of the study area, south of Willowholme itself (Flynn and McCarthy 1993; McCarthy *et al* 1998, 4-5). Here, the remains of five roundhouses, part

of a settlement of Bronze Age or Iron Age date (Site 7) were exposed. Just outside the study area, recent excavations on the site of the Maltsters' Arms public house on John Street, c 200m south of Willowholme, recovered a neolithic Langdale axe fragment, a hammer stone and two pieces of flint debitage (North Pennines Archaeology 2004). All these items were, however, either unstratified or residual in later contexts.

3.3 THE ROMAN PERIOD

- 3.3.1 **Carlisle:** despite a long tradition of antiquarian interest in Roman Carlisle (*Luguvalium*), it has only been in recent years that additional information has become available regarding the origins, nature, and extent of Roman settlement in the city. The theory that the prominent bluff occupied by Carlisle Castle had been the site of a Roman fort was put forward as early as the mid-nineteenth century (Ferguson 1893a, 348–9), whilst subsequent analysis of the samian from the city pointed to an early Flavian military presence (Bushe-Fox 1913, 299–301). For many years, however, it was generally accepted that the fort lay south of the castle, in the vicinity of the medieval cathedral (Shaw 1924, 96–102; Simpson 1953, 234; Hogg 1955, 72; 1964, 58). In fact, the fort's precise location remained unclear until the Annetwell Street excavations of 1973–84, which identified what proved to be the south rampart and south gate of a turf-and-timber fort extending north under the castle (Charlesworth 1980). A possible annexe lay on the south side of the fort (McCarthy 1991; Caruana 1992).
- 3.3.2 Dendrochronological dating has proved that the first fort was constructed in the autumn or winter of AD 72–3 (Groves in prep). Tree-ring dating also indicates that the interior of the fort was extensively refurbished in the autumn/winter of AD 83–4 (Caruana in prep; Zant in prep b). The fort was demolished in the early second century but was rebuilt, again in turf and timber, c AD 105, after only a short break. The second fort was not abandoned in the AD 120s, when Hadrian's Wall and the presumed primary Wall-fort at Stanwix were constructed less than 1 km to the north, but continued in use to the beginning of the Antonine period (*ibid*). It was probably demolished as a consequence of the reoccupation of southern Scotland in the AD 140s, when the northern frontier was advanced to the Forth-Clyde isthmus. In the following 60–70 years, the fort site may have been occupied only intermittently; activity during this period has proved difficult to characterise, but it seems probable that the site was not used as a conventional fort at this time. Intensive occupation appears to have begun again in the early third century, when a rebuilding in stone occurred, although it is not clear if the new installation was a conventional fort or some other kind of military establishment. Thereafter, occupation continued to the end of the Roman period, which on the evidence of coins and pottery extended into the fifth century.
- 3.3.3 South of the fort, extramural timber buildings adjacent to the main road leading south were in use within a few years of the arrival of the Roman army (McCarthy 1990). During the course of the Roman period the settlement grew into a sizeable town extending south and east of the fort. A milestone

discovered near Penrith demonstrates beyond much doubt that the town had become the tribal capital of the Carvetii, the *civitas Carvetiorum*, by AD 223, and it seems likely that *civitas* status had been conferred on the town by Septimius Severus some years earlier (Edwards and Shotter 2005, 69). As in the fort, the first stone buildings appeared during the late second-early third century AD, and there is good evidence from a number of sites that intensive occupation within the town continued into the late fourth or early fifth century at least.

- 3.3.4 At certain times during the Roman period, quite extensive suburbs extended along the main roads leading north and south from the town, but there is currently only very limited evidence for Roman activity west of the River Caldew (North Pennines Archaeology 2004). The exact position of the Roman road bridge over the River Eden is not known. During the Roman period, the Eden is likely to have lain well to the south of the modern river channel, but the discovery of a Roman bridge stone in the modern river suggests that the road may have been carried across both the river and the adjacent alluvial flats on a long bridge of many arches, or a combination of causeways and arches (Caruana and Coulston 1987, 50). The principal cemeteries appear to have been situated south of the town, adjacent to a main road represented by modern Botchergate (Patten 1974), although burials are also known from sites to the west and north-east (Ferguson 1886, 318-20; 1893b, 373; Hogg 1961; Esmonde-Cleary 1994, 263).
- 3.3.5 **Stanwix:** the Hadrian's Wall fort at Stanwix (*Uxellodunum*, perhaps later known as *Petriana* (Breeze 2006, 341-2)) was situated less than 1 km north of Carlisle. The existence of a Hadrianic fort on the site seems probable, although little direct evidence has yet been found (Caruana 2000, 74-5). The stone fort, which was the largest on the Wall, is conventionally dated to the AD 160s, and was the base of the milliary *ala Petriana*. Hadrian's Wall itself ran south-west from the fort and is presumed to have been carried over the River Eden on a bridge situated close to the river's present-day confluence with the Caldew (Hogg 1952, 149-52). Large numbers of bridge stones were dredged from the river close to this point in 1951 (*op cit*; Breeze 2006, 347) and some are still to be seen on the riverbank.
- 3.3.6 **Willowholme:** at Willowholme, the archaeology of the Roman period is dominated by Hadrian's Wall, which crossed the study area on an east-north-east to west-south-west alignment. The developmental history of the Hadrian's Wall frontier system is complex (Breeze 2006, 50-3), particularly so in its western sector, west of the River Irthing, where it was initially constructed of turf (why is still a matter for debate (*op cit*, 58-9)) and rebuilt in stone (often on a slightly different line) later. Furthermore, the Wall itself was only one element (albeit the most significant) of the frontier system; north of the Wall (in most areas at least) was a ditch (*op cit*, 62-3), whilst to the south, situated at widely varying distances from the Wall, lay the Vallum, an enigmatic earthwork comprising a flat-bottomed ditch flanked by mounds, the purpose of which also continues to excite debate (*op cit*, 86-7). Another linear element of the frontier system was a road, known as the Military Way. In many areas this ran along the north mound of the Vallum, but west of the Irthing it frequently

lay between the Wall and Vallum (*op cit*, 89). Work probably commenced on the Wall in AD 122–23 (Breeze and Dobson 2000, 66), although it is possible that the Turf Wall was begun slightly earlier (Shotter 2004, 75–9). With the exception of a break of no more than 20 years, when the northern frontier of *Britannia* was advanced to the Forth-Clyde isthmus during the reign of Antoninus Pius (AD 138–161), Hadrian's Wall remained in commission to the end of the Roman period. It would seem that the western sector of the Turf Wall, including the section in the Willowholme area, was not rebuilt in stone until the return from Scotland (Breeze 2006, 60), which probably occurred in the AD 150s according to current theories (Bidwell 1999, 23).

3.3.7 The line of the Turf Wall in the Willowholme area is not known, but it must presumably cross the study area somewhere in the vicinity of the Stone Wall. When excavated elsewhere, it has been found to be *c* 6m wide at the base and built of cut turves laid in courses (Breeze 2006, 58). In some places the rampart was placed on a cobble foundation up to 5.8m wide (*op cit*, 60), although this feature does not seem to have provided everywhere. There is evidence that in boggy ground the Turf Wall rested on a piled foundation (*ibid*). The Stone Wall (Site 2) was first seen at Willowholme in 1854 during the construction of a sewer (Ferguson 1888, 168; Simpson 1932, 149), and was exposed again in two places in 1886, close to the first site, in the angle formed by the main railway line from Carlisle to Glasgow and the branch line to Port Carlisle (*op cit*, 171–2). Here the Wall had been reduced almost to its foundation, which rested on river gravels, but enough survived to demonstrate that it had been 2.36m wide above foundation level. The remains of the Wall at this point were buried beneath 2.44m of alluvial silt (*ibid*). The Wall foundation was located again east of the main railway line and was found to be similarly preserved (*op cit*, 174). During the same excavation campaign, the Wall and Wall Ditch were located north of the Eden, on top of the steep bank above Hyssop Holme Well, and a search was made for traces of the bridge that carried the Wall over the river, but without success (Ferguson 1888, 172–3). In 1932, a further stretch of the Stone Wall several metres in length was found close to the site of the original (1854) exposure during the construction of a new sewer (Simpson 1932). Here the foundation was 2.69m wide and comprised a layer of rough sandstone flags *c* 100mm thick bedded in puddled clay and laid directly upon the natural gravel subsoil. Above foundation level only two of the northern facing stones remained, offset by *c* 163mm from the outer face of the foundation (*op cit*, 150). The depth at which the remains lay beneath the modern surface is not stated in the report, but the published photograph (*op cit*) (Fig 4) indicates that the Wall lay beneath a thick deposit of alluvium.

3.3.8 On the evidence of spacing, Milecastle 67 should lie just west of the study area, close to the south end of the Waverley Viaduct (now long disused) that once carried the Carlisle to Edinburgh railway line across the Eden. Whilst no trace of Milecastle 67 has been found, Roman coins were unearthed west of the viaduct in 1861 and a gold necklace of probable second century date was found a short distance further west in 1860, on the site of the former canal engine shed (OS First Edition map; Cumb. XXIII.3). Turrets 66a and 66b should also lie somewhere in the Willowholme area (Milecastle 66 was

located north of the Eden, on top of the steep bank above Hyssop Holme Well), but whilst the approximate positions of these structures can be calculated on the evidence of spacing, their precise locations are unknown. Neither the Wall Ditch, the Vallum, or the Military Way have been seen at Willowholme, though all presumably cross the area, buried deep, like the Wall itself, beneath alluvial silts. On the 1937 edition of the OS 25-inch map (Cumb. XXIII.3) a line labelled 'probable course of Vallum' is shown crossing Willowholme a little over 70m south of, and parallel to, the line of the Wall, but this is not based on archaeological evidence. North of the Eden, the north mound of the Vallum is depicted on the 1966 edition of the OS 1:1250 map (NY 3956 NE) as lying *c* 56m south of the Wall, but there can be no guarantee that this is reflected in the Willowholme area. Traces of the Vallum have, however, been observed west of the study area, on the higher ground at Davidson's Banks, where it lay just south of the Wall.

- 3.3.9 With the exception of Hadrian's Wall itself, few Roman remains are known from within the study area, a notable exception being the rural settlement that was excavated at the Cumberland Infirmary, which occupies a low hilltop site at the south-west corner of the study area, *c* 300m south of Hadrian's Wall. Here, where several roundhouses of Bronze Age or Iron Age date were also discovered (*Section 3.2.2*), part of a multi-phase Roman settlement was exposed, comprising rectilinear timber buildings and cobbled surfaces associated with palisaded and ditched enclosures (Flynn and McCarthy 1993). Dating evidence suggested a *floruit* for this site in the late first-second century AD. The only other record of Roman material from within the study area is of a small fragment of samian pottery, found in 1976-7 on the south-west edge of the modern sewage works, close to the line of Hadrian's Wall.

3.4 THE EARLY MEDIEVAL PERIOD

- 3.4.1 **Carlisle:** the nature of settlement at Carlisle in the earlier post-Roman period is difficult to determine. In view of its long history as a Roman administrative centre and its position at the hub of a system of roads, the town is unlikely to have been completely abandoned, although it seems likely that the settlement contracted considerably at the end of the Roman period. During the sixth century Carlisle probably lay within the British kingdom of Rheged (Kirkby 1962, 79), but archaeological and historical evidence at this time are almost entirely lacking. During the first half of the seventh century the region was absorbed into the Anglian kingdom of Northumbria and from this period onwards occasional historical references to Carlisle survive. By the late seventh century the settlement formed the centre of a royal estate 15 miles in circumference, which the Northumbrian king Ecgfrith gave to St Cuthbert, bishop of Lindisfarne, in AD 685 (Summerson 1993, 10). Cuthbert, in turn, used the grant to establish and endow a nunnery. That a monastic presence endured until the later ninth century is suggested by the presence of Eadred, described as a former abbot of Carlisle, in the group of monks who journeyed across northern England between AD 875 and AD 883, searching for a resting place for St Cuthbert's remains (Tudor 1984, 68-9). During Cuthbert's visit to Carlisle in AD 685, he was shown the town walls (possibly the fort defences, since there is as yet no evidence that the town itself was walled) and a working

Roman fountain, by Waga the reeve (*praepositus*) and other citizens (Webb 1998). The 'British' name Waga, and the use of the old Roman title *praepositus*, together with the civic pride evident in Cuthbert's guided tour, suggest a surviving connection with Carlisle's Roman past at this time.

- 3.4.2 By the late ninth century, control of Carlisle and its region passed from Northumbria to the British kingdom of Strathclyde or Cumbria, which itself owed allegiance by this time to the king of the Scots (Summerson 1993, 1). Scandinavian political influence at this time is debatable, although it is clear that the 'Great Army' under Halfden made a determined attempt to conquer Northumbria in 875. Some sources suggest that he sacked Carlisle, although physical evidence for this has not been found (Highham 1986, 308). In the eleventh century the region came under increasing English control, in the form of the Earls of Northumbria, but was recovered by Malcolm Canmore in the 1060s (Summerson 1993, 14–15), after which it remained technically in Scottish hands until the arrival of the Norman king William II in 1092 (Earle and Plummer 1892).
- 3.4.3 During the twelfth century the chronicler John of Worcester claimed that by the late eleventh century Carlisle had been deserted for 200 years following its destruction by the Danes. This assertion is not, however, supported by the archaeological evidence, which proves that occupation persisted throughout the early medieval period, with a principal focus of occupation in the vicinity of the medieval cathedral, where excavations have revealed evidence for a tenth-century cemetery (Gaimster *et al* 1989, 174; Keevil 1989).
- 3.4.4 **Willowholme:** there is no evidence for early medieval activity or occupation within the study area. It is conceivable that the important medieval ford at Etterby Wath, which crossed the Eden from Willowholme on the south to Etterby on the north (Jones 1976, 82), was already in use in the pre-Norman period (and indeed much earlier; *Section 3.5.5*), which would imply that a road or track leading to the ford across Willowholme, and which subsequently developed into Willowholme Road (*Section 3.6.21*), was also in existence, although there can be no proof of this.

3.5 THE LATER MEDIEVAL PERIOD

- 3.5.1 **Carlisle:** the Anglo-Saxon chronicle records that in the year 1092 William II led an army north to Carlisle (Earle and Plummer 1892) and drove out a certain Dolfin, whose presence in Cumberland has been taken to show that the region was part of the kingdom of the Scots prior to 1092 (Summerson 1993, 47). William, it is said, constructed a castle and brought settlers from the south to inhabit the re-established town (Earle and Plummer 1892). No trace of this early castle has been found, but it was almost certainly built of earth and timber and may have occupied the site of the present stone keep (McCarthy *et al* 1990, 11, 28).
- 3.5.2 The Norman hold on Cumberland was consolidated by Henry I, who visited Carlisle in the autumn of 1122 (Sharpe 2006, 52). At this time the position of the Anglo-Scottish border remained ill-defined, as is illustrated by a

contemporary Scottish description of Carlisle as lying ‘between England and Scotland’ (Kennedy 1973, 96). During his stay Henry took measures to strengthen Carlisle’s position within his kingdom, providing money for the construction of ‘walls and towers’, a probable reference to the town defences, and for the foundation of the Augustinian priory of St Mary’s (Summerson 1993, 25). The priory subsequently became a cathedral with the creation of the see of Carlisle in 1133 (Perriam 1987, 127). It was probably also during Henry’s reign that construction work began on the stone castle.

- 3.5.3 As a consequence of the unsettled conditions that prevailed in England following Henry I’s death in 1135, large parts of the northern English counties, including Carlisle, came under Scottish control (Kapelle 1979). However, the city reverted to English rule in 1157 and probably received its royal charter from Henry II in the following year (Summerson 1993, 58). During the comparatively stable period from the mid-twelfth to late thirteenth centuries, the story of Carlisle is one of sustained, if not spectacular, growth, although for the English kings its primary function remained that of a border fortress. By the later twelfth century suburbs had developed outside all three of the city gates, on Botchergate to the south, Rickergate to the north, and Caldewgate to the west. Little archaeological work has been undertaken within Carlisle’s medieval suburbs, but recent excavations on John Street, some 200m south of the study area, revealed an extensive metalworking complex of fourteenth-century date (North Pennines Archaeology 2004). Several medieval documentary sources attest to the existence of a water-course beneath the city’s west walls, which probably developed into the post-medieval mill-race known as the Corporation Dam, which ran through the eastern part of Willowholme (Hutchinson 1794; Jones 1985, 187–9). Three water-powered corn mills, the Borough Mill, Abbey Mill and Castle Mill, were operated by the city during the medieval period (Perriam 1992, 34) and other mills followed later.
- 3.5.4 By contrast with the preceding 150 years, the last decade of the thirteenth century heralded the beginning of a disastrous period of unrest for Carlisle and the wider region. Destruction of much of the city by fire in 1292 was followed four years later by the onset of the Anglo-Scottish wars, during which it was attacked or besieged on a number of occasions. A fragile peace negotiated in the 1320s had broken down a decade later, leading to several centuries of warfare, raiding, and skirmishing in the border region. The city was impoverished for much of this period and there are frequent references to the citizens being relieved of their obligations for the payment of taxes and subsidies (Summerson 1993, 265). Intermittent warfare continued for the rest of the medieval period, although in general these wars were less catastrophic than those of the fourteenth century. However, extremely unsettled conditions continued to prevail across the entire Border region until after the Union of the Crowns in the early seventeenth century. Consequently, the city appears to have remained underpopulated and relatively impoverished well into the post-medieval period.
- 3.5.5 **Willowholme:** it is during the medieval period that the first references to Willowholme appear in contemporary documents. The name of the area is

believed to derive from the personal name Gueri; the Pipe Roll of 1130 refers to Gueri the Fleming, who owned land and houses in Carlisle (Jones 1976, 82), and whilst there is no direct documentary proof, it is thought highly probable that part of Gueri's holding was at Willowholme, which in the Middle Ages was known as Weryholme (*idid*). The *-holme* element of the place name probably derives from the Old Norse *holmr*, which was adopted into late Old English and used in a general sense to denote flat or low-lying ground, or a river-meadow (Mills 1976, 45; Gelling 1984, 50-2). Gueri's land lay adjacent to the southern end of Etterby Wath, an important ford across the River Eden, and it is likely that he, together with his contemporary Etard (who gave his name to the village of Etterby on the north bank of the river) were given their lands in order to secure both ends of this crossing (Jones 1976, 82). The allocation of these estates across the wath was part of a wider policy to safeguard the approaches to Carlisle in the early Norman period by the creation of the baronies of Burgh and Liddell and the introduction of new tenants to the important local lordships of Scaleby, Rickerby and Botcherby (*ibid*).

- 3.5.6 During the medieval period Willowholme formed part of the socage manor of Carlisle, some 1,300 acres of arable, meadow and pasture land forming part of the revenue of the Crown (Spence 1984, 65-6). On a plan of the manor produced in 1611 (*op cit*, pl II) the Willowholme portion is estimated at 111 acres (*op cit*, 67) and its boundaries are shown (*Section 3.6.8*), but whether this reflects the situation in the medieval period is not known. From 1376 the manor, together with the castle and other royal demesnes, was committed to the custody of the sheriff of Cumberland at an annual rent (*op cit*, 74). From this date farming-out of parcels of land for rent became increasingly common, although documentary sources suggest that this had begun earlier, and by the early post-medieval period Willowholme, like other parts of the manor, was held by a large number of different tenants (*Section 3.6.8*). In the aftermath of the Black Death of 1349, the income paid to the sheriff from socage tenants in Willowholme was around a third less than previously (*op cit*, 281), which provides an indication of the possible level of mortality in the city. Some of the city's leading burgesses used their position to obtain grants of the royal demesnes once these began to be farmed out. One such was John de Blenkinsop, who in 1377 received a 13-year lease of lands in Weryholme; this grant was subsequently renewed twice (*op cit*, 368). The clerical poll tax returns of 1379 and 1380 for Carlisle deanery record that Gilbert Grout, an unbeneficed chaplain, briefly held the farm of the royal demesne of Weryholme (*op cit*, 306). The canons of the Priory of St Mary's in the city had acquired holdings in the area by *c* 1220 and possibly considerably earlier (*op cit*, 71-2), although later documents suggest the Priory held much of its land in the socage manor as freehold.
- 3.5.7 With the probable exception of what is now the Bridge Street/Church Street frontage to the south, it is unlikely that many buildings were erected in the Willowholme area during the medieval period. No medieval maps of Carlisle exist, but cartographic depictions from the seventeenth century show the whole area as open fields, with limited ribbon development extending west along the road leading from the west gate of the city (*Section 3.6.11-12*). In

view of its location, on a low-lying flood plain at the confluence of two rivers, it seems likely that the area was given over largely to pasture and meadowland rather than arable cultivation, although evidence is lacking. That the area was subject to severe (and presumably frequent) inundation is indicated by a documentary reference of 1401, when John de Blenkansop, a former mayor (presumably the same individual recorded in 1377; *Section 3.5.6*), requested a reduction in the rent of his land at Weryholme, which had been ruined by floods and by frequent Scottish raids (Summerson 1993, 396). Early in the same year, the castle demesnes at Weryholme were said to be ‘in great part diminished, and diminished from day to day, by the frequent flood of water around there’ (*op cit*, 397). No medieval sites are known within the study area, although the Little Caldew may be of medieval origin, perhaps originating as a mill-race to supply the medieval corn mill at Denton, which lay south of the study area (HER No.41077).

3.6 THE POST-MEDIEVAL PERIOD

- 3.6.1 **Carlisle:** during the sixteenth and seventeenth centuries Carlisle began the slow process of recovery from the period of warfare and plague that had prevailed during the later Middle Ages. From 1560 a state of peace existed between England and Scotland, although the Border region remained unsettled throughout the sixteenth century and this is likely to have had a detrimental effect on trade and commercial activity. One of the most significant historical events to occur during this period was the Dissolution of the Monasteries in the 1530s, which in Carlisle led to the disappearance of both friaries and the refoundation of St Mary’s Priory as a cathedral with dean and chapter. A major refurbishment of the castle was undertaken during the reign of Henry VIII and the Citadel was constructed at the opposite (southern) end of the city’s defensive circuit. Changes to the topography of the city were not always due to the works of Man, however, for in 1571 a ‘disastrous flood’ caused the Eden to divide into two main channels (Hogg 1952, 137).
- 3.6.2 Within a few years of the accession of James VI of Scotland to the English throne (as James I) in 1603, the era of Border raiding came to an end (McDonald Fraser 1971) and both Carlisle and the wider region enjoyed a period of peace and comparative prosperity. However, during the English Civil Wars the threat of trouble returned once more, and in 1644 the royalist stronghold of Carlisle was besieged by the Scots. The city surrendered in June 1645 but changed hands once more three years later in the second outbreak of fighting, and was surrendered again, this time to Cromwell in person.
- 3.6.3 The century following the end of the Civil Wars was a time of slow development for Carlisle. Even as late as the beginning of the eighteenth century, many of the buildings within the city would have been constructed of timber, but from the late seventeenth or early eighteenth century the use of stone in both public and private buildings became increasingly common. One of the first to be built was the Old Town Hall, constructed in 1669 and later extended. Little is known about the private residences of this period as few have survived, notable exceptions being a number of houses on Abbey Street, including that of Thomas Tullie, Dean of Carlisle Cathedral, which was built

in 1689 (McCarthy 1993, 109). During the first half of the eighteenth century, the city walls were so ruinous that the citizens themselves demolished certain stretches that had become unsafe. In 1745 the parlous state of the defences was brought into sharp focus during the Jacobite uprising, when it was found that parts of the eastern curtain wall had been demolished and that the castle defences were much decayed. After a short siege the Jacobite army took possession of the city in November 1745 but surrendered it the following month following bombardment by the Duke of Cumberland (McCarthy *et al.* 1990, 214-19).

- 3.6.4 In the second half of the eighteenth century, most of Carlisle's population, estimated at *c* 4–5000 people, continued to live within the medieval defences, where ample space was still available, although the Rickergate, Botchergate, and Caldewgate suburbs continued to develop during this period. By the time of the 1801 Census, however, the population had risen to approximately 10,000 and the city walls were beginning to be viewed as a hindrance to expansion, redevelopment, and the free movement of traffic in and out of the city. Extensive demolition of the curtain wall along what became West and East Tower Streets on the north and Lowther Street on the east occurred during the early nineteenth century and was largely complete by 1815 (Perriam 1976). The medieval Scotch (north) Gate was demolished in February 1815 and its remains were thrown into a raised causeway associated with the new Eden Bridge, which was under construction at the time (MacDonald 1971, 256); during construction of this bridge the south channel of the river was permanently blocked.
- 3.6.5 Census records indicate that Carlisle's population continued to rise sharply during the first half of the nineteenth century, reaching 35,000 by 1841. However, cartographic sources show remarkably little evidence for significant expansion of the built-up area during this period. Indeed, even as late as 1850, Carlisle covered an area not much bigger than that of the medieval city, although the population was of course many times larger than it had been several hundred years earlier. That this led to chronic overcrowding in some parts of the city is clear from a report of 1850 produced by the Carlisle Sanitary Association, which records families living 20 to a room 'adjacent to the filthiest privies and dunghills' (McCarthy 1993, 90).
- 3.6.6 By the time the Ordnance Survey (OS) first edition map of Carlisle was produced in 1865, the city had at last begun to expand significantly beyond its medieval boundaries and this growth continued apace during the second half of the nineteenth century and into the twentieth century. The size of all the suburbs increased greatly and the built-up area extended well to the east of Lowther Street, which had itself been laid out on the line of the medieval eastern defences. North of the river, the construction of new housing and business premises began the process of transforming Stanwix from a small village into a city suburb. No single factor can explain this rapid growth, although improved communications and transport networks are likely to have been significant. In response to the needs of Carlisle's industrialists, the Carlisle Navigation Canal was constructed in the early 1820s, providing a link between the city and the Solway coast (Ramshaw 1997). In Carlisle, the canal

basin was located at Caldcotes on the south-western edge of the study area. However, whilst the canal allowed for some industrial growth it was not the catalyst for the rapid expansion of the city. Of greater significance were the arrival of the railway in 1836 and the subsequent development of the rail network in the region. The Newcastle to Carlisle railway was fully opened in 1838 and by 1845 the Carlisle to Maryport line was providing a rail link to the Irish Sea coast (Marshall and Davies-Sheil 1977, 188–9). This, together with the silting-up of the Solway and the gradual increase in ship sizes, had killed off the canal by the early 1850s. During the nineteenth century, Carlisle became the leading industrial and commercial centre in the county. As early as the 1720s a mill for the manufacture of broad cloth was built on the mill-race adjacent to the River Caldew (Jones 1985, 186–191), and from the second half of the eighteenth century textile manufacture became increasingly important in the city. Clock making, brick making, ironworking, tin-plate manufacture, and the production of biscuits also developed into significant industries during the nineteenth century and remained so well into the twentieth century.

- 3.6.7 **Willowholme:** at Willowholme, the early post-medieval period probably saw little change, with the area doubtless continuing to be used largely for pasture and meadow. That this was the case is suggested by a documentary reference to the construction of a siege-work west of Carlisle during the Parliamentary siege of the city in 1644–5. The work was constructed on the top of Catcoates Bank, from where it ‘commanded the Willowholme, and rendered it useless to the garrison as a grazing ground’ (Ferguson 1891, 112).
- 3.6.8 During the sixteenth century it would appear that much of the socage manor of Carlisle, of which Willowholme formed part, had, for a variety of reasons including political expediency and laxness on the part of the Exchequer, slipped from the control of the Crown (Spence 1984, 79). In the early seventeenth century steps were taken to remedy this situation. Two detailed Exchequer surveys conducted in 1608 and 1611 recorded a large number of tenants and landholders, from the Dean and Chapter of the Cathedral to members of the aristocracy and local traders and craftsmen, many of whom claimed to hold their land freehold or by customary tenure, and who therefore paid no rent to the Crown. Willowholme, as shown on a plan produced to accompany the 1611 survey (*op cit*, 67) comprised 111 acres of demesne land. In the same year a sixty-year lease on the manor, demesnes and castle was granted to Francis Clifford, Earl of Cumberland, who undertook prolonged legal proceedings to reclaim manor lands from those who claimed freehold or customary tenure over them. These proceedings, which continued through the 1620s and 1630s, demonstrated that many tenants had no permanent claim on their holdings, which remained the property of the Crown. By December 1630, 42 acres in Willowholme had been recovered and it was recommended that the land should be enclosed, but this was not done (*op cit*, 76). However, other lands in Willowholme continued to be held by important Carlisle citizens, some of whom were summoned before the Council of the North at York to answer the Cliffords’ complaints that they had refused to quit their holdings (*op cit*, 77). One of the few landholders to succeed in their legal claim to manor land was Thomasine Tullie, widow of George Tullie, who kept her land at the Saucerries (east of the River Caldew) because the Court decided that it

was really part of her freehold in Willowholme but had been separated from that holding by a change in the river's course (*ibid*).

- 3.6.9 For the later post-medieval period, the development of the Willowholme area is best illustrated through the study of historic maps and plans dating from the seventeenth century to the twentieth century. This method, known as map regression analysis, allows for the historical development of the landscape to be charted chronologically, although the few maps of Carlisle that were produced prior to the eighteenth century are of little value to the present study except to demonstrate that the Willowholme area was largely open land at this time.
- 3.6.10 ***Tudor plan of Carlisle, c 1560***: the earliest surviving detailed plan of Carlisle, produced c 1560 and now in the British Library (BL *Cotton Ms, Aug I, i, 13*; reproduced in Lysons 1815) does not depict anything outside the city walls, and is therefore of no value to the present study.
- 3.6.11 ***John Speed, 1610***: the plan of Carlisle produced by John Speed as an inset to his map of Cumberland does show the immediate environs of the walled city, including the eastern edge of the Willowholme area. However, the depiction is clearly highly stylised and cannot be regarded as an accurate representation. No development of any kind, not even field boundaries, is shown within the study area.
- 3.6.12 ***James Richards, 1684-5***: Richards' map, which was itself based on a plan produced in 1682 (Ferguson 1895) shows limited ribbon development along the road leading from the city's west gate, but the built-up area lies wholly east of the, outside the study area. The south-east corner of the study area appears on the map but is shown as open ground; no field boundaries or other topographic features are shown, with the exception of the Little Caldew mill-race (its earliest cartographic depiction).
- 3.6.13 ***George Smith, 1746***: Smith's plan depicts the siege of Carlisle in December 1745, when the Jacobite garrison were besieged by the Duke of Cumberland. Most of the study area was occupied at that date by a system of large fields, probably pasture or meadowland, defined by hedgerows. Buildings are shown fronting Caldewgate on the south, with a series of smaller fields or garden plots, mostly narrow and rectangular in plan, to the rear. The Little Caldew mill-race is shown issuing into the main channel of the River Caldew within the study area.
- 3.6.14 ***Hodgkinson and Donald, 1771***: this plan, surveyed in 1771 but first published as an inset to a map of Cumberland in 1783, is rather stylised but shows increasing development on the Caldewgate frontage.
- 3.6.15 ***William Hutchinson, 1794***: the first significant development north of the Church Street/Bridge Street frontage is depicted on William Hutchinson's plan of 1794, where a few buildings are shown well to the north of Caldewgate, adjacent to the west bank of the Little Caldew mill-race. The street frontage itself appears increasingly built-up, and large, formal gardens are shown to the rear of many of the buildings, with hedged fields beyond. Some of the fields

are described as 'Print Fields', which are known from other sources to have been associated with Donald's dye and print works, established in 1768 (HER No.42047). Although not identified as such, buildings that are known from later maps to have been owned by the Donald family, and which therefore probably formed part of their works, are depicted adjacent to the Little Caldew mill-race. An unnamed structure situated on the Little Caldew, close to its confluence with the main river channel, can be identified from later maps as Willowholme mill. Originally part of Donald's print works, it was converted to a corn mill in the late eighteenth century (HER No.41054). A gap in the street frontage buildings close to the Little Caldew may mark the position of a lane that subsequently developed into Willow Holme Road. The lane is first depicted on Cole and Roper's plan of 1801 (see below), and is first named on John Wood's map of 1821 (*Section 3.6.17*). Whilst not depicted as such on these early maps, it is possible that Willow Holme Road originated as a track leading to Etterby Wath (*Section 3.6.21*).

3.6.16 *Cole and Roper, 1801*: the plan of Carlisle produced by G Cole and J Roper is notable in terms of the present study principally for its depiction of Willow Holme Road (or at least its southern part), which is shown as an unnamed track or lane running north-north-west from Bridge Street. The print fields depicted on Hutchinson's map are also shown, their association with Donald's print works now explicit in the name 'Donalds Print Field'.

3.6.17 *John Wood, 1821*: generally speaking, Wood's plan of Carlisle is more detailed than any earlier map and names the owners of many properties within the city. Away from the main street frontage, development of the area during the early nineteenth century continued to be largely confined to the west bank of the Little Caldew, on either side of Willow Holme Road. Donald's premises, depicted on earlier plans (*Section 3.6.15-16*), are named, as is Willowholme corn mill (*Section 3.6.15*). Also shown for the first time is the canal basin at the terminus of the Carlisle Navigation Canal, together with a row of six coal and lime vaults on the east and a large building at the southern end of the canal basin that can be identified from later maps and other sources as a four-storey bonded warehouse built in the same year that Wood produced his plan (Ramshaw 1997, 56; HER No.41052). Work on the canal began in 1820 (Ramshaw 1997, 12) and it was opened in 1823 (*op cit*, 25), reaching the sea at Port Carlisle. It was hoped that the canal would fill with water naturally, but at the Carlisle terminus additional water was required, which led to the cutting of the Willowholme leat in 1825. This leat fed water west from the River Caldew to a sixteen-foot overshot water wheel that in turn worked a pumping engine, situated on the south bank of the River Eden, which raised water to the canal (*op cit*, 17-18). Initially the canal was successful, but competition from the railways, together with other factors, led to its decline and eventual closure in the early 1850s.

3.6.18 *Carlisle Board of Health plan, 1853*: the canal and canal basin, together with a timber dock constructed in 1838 immediately north of the basin (Ramshaw 1997, 17), and two bonded warehouses are shown on this map, which was produced by R Asquith in 1853. The most southerly warehouse, which was located at the south end of the canal basin, was built in 1821 (it appears on

Wood's plan of that year) and was demolished in 1974 (Ramshaw 1997, 56); the other (HER No. 41015) was built in 1832 on the east side of the canal basin, on a site occupied in 1821 by six coal and lime vaults. The plan also provides the earliest cartographic depiction of Willowholme leat, and indicates that the whole of the northern part of Willowholme was 'land liable to be flooded'. The Carlisle and Newcastle railway, full opened in 1838, is shown looping south of the city to a terminus adjacent to the canal.

3.6.19 **OS First Edition map, 1865:** by the time the first edition OS map (Cumb. XXIII.3) was produced in 1865, the disused canal basin (Site 6) had become the site of a coal depot and general railway yard (HER No.13502) for the Carlisle and Silloth section of the North British Railway, which had opened in 1854. The Canal Station, situated at the junction of this railway with the Newcastle and Carlisle railway, was also located adjacent to the old canal basin, as was the Customs House, built in 1832 (Ramshaw 1997, 69). The two bonded warehouses shown on the Board of Health map are also depicted. To the north-west, adjacent to the River Eden, was a bone manure works; this was constructed *c* 1832 above the pumping engine (Site 5) that was built to serve the canal in 1825. It was initially powered by that engine (*op cit*, 66), but a steam engine was inserted in 1839 (HER No.10202). This was subsequently removed in 1855 but the mill continued in use, using water power once again, until 1906. South-east of this facility was a varnish works situated immediately north of the junction of the Carlisle-Silloth and Carlisle-Edinburgh branches of the North British Railway. The Carlisle to Glasgow railway line (the modern west coast main line), opened in 1847, bisected Willowholme from north-west to south-east, and a branch from this line looped south-westwards to link with the North British Railway. Also depicted are the Alexandra Saw Mills, situated north-east of the canal basin, which originated as a steam sawmill but continues in business today, and the Canal Saw Mills and timber yards south-west of the basin. The latter, situated on the east side of Infirmary Street, were in existence by 1836 (HER No.41019), but most of the buildings shown on the 1865 map had gone by the early twentieth century. West of Infirmary Street was the Cumberland Infirmary itself, opened in 1832 and much extended subsequently. The original building, though altered later, still stands, as does Crozier Lodge, a house situated north-west of the original infirmary building, that was converted to a House of Recovery during the nineteenth century and later became a fever hospital.

3.6.20 Adjacent to the west bank of the Little Caldew were a number of business premises, including an alabaster works with a warehouse to the north. Willowholme corn mill continued in use at the north end of the Little Caldew mill race, and new streets of terraced housing had also been laid out on the southern part of the study area, north of Church Street/Bridge Street.

3.6.21 Etterby Wath is also shown, and it seems clear from this map that Willow Holme Road made directly for the ford, albeit on a slightly meandering course. The road itself is shown terminating abruptly a little over 200m short of the river Eden, but what must be the line of the track is marked by a field boundary that runs directly from the end of the road to the wath. How long into the post-medieval period the ford continued to be used is not clear. Since

Willow Holme Road did not extend as far as the ford in 1865, it may have gone out of use sometime before that date; in 1899 the wath is described by Ferguson (1899, 130-1) as being 'dangerous and probably impracticable', although it is still marked on the OS fourth edition map of 1846 (HER No.41754).

- 3.6.22 ***OS second and third edition maps, 1899 and 1925:*** further infilling continued to take place on the southern part of the study area, adjacent to Church Street/Bridge Street, during the late nineteenth and early twentieth centuries. A sewage disposal works was also built further north, on the site of the modern sewage plant, in 1908. Willowholme corn mill had gone by 1925, as had the bone manure works beside the River Eden and most of the nineteenth century industries adjacent to the Little Caldew. Other sites, however, such as the railway yards on the site of the canal basin, and Alexandra Saw Mills, survived and had clearly continued to develop since the production of the first edition map some sixty years earlier.

3.7 PREVIOUS ARCHAEOLOGICAL INTERVENTIONS

- 3.7.1 The earliest recorded archaeological observations made in the Willowholme area occurred in 1854, when the stone rebuild of Hadrian's Wall (Site 2) was seen during the construction of a sewer (Ferguson 1888, 168; Simpson 1932, 149). The Stone Wall was exposed again in three places in 1886; two of the exposures occurred close to the first site, in the angle formed by the main railway line from Carlisle to Glasgow and the branch line to Port Carlisle (*op cit*, 171-2), whilst the third was situated east of the main railway line. The levelled remains of the Wall were found to be sealed beneath *c* 2.44m of alluvial silt (Section 3.3.7). The sites of all four exposures were marked with inscribed stones (*op cit*, 174; Simpson 1932, 149). In 1932, a further stretch of the Stone Wall several metres in length was found close to the site of the original (1854) exposure during the construction of a new sewer (Simpson 1932). Here too, the Wall foundation was buried beneath a thick accumulation of river deposits (Section 3.3.7).
- 3.7.2 No further archaeological work was undertaken in the Willowholme area until 1988, when the Central Excavation Unit (CEU) excavated a trial trench 40m long and 2m wide across the presumed line of Hadrian's Wall, on the site of a proposed tarmac batching plant at NY 338750 556460 (HER No.13662). A deposit of modern ash and clinker 0.5m deep was found to overlay clean alluvial sand and no trace of the Wall was found.
- 3.7.3 The most extensive archaeological excavation undertaken within the study area took place in 1992-3 on the site of the Cumberland Infirmary, south-west of Willowholme, in advance of the proposed redevelopment of the site. There, the remains of a prehistoric settlement of possible Bronze Age or Iron Age date (Site 7) (Sections 3.2.2 and 3.3.9), were overlain by extensive Romano-British occupation levels (Site 8). (Flynn and McCarthy 1993; McCarthy *et al* 1998, 4-5). Further phases of evaluation and excavation occurred on the same site in 1997-8.

- 3.7.4 On Willow Holme itself, a watching brief was maintained in 2005 during the erection of a telephone mast at a site adjacent to Willow Holme Road (Martin 2005), very close to the site where Hadrian's Wall was located in 1886 in the angle between the railway lines (*Section 3.3.7*). In spite of its location, however, the mast was found to have been sited on an artificial bank composed of modern overburden and rubbish up to 3m thick. No archaeological deposits were recorded. Similar deposits were also encountered during archaeological evaluations conducted elsewhere in the industrial estate in 2007, in connection with the Carlisle City Flood Alleviation Scheme. In the first phase of works, three trenches were excavated, one immediately beside the main West Coast railway line at the point where the railway bisects the line of Hadrian's Wall, the other two further to the south-west, next to the Parham Beck (The Archaeological Practice 2007a). In the former trench 1.5m of modern debris, possibly levelling material, was found to overlie a level that may have been associated with the old railway sidings. Since the Stone Wall in this area is known to lie *c* 2.44m below the level of the nineteenth century ground surface, it was concluded that today the remains of the Wall are likely to lie at least 3.9m below ground. In the trenches next to Parham Beck, nineteenth century debris was removed to a depth of 1.55m below the modern surface, after which excavation ceased. The second phase of evaluation took place close to the north end of the Little Caldew (The Archaeological Practice 2007b). There, modern levelling debris and twentieth century alluvial deposits were found to overlie nineteenth century rubbish deposits that in turn sealed a possible stake-built fence adjacent to the south bank of the Willowholme leat, which is known to have been cut in 1825. No earlier deposits were encountered.

4. WATCHING BRIEF RESULTS

4.1 INTRODUCTION

- 4.1.1 In accordance with recommendations made by Cumbria County Council Historic Environment Service (CCCHES), a watching brief was conducted during February 2008.

4.2 RESULTS

- 4.2.1 The watching brief area was located to the south-east of a small, recently-built concrete structure (Fig 2). A landscaping layer of pinkish gravel, which measured <0.2m in depth, overlay the majority of this area and had obviously been laid following the construction of the concrete structure.
- 4.2.2 The area was initially stripped down <0.40m from the top of this pinkish gravel, to expose approximately 0.20m of friable made ground comprising mid-grey-brown silt. At the south-west end of the site, the ground was reduced by 1.2m, with the layer of silty made ground continuing to this depth with only slight variation. In parts, this layer was found to be more firm and had a more clayey-silt consistency. In addition, a high-pressure water pipe was observed running north-east/south-west to the south-east of the concrete structure (Plate 2), whilst a more deeply buried hollow metal pipe, lying 3.5m to the south-east of the concrete structure, also followed this same alignment.
- 4.2.3 A second layer of gravel, grey in colour, was observed beneath the made ground to the south-east of the concrete structure, at a depth of 1.20m. The trench began to fill with water once this gravel layer had been exposed. The gravel layer and elements of an earlier concrete structure were both probably associated with the sewage works.
- 4.2.4 No archaeologically significant structures or features were observed during the course of these works.

5. CONCLUSION

5.1 RAPID DESK-BASED RESEARCH

- 5.1.1 The area of Willow Holme in Carlisle is low-lying and has been subject to periods of inundation from the River Caldew, located to the east, and the River Eden located to the north. As a result of this, the area was largely used as pasture and meadows during the medieval and post-medieval periods until the nineteenth century when it began to be developed. The area of the two proposed kiosks was first developed in 1908 when a sewage works was constructed there.
- 5.1.2 There are no known prehistoric sites from the area, although part of a settlement dating to the Bronze Age/Iron Age was excavated a short distance to the south at the Cumberland Infirmary in the 1990s. The lack of prehistoric evidence from Willow Holme may be due to the fact that there has been little potential for discovery of remains in recent times. Any prehistoric levels are likely to be buried under several metres of alluvium, which have built up from multiple episodes of flooding.
- 5.1.3 The alluvium across Willow Holme has also buried Hadrian's Wall, which is known to run across this area, a short distance to the south of the two proposed kiosks. Excavations in the area in the nineteenth century identified the Wall in several places each time beneath approximately 2m or more of alluvium.
- 5.1.4 In the Willow Holme area a Turf Wall pre-dated the Stone Wall. In addition, a ditch would have been located to the north of the Wall and the Vallum and Military Way would have been located to the south. Although the Stone Wall has been identified in the Willow Holme area during excavations in the nineteenth century, its exact location in the vicinity of the proposed development is not known, and no evidence for the North Wall ditch, the Vallum of the Military Way have been found in the immediate area.

5.2 WATCHING BRIEF

- 5.2.1 Any potential impact upon features identified during the desk-based research was mitigated by the relatively shallow nature of the excavations. The ground works in this area did not exceed a depth of approximately 2.0m beneath the current ground surface. Moreover, the ground in this area is very heavily disturbed to this depth and comprised a mixed, grey-brown clay-silt deposit. Subsequently, there was no evidence of any surviving archaeological features during this phase of work.
- 5.2.2 No further archaeological work is recommended in the area of the two proposed kiosks to this depth of excavation.

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7. ILLUSTRATIONS

7.1 LIST OF FIGURES

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Plate 2: High pressure water pipe exposed cutting across the watching brief area



Figure 1: Site Location

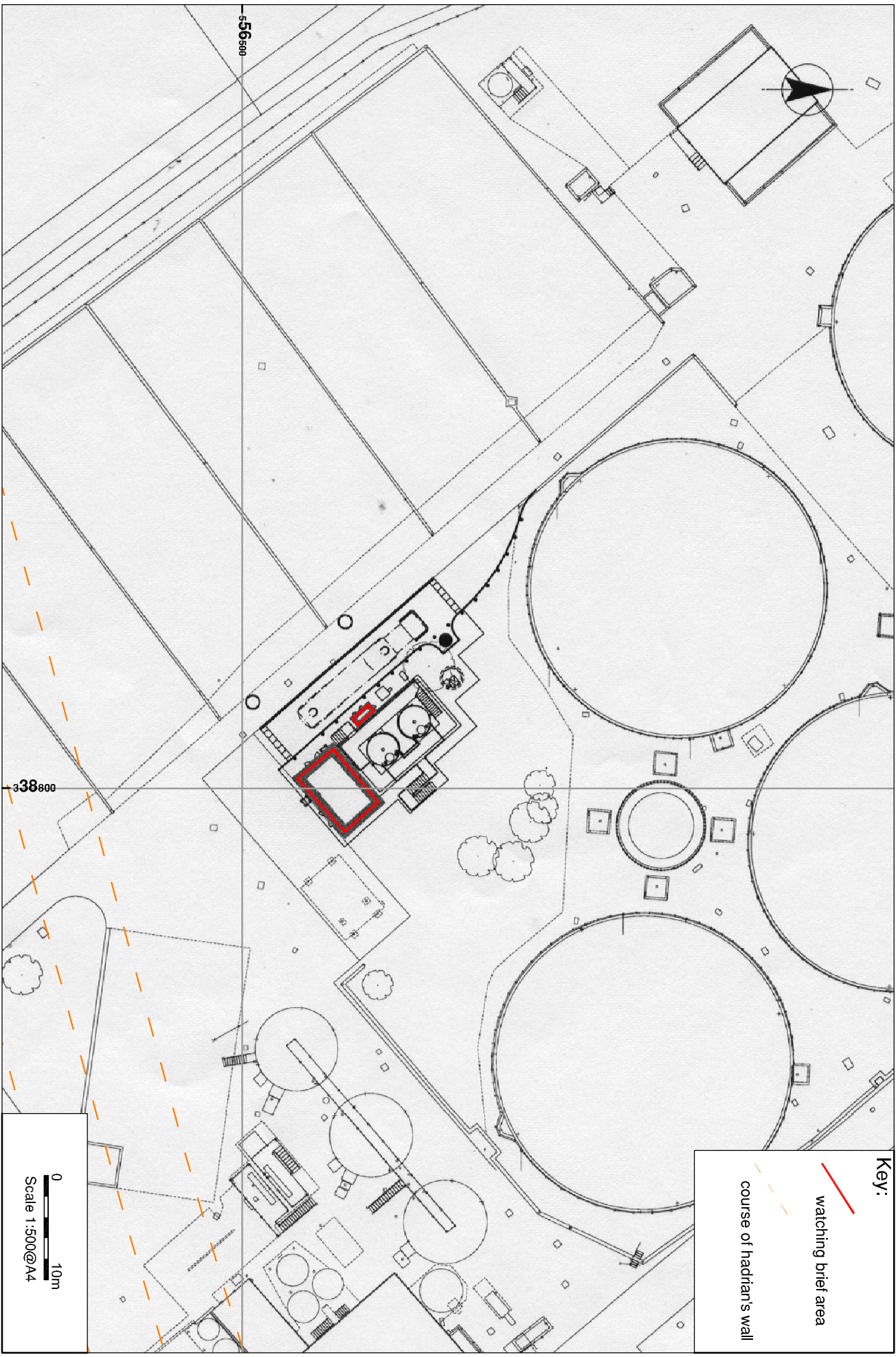


Figure 2: Site plan showing area subject to watching brief



Plate 1: Working shot



Plate 2: High pressure water pipe exposed cutting across the watching brief area

APPENDIX 1: PROJECT BRIEF

**BRIEF FOR AN ARCHAEOLOGICAL WATCHING BRIEF AT
CARLISLE WASTEWATER TREATMENT WORKS,
WILLOWHOLME INDUSTRIAL ESTATE, CARLISLE, CUMBRIA**

Issued by the

County Historic Environment Service

Environment Unit, Economy, Culture and Environment



Date of Brief: 15 January 2008

This Design Brief is only valid for 1 year after the above date. After this period the County Historic Environment Service should be contacted. Any specification resulting from this Brief will only be considered for the same period.

1. SITE DESCRIPTION AND SUMMARY

Site: Carlisle Wastewater Treatment Works, Willowholme Industrial Estate, Carlisle

Grid Reference: NY 3881 5651

Planning Application No.: 1/07/9012

Detailed proposals and tenders are invited from appropriately resourced, qualified and experienced archaeological contractors to undertake the archaeological project outlined by this Brief and to produce a report on that work. The work should be under the direct management of either an Associate or Member of the Institute of Field Archaeologists, or equivalent. Any response to this Brief should follow IFA Standard and Guidance for an Archaeological Watching Brief, 2001. No fieldwork may commence until approval of a specification has been issued by the County Historic Environment Service.

2. PLANNING BACKGROUND

- 2.1 Cumbria County Council's Historic Environment Service (CCCHES) and English Heritage have been consulted by the County Council's planning team regarding a planning application for the erection of two kiosks at Carlisle Wastewater Treatment Works, Willowholme Industrial Estate, Carlisle.
- 2.2 The scheme affects an area of archaeological significance, as it lies adjacent to the Hadrian's Wall World Heritage Site. Consequently, a condition has been placed on planning consent requiring a programme of archaeological works. This will comprise an archaeological watching brief during the course of the ground works of the development.
- 2.3 This advice is in accordance with guidance given in Planning Policy Guidance note 16 (Archaeology and Planning) and with sub-regional and regional planning policy.

3. ARCHAEOLOGICAL BACKGROUND

- 3.1 The line of Hadrian's Wall lies a short distance to the south of the two kiosks and is protected as a Scheduled Monument at this point (SM no. CU2819). Although the proposed development lies outside the Scheduled Monument it may nevertheless affect remains of the wall. This is because the wall was originally constructed in turf in this section and was later replaced in stone. The sequence of replacement means that it is difficult to predict exactly where the two phases of the wall construction lie.

4. SCOPE OF THE PROJECT

4.1 Objectives

- 4.1.1 To identify, investigate and record any surviving archaeological remains revealed during the course of the development ground works.

4.2 Work Required

- 4.2.1 Before any on site work commences the County Historic Environment Record should be consulted and a *rapid* desk-based survey of the existing resource undertaken. This should include an assessment of those primary and secondary sources referenced in the County Historic Environment Record.
- 4.2.2 All ground reduction and the excavation of footings must be carried out under archaeological supervision. Any putative archaeological features must then be cleaned by hand and if possible a stratigraphic record made. Finds and environmental samples should be retrieved as appropriate. A reasonable period of uninterrupted access should be allowed to the archaeologist for all necessary archaeological recording.

5. SPECIFICATION

- 5.1 Before the project commences a specification must be submitted to and approved by the County Historic Environment Service.

- 5.2 Proposals to meet this Brief should take the form of a detailed specification prepared in accordance with the recommendations of *The Management of Archaeological Projects*, 2nd ed. 1991, and must include:
- ❖ A description of the methods of observation and recording system to be used
 - ❖ A description of the finds and environmental sampling strategies to be used
 - ❖ A description of the post excavation and reporting work that will be undertaken
 - ❖ Details of key project staff, including the names of the project manager, site supervisor, finds and environmental specialists and any other specialist sub-contractors to be employed
 - ❖ Details of on site staffing, e.g. the number of people to be employed on site per day
 - ❖ A projected timetable for all site work and post excavation work (through to final publication of results)
- 5.3 Any significant variations to the proposal must be agreed by the County Historic Environment Service in advance.

6. REPORTING AND PUBLICATION

- 6.1 The archaeological work should result in a report, this should include as a minimum:
- ❖ A site location plan, related to the national grid
 - ❖ A front cover/frontispiece which includes the planning application number and the national grid reference of the site
 - ❖ A concise, non-technical summary of the results
 - ❖ A date when the project was undertaken and by whom
 - ❖ A description of the methodology employed, work undertaken, and the results obtained
 - ❖ Plans and sections at an appropriate scale showing the location and position of deposits and finds located
 - ❖ A brief photographic record of the site must be included, showing any features of archaeological interest. Where the results of the project revealed no significant archaeological remains a single photograph showing an indicative section of trench will suffice.
 - ❖ A list of, and dates for, any finds recovered and a description and interpretation of the deposits identified
 - ❖ A description of any environmental or other specialist work undertaken and the results obtained
- 6.2 Two copies of the report should be deposited with the County Historic Environment Record and one copy deposited with Mike Collins, Hadrian's Wall Archaeologist, within six months of completion of fieldwork. This will be on the understanding that the report will be made available as a public document through the County Historic Environment Record.
- 6.3 A summary report should be submitted to a suitable regional or national archaeological journal within one year of completion of fieldwork. If archaeological remains of significance are identified, one or more full reports should also be submitted to a suitable journal or other publication in due course.
- 6.4 Cumbria HER is taking part in the *Online Access to Index of Archaeological Investigations* (OASIS) project. The online OASIS form at <http://ads.ahds.ac.uk/project/oasis> must therefore also be completed as part of the project. Information on projects undertaken in Cumbria will be made available through the above website, unless otherwise agreed.

7. THE ARCHIVE

- 7.1 An archive must be prepared in accordance with the recommendations in Brown, DH, 2007, *Archaeological Archives A Guide To Best Practice In Creation, Compilation, Transfer and Curation*, Archaeological Archives Forum. Arrangements must be made for its long term storage and deposition with an appropriate repository. A copy shall also be offered to the National Monuments Record.
- 7.2 The landowner should be encouraged to transfer the ownership of finds to a local or relevant specialist museum. In this case Tullie House Museum is the most likely repository. The museum's requirements for the transfer and storage of finds should be discussed before the project commences.
- 7.3 The County Historic Environment Service must be notified of the arrangements made.

8. PROJECT MONITORING

- 8.1 One weeks notice must be given to the County Historic Environment Service prior to the commencement of fieldwork.

9. FURTHER REQUIREMENTS

- 9.1 It is the archaeological contractor's responsibility to establish safe working practices in terms of current health and safety legislation, to ensure site access and to obtain notification of hazards (eg. services, contaminated ground, etc.). **The County Historic Environment Service bears no responsibility for the inclusion or exclusion of such information within this brief or subsequent specification.**
- 9.2 The Code of Conduct of the Institute of Field Archaeologists must be followed.
- 9.3 The involvement of the County Historic Environment Service should be acknowledged in any report or publication generated by this project.

10. FURTHER INFORMATION

For further information regarding this Brief, contact

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As part of our desire to provide a quality service to all our clients we would welcome any comments you may have on the content or presentation of this design brief. Please address them to the Assistant Archaeologist at the above address.