NORTHSIDE BRIDGE, PERMANENT REPLACEMENT, WORKINGTON, Cumbria

Archaeological Watching Brief Report

Oxford Archaeology North

January 2012

Birse Civils

Issue No: 2011-12/1223
OA North Job No: L10386
NGR: NX 9995 2940

Document Title: NORTHSIDE BRIDGE PERMANENT REPLACEMENT, WORKINGTON, CUMBRIA

Document Type: Archaeological Watching Brief

Client Name: Birse Civils

Issue Number: 2011-12/1223
OA Job Number: L10386
National Grid Reference: NX 9995 2940

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SUMMARY

Birse Civils commissioned Oxford Archaeology North (OA North) to undertake an archaeological watching brief during the groundworks on the north side of the river Derwent associated with the replacement of Northside Bridge, Workington, Cumbria (NGR NX 9995 2940). The watching brief was a condition of the planning permission requested by Cumbria County Council Historic Environment Service (CCCHES). This was based on information from an assessment of the cultural heritage resource surrounding the bridge site as part of an Environmental Impact Assessment undertaken by OA North, in 2010, on behalf of Capita Symonds and Cumbria County Council. The assessment identified the potential for sub-surface remains, including the remains of human burials, in association with the find spot of an early medieval Viking sword.

The area of groundworks observed during excavation was divided into three areas for the purposes of recording; Areas A, B and C. The watching brief took place in three phases. The first phase took place over six days from August 30th to September 9th 2011 in Areas A, B and C. The second phase over four days from October 31st to November 3rd 2011 in Area A. The final phase took place in Area C over five days from November 28th to December 2nd 2011. Area A comprised the buried truncated remains of the north end of Northside Bridge. Area B was positioned to the immediate east of Area A, and was a grassed area that was formerly a row of terraced houses. Area C was situated between the river Derwent and Northside Road, immediately to the south of Area A, and was the site of a pier of Northside Bridge.

The groundworks observed during the watching brief uncovered the structural remains of the demolished Northside Bridge in Area A, and a modern drain, ***1043***, which was probably associated with the former Workington to Cockermouth railway line. Within an area of a demolished row of terraced houses to the east of the bridge, Brick Row, a short section of wall foundation, ***1042***, a section of hardstanding, ***1021***, and a drain, ***1030***, were uncovered. In addition, road surfaces, ***1018***, were unearthed that were associated with terraced housing that had stood to the west of the bridge. In Area B, no foundations of the demolished Brick Row, were uncovered, only a rubble levelling deposit, ***2001***. In Area C, the foundations of the east, ***3010***, and west, ***3014***, wings of a pier were located, but there was no trace of an earlier bridge pre-dating Northside Bridge. However, the earlier maps thought to show this may have been indicating a ford located to the immediate east of Northside Bridge (Ordnance Survey 1925). No further features or deposits of archaeological interest were encountered during the watching brief. However, as excavation in the north end of Area A did not extend deeper than post-medieval deposits, so there is still the potential for earlier sub-surface remains to exist.

ACKNOWLEDGEMENTS

Oxford Archaeology North would like to thank Stuart MacFarlane of Birse Civils for commissioning the project. The fieldwork was undertaken by David Maron, who also wrote the report. Chris Howard-Davis commented on the finds. The illustrations were produced by Mark Tidmarsh. The project was managed by Emily Mercer, who also edited the report.

1. INTRODUCTION

1.1 CIRCUMSTANCES OF THE PROJECT

1.1.1 Birse Civils commissioned Oxford Archaeology North (OA North) to undertake an archaeological watching brief during the groundworks on the north side of the river Derwent associated with the replacement of Northside Bridge, Workington, Cumbria. In 2010, OA North undertook an assessment of the cultural heritage resource surrounding the bridge site on behalf of Capita Symonds and Cumbria County Council, as part of an Environmental Impact Assessment. Five heritage assets were identified within the area of groundworks, which included a findspot of an early medieval Viking sword (OA North 2010). The remainder of the sites were of post-medieval, industrial, or modern date representing a wide range of functions and activities. Due to the poor state of preservation of many of these sites, most were considered to be of low or negligible significance. However, the potential exists for sub-surface remains, including the remains of human burials, in association with the findspot of the Viking sword (*ibid*).

1.1.2 In order to mitigate the impact of the groundworks on the cultural heritage resource, Cumbria County Council's Historic Environment Service (CCCHES) requested that an archaeological watching brief be maintained during earthmoving activities associated with the significant groundworks on the north side of the river only. The watching brief was maintained over fifteen days between 30th August and 2nd December 2011.

1.2 LOCATION, TOPOGRAPHY AND GEOLOGY

1.2.1 Northside Bridge allowed the north/south passage of the A597 (New Bridge Road) over the river Derwent, between The Cloffocks and the northern bank of the river prior to its collapse in 2009. The bridge site comprises two disconnected areas associated with the northern and southern banks of the river, with the archaeological watching brief being maintained on the north side of the river (NGR NX 9995 2940; Fig 1).

1.2.2 The area to the north of the river comprises the broad flood plain of the river Derwent (maximum 10m AOD), and is essentially urban and industrial (Countryside Commission 1998, 27). The solid geology consists essentially of Westphalian grey mudstones, with numerous coal seams. The drift geology is generally made up of alluvial deposits, although many areas are reclaimed coal workings and former spoil heaps (*ibid*).

1.3 HISTORICAL AND ARCHAEOLOGICAL BACKGROUND

1.3.1 The following section provides a brief summary of the historical and archaeological background presented in the *Northside Bridge, Workington, Cumbria: Archaeology and Cultural Heritage Environmental Impact*

Assessment (OA North 2010), in order to place the results of the watching brief into context.

1.3.2 ***Prehistoric Period:*** prehistoric activity around Workington consists of sites identified along the coast to the south of Workington, from St Bees to the north side of Morecambe Bay (Cherry and Cherry 2002). Also, several flint artefacts have been found in the environs of Workington (Hartley and Hardman 2002), although these have not been numerous enough to provide any detailed information about activity in the local area. Furthermore, stray finds of bronze axes, stone axes, and cup and ring marked stones have been made in the general area pertaining to the later Neolithic to Iron Age periods (Spence 1935, 178; Hartley and Hardman 2002).

1.3.3 ***Roman Period:*** the area covered by the town of Workington has produced few Roman remains, although occasional stray coin finds have been made (Hartley and Hardman 2002), one of which is situated within a 0.25km radius of the site. There is, however, a Roman fort, Burrow Walls, on the north side of the river Derwent, within 1.25 km of the area. A Roman road has also been suggested to have come through Workington (Jackson 1878), although the line of such a route has not been demonstrated and a crossing point of the river Derwent was not suggested by either Jackson (*ibid*) or Margary (1973, 397).

1.3.4 ***Early Medieval Period:*** extensive early medieval settlement remains have not been discovered in Workington. However, significant discoveries of pieces of stonework of early medieval date have been made at the parish church of St Michael in Workington (Calverley 1888; Mason and Valentine 1928). In addition to stonework, Viking activity in the area is suggested by the discovery of a sword on the northern side of the river Derwent during road building in the early 1900s. The sword was in two pieces when it was found on a gravel ridge called Oysterbanks, and the fact that it was bent has led to the suggestion that it might have accompanied a burial (Edwards 2004). The name Workington is considered to be Old English, meaning 'settlement of Weorc's people' and was first recorded in 1125, Weorc being perhaps a local leader of some distinction (Armstrong *et al* 1971, 455). The placename of Cloffocks has also been suggested (Armstrong *et al* 1950) to have derived from an Old English form of *Clougha,* meaning 'spur in a ravine' and might, therefore, be of early medieval origin.

1.3.5 ***Medieval Period:*** Workington was clearly well-established by the end of the tenth century, even though its extent cannot be clearly defined. The earliest manorial buildings are thought to have been built on the site of the Roman fort at Burrow Walls, perhaps by ancestors of the Curwen family, who came to own the manor (Byers 1998). The family seat was moved to the site of what is now Workington Hall probably sometime in the late twelfth century (Curwen 1900) and the Curwen family retained the manor from that time (Jackson 1881). For the majority of the people of Workington fishing appears to have been one of the main sources of income. Fish weirs were established on the river Derwent from Cockermouth to Workington by at least 1278 (Winchester 1987, 108). The first literary description, by Leland in the sixteenth century, refers to Workington as '*a lytle prety fyssher town*' (Hutchinson 1794, Vol 2, 138), clearly demonstrating what the early focus of activity in the town was.

1.3.6 ***Post-medieval Period:*** Workington became larger, and developed into a significant port during the sixteenth century. This was, in part, because of the influence of the Mines Royal Company, which began building a harbour in 1569. By the end of the sixteenth century Workington had begun to grow in size, although it still essentially consisted of two clusters focused around the parish church and the hall (*op cit*, 122). Its fortunes changed dramatically during the eighteenth century, however, so rapidly that Hutchinson describes the town as having 'arisen from an inferior degree within a century' (*op cit*, 138). The main cause of this was the large-scale exploitation of coal and its exportation to Ireland (Jackson and Jackson 1988). The result of this was the rapid growth of Workington in both size and population. Workington continued to grow as a town during the nineteenth century, becoming comparable in scale to Middlesborough or Barrow-in-Furness (Bulmer and Co 1883, 292), with further expansion increased by the production of iron and steel (Jackson and Jackson 1988, 37).

1.3.7 ***Modern Period:*** although the town reached its economic peak in the nineteenth century, Workington continued to develop throughout the twentieth century. As a result of the location of Workington, in the angle formed by the west coast and the river Derwent, the area has represented an important foci for communication routes linking the town with the northern coastal areas throughout the post-medieval period and into the present day. In 1901 construction began on the Northside Bridge (Plate 1), and it was opened in 1904, being also known as the New Bridge (Wikia 2011). During its construction there was controversy regarding changes to its design, the quality of the girders used and its cost (*ibid*). It appears to have replaced an earlier bridge in a similar location, shown on various maps in 1787 (Cary 1787) and 1805 (Cole 1805). This bridge was not depicted on subsequent maps produced in 1818 (Otley 1818) and 1846 (Hughes 1846), suggesting it had been destroyed by this time. The Cockermouth to Workington railway line ran beneath Northside Bridge (Wallace 2005, 94), as did the Maryport to Workington road. The Cockermouth railway line was recommended for closure in the Beeching Report of 1963, and the last passenger train ran in 1972 (Cumbrian Railways Association 2010). Northside Bridge was remodelled in the early 2000s, with the Maryport road rerouted along the former railway line and its former bridge span backfilled. Northside Bridge was subsequently destroyed by flood water on the 19th of November 2009 (Plate 2).

2. METHODOLOGY

2.1 PROJECT DESIGN

2.1.1 In response to a request from the client, OA North issued a project design (*Appendix 1*), the methodology of which was adhered to in full. The work was consistent with the current standards and procedures of the Institute for Archaeologists (2008 and 2010) and English Heritage (1991), and generally accepted best practice.

2.2 FIELDWORK

2.2.1 A permanent archaeological presence was maintained during groundworks. The purpose was to identify, investigate and record any archaeological remains encountered. The area of the groundworks was sub-divided into three for the purposes of recording; Areas A, B and C (Fig 1). The watching brief took place in three phases. The first over six days from August 30th to September 9th in Areas A, B and C. The second over four days from October 31st to November 3rd in Area A. The final phase took place in Area C over five days from November 28th to December 2nd. Area A was an area that comprised buried truncated remains of the north end of the demolished Northside Bridge. Area B was situated to the immediate east of Area A, and was a grassed area measuring approximately 25m by 20m that was formerly the site of terraced housing. Area C was situated between the river Derwent and Northside Road, immediately to the south of Area A (Fig 1). It was an area of poorly grassed waste land that was the site of the north pier of Northside Bridge, and measured approximately 65m by 23m. Excavations were carried out by a 22 tonne 360º mechanical excavator and, on occasions, a mini-digger.

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

2.3 ARCHIVE

2.3.1 A full and professional archive has been compiled in accordance with the project design (*Appendix 1*) and current IfA (2008 and 2010) and English Heritage guidelines (1991). The paper and digital archive will be deposited with the Cumbria County Record Office (Whitehaven) on completion of the project. Copies of the report will be deposited with the Cumbria Historic Environment Record (HER) in Kendal.

3. FIELDWORK RESULTS

3.1 INTRODUCTION

3.1.1 The objective of the watching brief was to identify, investigate and record any archaeological remains encountered during the groundworks for a permanent replacement of the Northside Bridge (Fig 1). A list of contexts used has been provided in *Appendix 2* and a catalogue of finds has been provided in *Appendix 3*. The following section provides a detailed summary of the deposits and results of the archaeological watching brief.

3.2 RESULTS

3.2.1 ***Area A:*** was the excavation by machine of an area that comprised buried truncated remains of the north end of Northside Bridge. Excavations in Area A took place in two phases. On completion of the first phase of excavation, a deposit, ***1053***, of quarry waste was used to level the area to provide a working surface for piling operations. On completion of the piling operation, the quarry waste, ***1053***, was removed and the ground reduction recommenced. Area A has been sub-divided into three zones, these being to the exterior of the west wing wall, ***1059***, to the exterior of the east wing wall, ***1009***, and the central zone between the west and east wing walls (Fig 2). The fieldwork results for Area A are presented in these three zones for clarity. A number of features and deposits were exposed and recorded.

3.2.2 In the central area, excavations uncovered two bands of natural, alluvial deposits, ***1033*** and then ***1032*** above. Natural deposit ***1033*** was a mid-bluish-grey silty-clay with 40% small water-rounded pebbles. Overlying this was deposit ***1032***, a mid brownish-yellow sandy-clay with 20% inclusions of small water-rounded pebbles and gravel. A construction cut, ***1027***, for a drain, ***1030***, had been made in to the natural deposits. Drain ***1030*** was constructed of bricks that were a light whitish-yellow with 50% flecks of red and were crumbly (Fig 2). The bricks were bonded by a dark bluish-black mortar with 5% small white inclusions. The construction cut, ***1027***, for the drain, was initially backfilled with ***1029***, a deposit of building rubble comprised 40% mortar fragments and 60% small, angular fragments of stone. Above this was a second backfill deposit, ***1028***, of bluish-grey silty-coarse sand with 60% gravel and small pebbles. A pipe, ***1057***, measuring 0.28m internal diameter entered the drain on the west side but, due to debris entering the drain during excavation, it was not possible to locate another pipe or pipes. The pipe was two thirds full of a firm dark greyish-black silt deposit, ***1056***, that was dried sewage. Two metal plates, ***1031***, 30mm in thickness, covered the drain entrance.

3.2.3 During the excavation of drain ***1030***, the foundations and inner face of a wall, ***1017***, were exposed (Fig 2). This wall was aligned south-east to north-west and was constructed of large, roughly-worked blocks of red sandstone. The foundation stones of ***1017*** were laid on natural deposit ***1033***.

3.2.4 A levelling layer, ***1055***, of mid greyish-blue silty-clay with inclusions of charcoal and burnt material had been laid on natural deposit ***1033***. This levelling layer ***1055*** was visible when drain ***1030*** was excavated, and above it was a construction deposit, ***1022***, of small fragments of broken brick, red sandstone and mortar. There were occasional patches, ***1019***, of loose, dark brownish-black ash and slag in ***1022***. Ground reduction for the construction of the replacement bridge stopped at this layer, but a number of hand-excavated pits showed that levelling layer ***1055*** lay beneath ***1022*** across the central zone. At the north side of the central zone, a construction cut, ***1050***, made into ***1022*** was visible (Fig 2). In this cut were the foundation stones for wall ***1016*** and this was constructed in the same manner as those of wall foundations ***1017*** (Plate 3). Wall ***1016*** was aligned north-west to south-east, being parallel with wall foundations ***1017*** (Fig 2). The inner face of ***1016*** comprised very large blocks of roughly-worked red sandstone, measuring up to 1.2m by 0.4m, with dressed stone, measuring 0.4m by 0.3m, used as levelling material between courses. It was approximately 11m long by 5m high, and at least 1.75m deep.

3.2.5 Although foundation stones were not revealed, two more walls were positioned within construction deposit ***1022***. These were ***1007*** and ***1015***, which were aligned north-east to south-west and connected walls ***1016*** and ***1017*** on the east and west sides of the central zone respectively (Fig 2). The four walls, ***1007***, ***1015***, ***1016*** and ***1017*** were the inner faces of the remnants of the pier of Northside Bridge that stood between the former Workington to Cockermouth railway line and the old Northside Road. Walls ***1007*** and ***1015*** were constructed in the same manner as ***1016***, comprising very large blocks of roughly-worked red sandstone, measuring up to 1.2m by 0.4m, with dressed stone, measuring 0.4m by 0.3m, used as levelling material between courses. The remains of walls ***1007*** and ***1015*** were 11m long by 2m wide with a maximum height of 5m where they abutted wall ***1016*** and a height of 0.5m where they abutted wall ***1017***.

3.2.6 The rectangular space created between the four walls had been backfilled at the time of construction by a number of deposits. Above construction deposit ***1022*** was backfill deposit ***1052*** that comprised a mid yellowish-brown silty-clay with 40% inclusions of water-rounded pebbles. This deposit also backfilled the construction cut ***1050***. The excavation of this deposit had revealed three drain outlets, or weep holes, ***1024***, ***1025***, and ***1026***, near the base of the wall ***1016*** (Plate 3; Fig 2). These drains had a horizontal depth of between 1.5m and 1.75m into the wall and a number of finds, including ceramic marbles and an earring, were recovered from them (Plate 4; see *Section 3.3*, below, and *Appendix 3*). The next backfill deposit was ***1051***, a dark purplish-brown silty-sand with 80% inclusions of water-rounded pebbles. Above ***1051*** lay ***1012***, a silty-sand with 80% small stones and gravel. Between backfill deposit ***1012*** and wall ***1016*** was a deposit, ***1011***, of mid pinkish-brown clay that was approximately 0.3m thick and appeared to act as a waterproof lining (puddle clay). Another backfill deposit, ***1010***, of silty-sand with gravel, lay above ***1011*** and ***1012***.

3.2.7 The north wall, ***1016***, was the highest remaining part of the old Northside Bridge and its upper section was a concrete slab, ***1004***, that measured 10.5m

long by 1.5m deep, and a minimum of 0.2m wide (Plate 5; Fig 2). It is possible that this concrete deposit was used to seal the open end of the former road tunnel that ran beneath the bridge prior to its infill with a deposit of air-filled concrete, ***1005***, or grout, in 2000 (Fig 2). This had extruded from the void at its south-eastern corner and was a medium bluish-grey lower deposit with a light-pinkish yellow above, and a swirled mixing of both colours where they met. Part of an iron girder, ***1006***, was also revealed at the south-eastern corner (Plate 6), along with part of a girder, ***1020***, exposed in a shallow trench dug to locate an electricity cable (Fig 2). These girders were part of the original twentieth century bridge over the old Northside Road. Excavation revealed the truncated remains of New Bridge Road, which comprised a former road surface, ***1002***, that lay beneath the present road surface, ***1014*** (Plate 7; Fig 2). Both surfaces comprised tarmac laid over layers of sub-surface material of gravel and small stones, and were approximately 0.9m thick. An extant section of wall, ***1000***, bordering New Bridge Road, was partly demolished during groundworks, with the stone retained for reuse (Fig 2).

3.2.8 The standing remains associated with Northside Bridge had been demolished and removed following the collapse of the bridge in 2009. The truncated end of the bridge was buried under a deposit of rubble, ***1008***, that included large pieces of red stone up to 1.1m by 0.7m by 0.3m in size. A layer of terram, ***1058***, was laid over demolition layer ***1008***, covered with topsoil ***1001***, approximately 0.2m deep, and landscaped.

3.2.9 In the area external to, and abutting, the east-facing side of the east wing wall, ***1009*** (***1007*** being the west-facing side, with a rubble core between), a layer of alluvial material, ***1049***, was uncovered. This was dark brownish-yellow silty-coarse sand with 70% inclusions of small pebbles and gravel. Above this, a series of layers forming a hard standing, ***1021***, were uncovered during ground reduction (Fig 2). Above alluvial material, ***1049***, lay a levelling layer of hardcore, ***1048***, a yellowish-brown silty-clay with 80% fragments of small angular stone and pebbles. A levelling layer of compacted gravel, ash and vitrified material, ***1047***, lay above ***1048***, which was overlain by a further layer of concreted ash and gravel, ***1046***. The uppermost layers, ***1045*** and ***1044***, comprised compacted gravel and small water-rounded stones. The series of layers forming ***1021*** probably formed a track to the rear of Brick Row, the terraced housing that stood to the east of Northside Bridge.

3.2.10 The outer face ***1009*** comprised worked and shaped blocks of red sandstone, measuring from 0.4m by 0.2m to 2.2m by 0.55m (Plate 8; Fig 2). At some point, a section of the outer face had been buried by a landscaped bank comprising dump deposits, ***1003***, of mainly clayey-silt with whole bricks and building rubble. This may have been following the demolition of Brick Row or during the remodelling of the bridge in the early 2000s. Landscape bank deposit, ***1003***, was topped with terram, ***1058***, topsoil, ***1001***, and planted with trees and shrubs.

3.2.11 To the north of ***1021***, brick foundations, ***1042***, were uncovered (Plate 9; Fig 2). The exposed section lay beneath landscaped bank ***1003***, and measured 0.6m long by 0.3m deep. The bricks were a light whitish-yellow with 50% flecks of red and were crumbly, and bonded by a dark bluish-black mortar

with 5% small white inclusions. These were the same as the materials used to construct drain ***1030***, and this feature was probably associated with Brick Row. Also beneath ***1003***, at the southern end of ***1009*** bordering the present road, was a modern drain, ***1043***, that measured 0.62m square with a visible depth of 0.8m. This was on the former route of the Workington to Cockermouth railway line (Fig 2). This drain was not removed, but backfilled, so it was not possible to determine its relationship with surrounding contexts.

3.2.12 In the area external to the west wing wall, ***1059***, a layer of alluvial material, ***1041***, was uncovered. This was a mid brownish-yellow clayey-sand with 60% inclusions of water-rounded stones and was probably a natural alluvial deposit. Above this were a series of road or hard standing surfaces that were given group number ***1018*** (Fig 2). Immediately above ***1041*** was a metalled surface, ***1040***, of 80% pebbles and small cobbles set in a dark bluish-grey sandy-silt. This was probably a former road surface associated with the terraced housing that pre-dated and stood to the west of Northside Bridge. Above ***1040*** was a levelling deposit, ***1039***, of industrial waste, which comprised blast furnace slag and vitrified material. This provided a foundation for a metalled surface, ***1038***, of 90% small angular stones compacted in a dark brownish-black and red silty-clay. Above ***1038*** were three layers of tarmac, ***1035***, ***1036*** and ***1037***, each approximately 50mm thick and these represented post-bridge construction road surfaces associated with the terraced housing. A large concrete slab, ***1034***, of unknown function, was unearthed. It rested on tarmac surface ***1035*** and was set against the exterior of the west wing wall, ***1059***, of the bridge (Fig 2). This exterior wall was constructed in the same manner as ***1009***, the exterior wall of the east wing. Above the series of road or hard standing surfaces, ***1018***, was ***1060***, a landscaped bank, which comprised a series of dump deposits of mainly clayey-silt with whole bricks and building rubble. This may have been deposited following the demolition of the terraced housing to the west of the bridge or during the remodelling of the bridge in the early 2000s.

3.2.13 ***Area B:*** this was a grassed area to the immediate east of Area A measuring approximately 25m by 20m. A levelling deposit of demolition rubble, ***2001***, was uncovered. The excavation by mechanical digger of six postholes to a maximum depth of 1m showed the rubble deposit to comprise loose, dark blackish-grey sandy-silt, with 80% inclusions of fragments of stone, brick and concrete. This rubble deposit was overlain by a 0.3m deep layer of topsoil, ***2000***, that was dark-greyish brown clayey-silt, with 10% inclusions of gravel and small water-rounded pebbles.

3.2.14 ***Area C:*** this is situated between the river Derwent and Northside Road, immediately to the south of Area A, and was an area of poorly grassed waste land over the site of the former north pier of Northside Bridge, and measured approximately 65m by 23m. Excavation took place in two phases, the first to prepare the area for piling operations, during which a deposit of quarry waste, ***3028***, was used to level the area to provide a working surface for piling operations. On completion of this phase of the construction works, quarry waste ***3028***, was removed and ground reduction recommenced. The second phase was to further reduce the ground level prior to the commencement of construction works.

3.2.15 A series of post-glacial alluvial deposits of varying depths and compositions of sand, gravel and water-rounded stones were excavated to reach the required depth for construction works. The lowest deposit was ***3026***, which was a dark greenish-grey silty-coarse sand with small pebbles and water rounded-stones up to 0.25m by 0.15m by 0.1m. Above this lay deposit ***3025*** that was light creamy-orangey-brown coarse sand with 90% gravel and small water-rounded stones. The next deposit ***3024*** was a medium orangey-brown coarse sand with 25% gravel and small pebbles. Above this, lay deposit ***3023***, a dark reddish-orangey-brown coarse sand with 50% gravel and small pebbles, which was overlain by deposit ***3022***, a medium bluish-grey silty-coarse sand with 20% gravel. Above this was deposit ***3021***, a dark orangey-brown coarse sand with 2% gravel. The next in the sequence was deposit ***3020***, a dark reddish-brown coarse sand with 2% gravel but up to 10% gravel in pockets, and then deposit ***3019***, which was a light yellowish-grey silty-sand with 40% gravel. These lay beneath two sedimentary deposits, ***3017*** and ***3018***. Deposit ***3018*** was dark bluish-grey silty-clay with up to 50% inclusions of wood remains. Deposit ***3017*** was medium bluish-grey silty-clay with inclusions of 2% gravel in small pockets. They were both deposits of fine-grained sediment and their depths varied from north to south, with ***3018*** varying from 1.2m to 0.3m and ***3017*** from 0.1m to 0.3m. These sediments were the river bed deposits prior to the demolition of the remains of Northside Bridge following its collapse in 2009.

3.2.16 Due to the slope of the land towards the river, and the approximate distance of 10m between the two phases of excavation, it was difficult to relate with certainty the relationship of the next shingle deposit, ***3009***, to the above sequence. It comprised coarse sand with 70% gravel, and small to medium water-rounded stones and probably lay above ***3019***. Above ***3009*** was ***3007*** and ***3008*** (Fig 3), a light bluish-grey firm fine sandy-clay with infrequent inclusions of small water-rounded pebbles. Above this was ***3005*** and ***3006***, which were light brownish-yellow firm clayey-silt deposits with infrequent inclusions of gravel. A construction cut, ***3011***, had been made through natural deposits ***3005*** to ***3008*** (Fig 3), within which the foundations of the east wing wall, ***3010***, of the pier of Northside Bridge between the north river bank and the south side of the former Workington to Cockermouth railway were set on shingle deposit ***3009*** (Plate 10; Fig 3). The foundations were approximately 1.0m high by 4.0m long and 2.0m wide. They were constructed of roughly-hewn blocks of red sandstone with a bonding of light pinkish-brown cement. Packing deposits ***3012*** and ***3013*** lay at the sides of the foundations (Fig 3). Deposit ***3012*** was degraded red sandstone and firm, dark yellowish-brown silty-clay. Packing deposit ***3013*** was dark reddish-greyish-brown coarse sandy-silt with 50% inclusions of red sandstone and slate fragments. Ground reduction also partly unearthed the shattered remnant of the west wing foundations, ***3014***, which was constructed in the same manner and material as the east wing wall, ***3010*** (Fig 3). Levelling deposits ***3003*** and ***3004***, a dark blackish-grey firm clayey-silt with 10% inclusions of fragments of coal, mortar, stone and vitrified waste up to 0.7m thick lay at either side of the east wing wall foundations, ***3010*** (Fig 3).

3.2.17 Following the demolition of Northside Bridge in 2009 the area was levelled with deposits ***3016*** and ***3027***. Deposit ***3016*** was dark brownish-blue coarse

sand with 60% pebbles and small stones. Levelling deposit ***3027*** was a dark brownish-grey compact silty-clay containing 80% inclusions of small stones, pebbles, angular fragments of stone and fragments of brick (Plate 11). The depths of deposits ***3016*** and ***3027*** were shallower at the northern side of the site and deeper on the southern or riverside of the site. Large granite rocks, ***3015***, had been deposited along the riverbank following demolition to protect the area from erosion by the river. The area had been levelled with ***3002***, rubble that comprised dark greyish-brown loose sandy-silt with 60% inclusions of fragments of red sandstone, concrete, brick and cobbles. The depth of this deposit varied. A hard standing, ***3001***, a medium pinkish-brown sandy-silt with fragments of tarmac, small stones and fragments of concrete, about 0.2m thick, lay above ***3002***. The final levelling layer was ***3000***, a poor quality topsoil that was dark brownish-grey clayey-silt, with 20% gravel and small water-rounded pebbles of approximate depth of 0.2m.

3.3 FINDS

3.3.1 In all, 67 fragments of artefacts and ecofacts were recovered during the investigation. Their distribution is shown below (Table 1). All were well-preserved, with little abrasion. The majority of the finds were glass and ceramic marbles, and in all cases finds suggested activity at or about the turn of the twentieth century, with deposition continuing to the middle of the century.

Context	Pottery	Glass	Tobacco	Bone	Wood	Iron	Other	Totals
1023	0	2	1	0	0	0	0	*3*
1024	8	8	0	1	1	5	2	*25*
1025	1	3	0	0	1	4	1	*10*
1026	3	2	0	0	0	5	3	*13*
1041	14	0	0	1	0	1	0	*16*
Totals	*26*	*15*	*1*	*2*	*2*	*15*	*6*	***67***

Table 1: Distribution of artefacts and ecofacts by context

3.3.2 Ironwork from weep holes ***1024-26*** and natural deposit ***1041*** seems most likely to derive from the construction and maintenance of a bolted iron or steel structure, likely to be the railway bridge, with the large washers from ***1024*** and ***1025*** presumable associated with securing the bolts. A large nail came from ***1041***. A wooden peg or trenail from ***1025*** is probably also associated with a structure of some kind.

3.3.3 Most other finds from the site are likely to derive from the casual, small-scale deposition of domestic debris. A single clay tobacco pipe fragment from ***1023*** cannot be dated with precision, but is probably of very late nineteenth to early twentieth century date. Fragments of colourless glass machine-blown bottles from ***1025*** and ***1026*** are of early to mid twentieth century date, and fragments of a dark green wine bottle from ***1023*** is possibly marginally earlier, although it is unlikely to date earlier than the late nineteenth century. All but one of the fragments of pottery were from natural deposit ***1041***, most are plain refined white earthenware kitchen and tablewares, with three transfer-printed fragments. Although these came into widespread production early in the

nineteenth century, it is unlikely that any of the fragments recovered pre-date the twentieth century.

3.3.4 Plastic from ***1024***, a rubber ball from ***1025***, and graphite rods from ***1026*** are all of twentieth century date, and whilst none can be dated with precision, they are all likely to come from the middle part of the century.

3.3.5 The number of marbles from the site is of interest, with both glass and ceramic examples present in weepholes ***1024***, ***1025***, and ***1026***. Many of these are probably reused mineral-water stoppers, but the larger examples, and glass examples with deliberate coloured swirls, are likely to have been mass-produced with the game of marbles in mind. The first mass-produced glass marbles were made in Germany in the mid-nineteenth-century (www.marblechamp.com/history-of-marbles), but the technology spread rapidly and by the early twentieth century they were made in great quantities. Marble games appear to have been at their most popular in England in the 1930s and 1940s, with the creation of the World Marble Championships at Tinsley Green in West Sussex, in 1932 (Pearson 2003). The numbers lost on the site suggest that the bridge was a popular spot for playing this popular childhood game. Fragments of butchered bone came from weephole ***1024*** and natural ***1041***, and there was a single common snail shell (*H aspersa*) from weephole ***1026***.

4. CONCLUSIONS

4.1 DISCUSSION

4.1.1 ***Introduction:*** five heritage assets had been previously identified within the area of groundworks (OA North 2010), which included a findspot of an early medieval Viking sword. No archaeological deposits or remains were found to be associated with this, although beyond the north end of Area A there is still the potential for sub-surface remains, as excavation in this area did exceed the depth of the post-medieval deposits. Nevertheless, below ground remains were revealed that were associated with the remainder of the heritage assets. The former Workington to Cockermouth railway line was identified by an associated drain, ***1043***, in Area A. Brick Row, a demolished row of terraced houses, was identified by a short section of wall foundation, ***1042***, a section of hardstanding, ***1021***, and a drain, ***1030***, that were all uncovered in Area A. In addition, a section of metalled surfaces, ***1018***, were uncovered in Area A that were associated with terraced housing that had stood to the west of the bridge. The standing remains associated with Northside Bridge had been demolished and removed following the collapse of the bridge in 2009. However, in Areas A and C the remains of structures of the demolished bridge were observed. In Area C there was no trace of an earlier bridge pre-dating Northside Bridge, which had been anticipated from early maps, although it is possible that it may have actually been a ford that was being indicated to the immediate east of Northside Bridge (Ordnance Survey 1925).

4.1.2 ***Area A:*** the old Northside Bridge originally spanned the river Derwent, the Workington to Cockermouth railway line and the old Northside Road. The arch over the river was built of red sandstone and those over the railway line and road were iron girders. The pier of the bridge between the railway line and the road had been within Area A (Plate 12). The span over the old Northside Road was infilled in the early 2000s, and the road re-routed along the now disused railway line, with the bridge reduced to a couple of spans. The excavations revealed features of this pier and the former span over the old road. The section of wall ***1000***, bordering the pavement on New Bridge Road, was constructed of red sandstone, some of which had been reused from an earlier structure (Fig 2). The wall was built to match that on the approach road at the southern end of the bridge. It is probable that this wall was built when the northern end of the bridge was remodelled in the early 2000s. Metalled surface ***1002***, lying 0.9m beneath the present road surface ***1014***, was probably the road level prior to the remodelling of the bridge (Plate 7; Fig 2). Two iron girders, ***1006*** and ***1020***, were exposed and these had spanned the old Northside Road prior to it being re-routed (Plate 6; Fig 2).

4.1.3 Excavation revealed the walls of the pier of Northside Bridge that had stood between the former railway line and the old Northside Road (Plate 12). The truncated remnant of the east wing wall was exposed with its roughly-hewn inner face ***1007*** not designed for public view contrasting with the visible worked outer face ***1009*** (Plate 8; Fig 2). The west wing wall ***1015*** was excavated with the remains providing a good idea of the impressive bulk of the

former bridge (Fig 2). At some point, most probably with the remodelling of the bridge, a section of the east and west outer faces had been buried when landscaped banks ***1003*** and ***1060*** were created. The space between these walls had been backfilled with a number of deposits to support New Bridge Road, ***1002*** and ***1014***, that crossed Northside Bridge (Plate 7; Fig 2). Ground reduction exposed the footings of a wall, ***1017***, running south-east to north-west between the wing walls, and this was the base of the wall alongside the Cockermouth to Workington railway line (Fig 2).

4.1.4 In the base of wall ***1016*** three drains or weep holes, ***1024***, ***1025***, ***1026***, were uncovered (Plate 3; Fig 2). These produced a number of finds including an earring, pieces of wood, plastic, and fourteen marbles. Two marbles with coloured swirls were manufactured as toys for children. The remaining twelve marbles had been removed from the necks of glass bottles to be used as toys. These finds would have entered the drains from inlets at the base of the wall alongside the old Northside Road. The weep holes allowed water to seep from the interior of this section of the bridge and prevented damage to the structure from a build up of pressure from trapped water.

4.1.5 Evidence was uncovered of the terraced housing that once stood at the east and west sides of the bridge. A short section of a brick wall, ***1042***, was part of Brick Row, a single row of terraced housing that stood immediately to the east of Northside Bridge (Fig 2). A section of hard standing, group number ***1021***, comprised a number of deposits that formed an access lane alongside the bridge to the rear of Brick Row (Plate 9; Fig 2). A drain, ***1030***, constructed of identical brick and mortar to brick wall ***1042***, contained a sewer pipe that probably served Brick Row, and ran east to west to the terraced housing that stood on the west side of the bridge (Fig 2). A section of road surfaces were uncovered, ***1018***, that would have formed part of the road that ran between the railway line and the terraced housing at the west side of the bridge (Fig 2).

4.1.6 ***Area B:*** this was the location of a single row of terraced housing called Brick Row. No foundations were uncovered during ground works although material from the demolition of the houses was probably used as a levelling deposit, ***2001***, with topsoil, ***2000***, laid over it.

4.1.7 ***Area C:*** in this area a pier had stood that supported the north end of the arch that spanned the river Derwent and the south end of the span over the Workington to Cockermouth railway line (Plate 1). This pier had been demolished following the collapse of the bridge in 2009 and the area levelled with a number of deposits. Excavations revealed features of the former pier of the bridge and the riverbank prior to its demolition. Furthermore, material, ***3016*** and ***3027*** dumped as part of a river defence barrier following the demolition of the collapsed bridge in 2009 (Plate 11) was revealed. Beneath this were two deposits, ***3017*** and ***3018***, of sedimentary material containing organic matter such as wood, some of which was identifiable as hawthorn, and this was the former river bank prior to the construction of Northside Bridge in 1904. Beneath this were a series of alluvial deposits, ***3019*** to ***3026***, representing post-glacial deposition material. However, no archaeological features were uncovered in the final stage of ground reduction, and, in particular, no features associated with an earlier bridge.

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6. ILLUSTRATIONS

6.1 FIGURES

6.2 PLATES

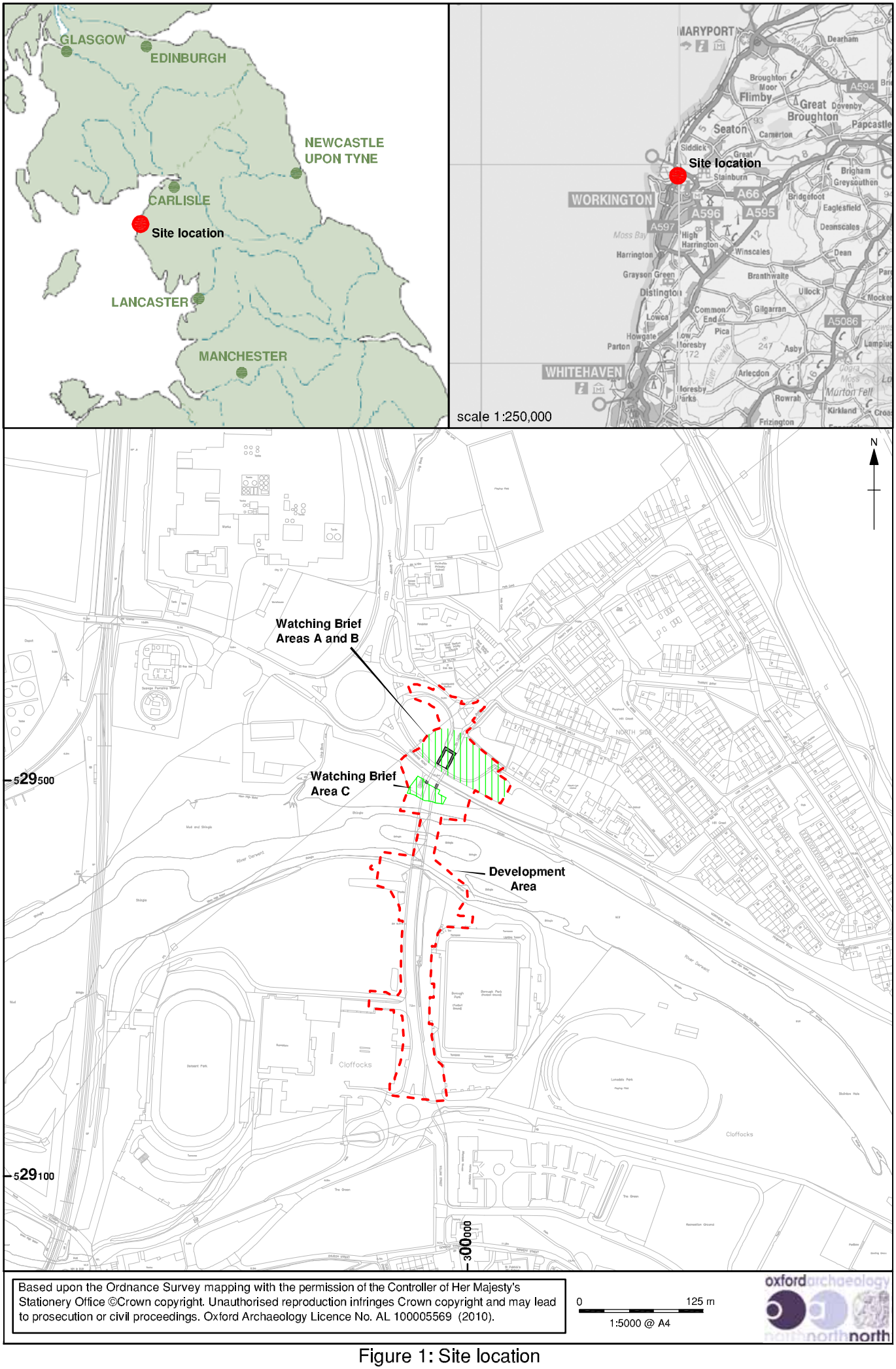

Figure 1: Site location

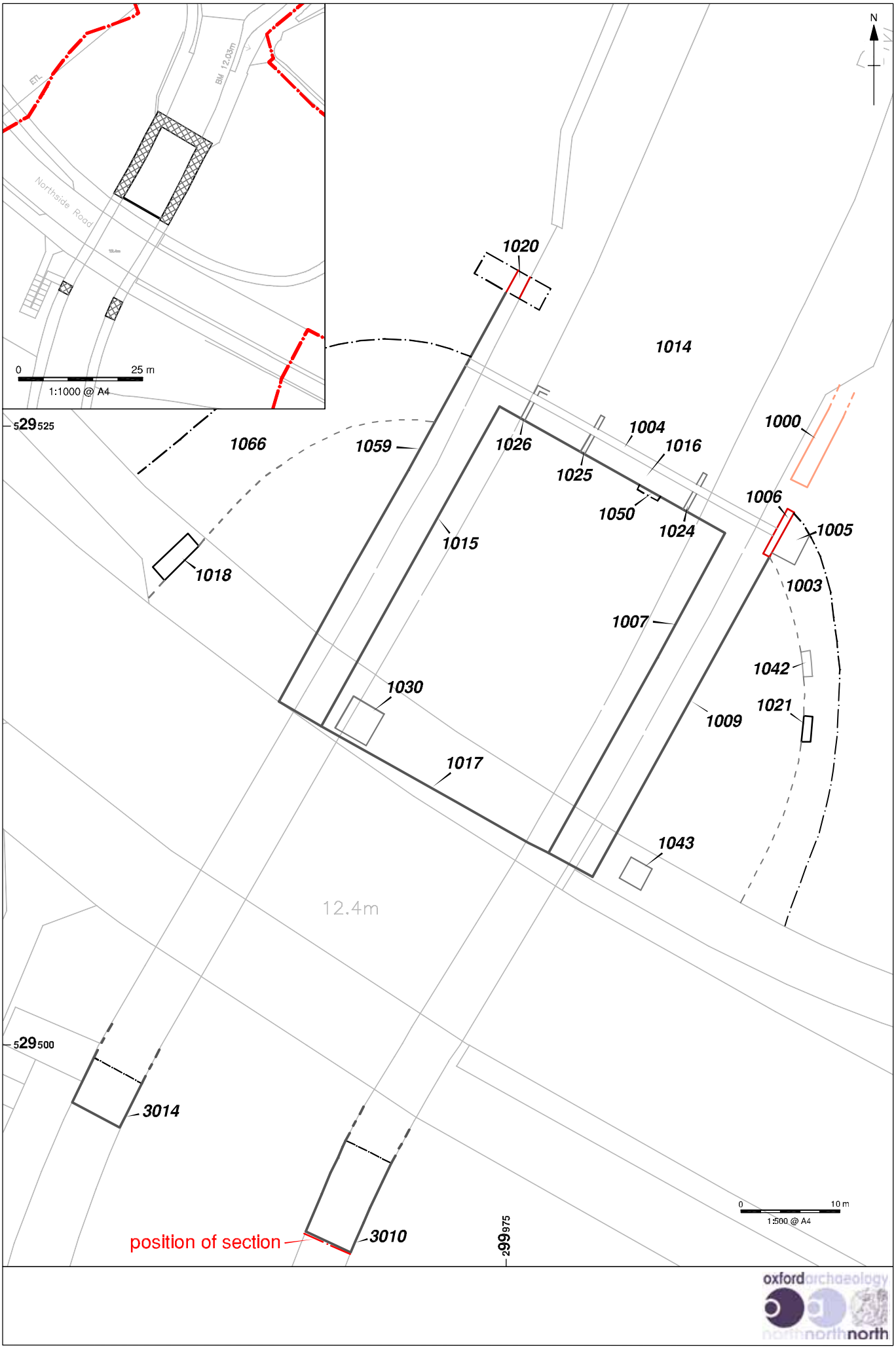

Figure 2: Plan of features observed during watching brief

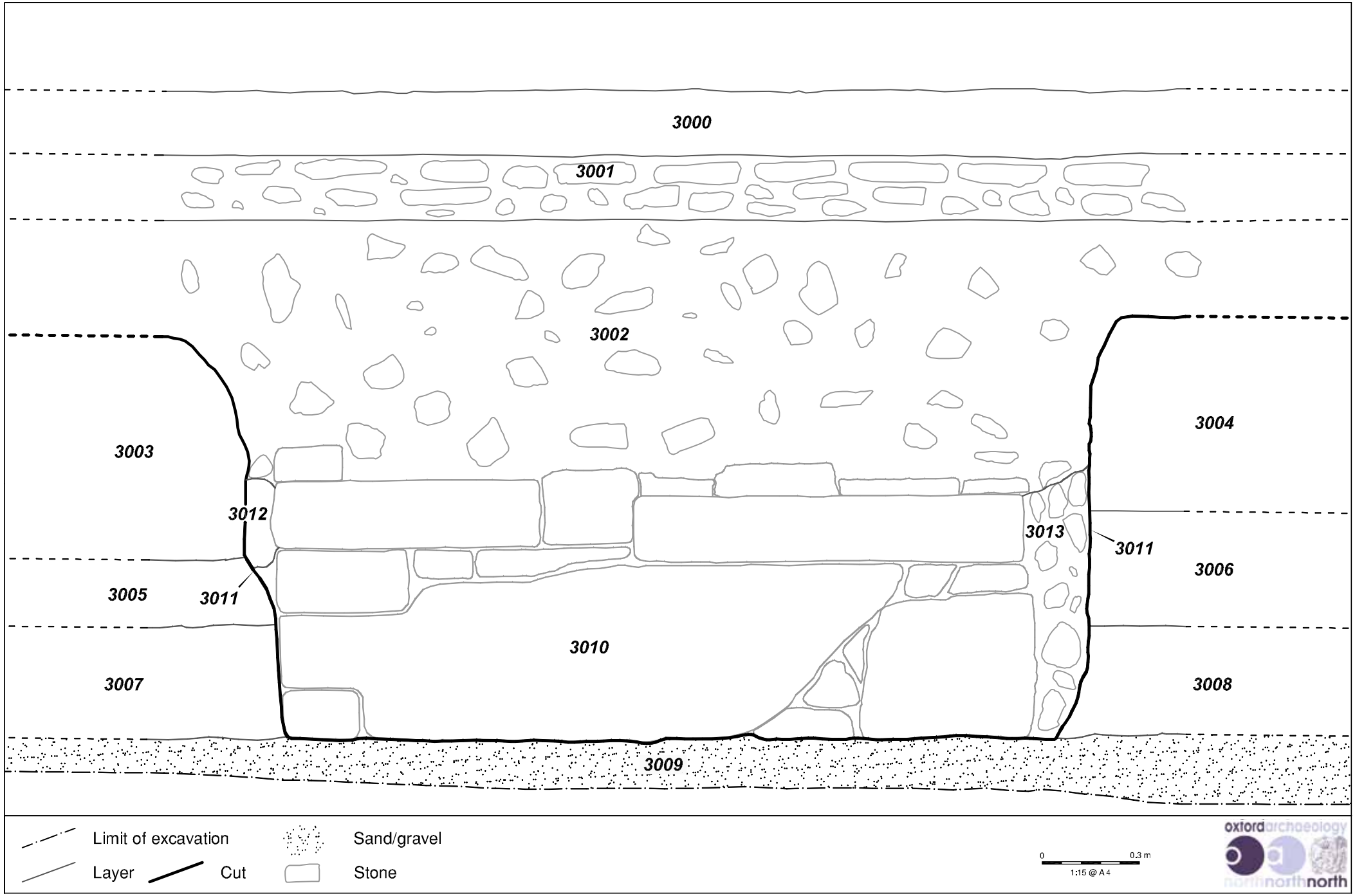

Figure 3: South-facing section through east pier of Northside Bridge

Plate 1: View of Northside Bridge looking west

Plate 2: View of Northside Bridge following its collapse in November 2009

Plate 3: Drain ***1024*** in wall ***1016*** and construction cut ***1050***

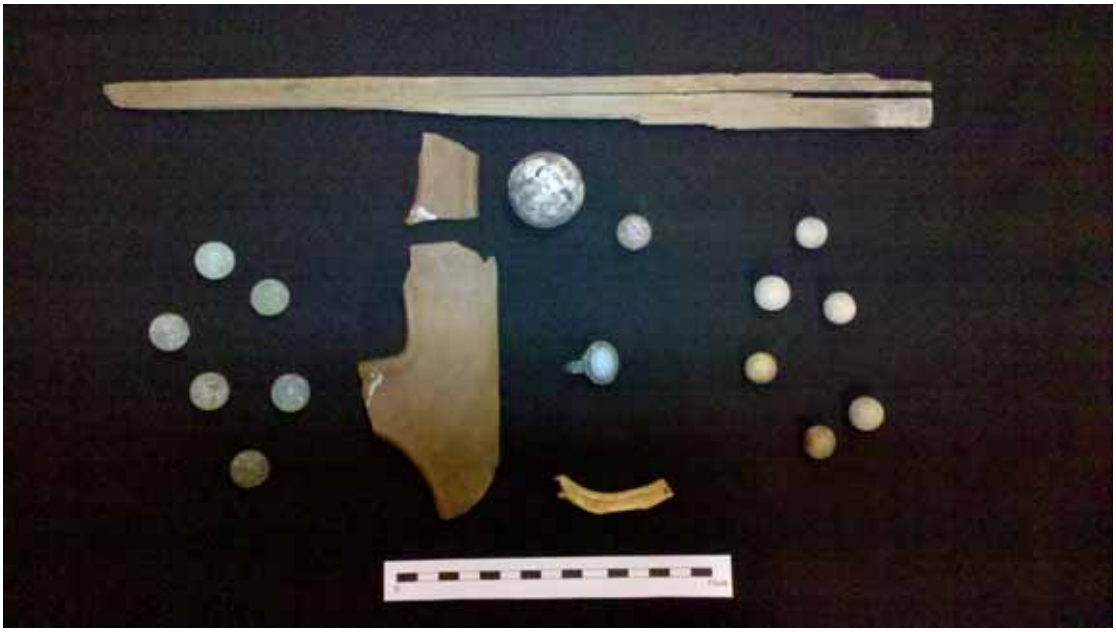

Plate 4: The finds from drain ***1024***

Plate 5: The south-facing concrete slab ***1004*** and inner wall ***1016***

Plate 6: Part of an iron girder ***1006***

Plate 7: Former road surface ***1002*** beneath the present surface ***1014***

Plate 8: The outer face of the east wing wall ***1009***

Plate 9: Brick wall ***1042***, part of Brick Row terraced housing

Plate 10: The remains of the foundations of the east wing ***3010*** of the north pier

Plate 11: Uppermost deposit ***3027*** and layers of deposits beneath, exposed during final ground reduction in Area C

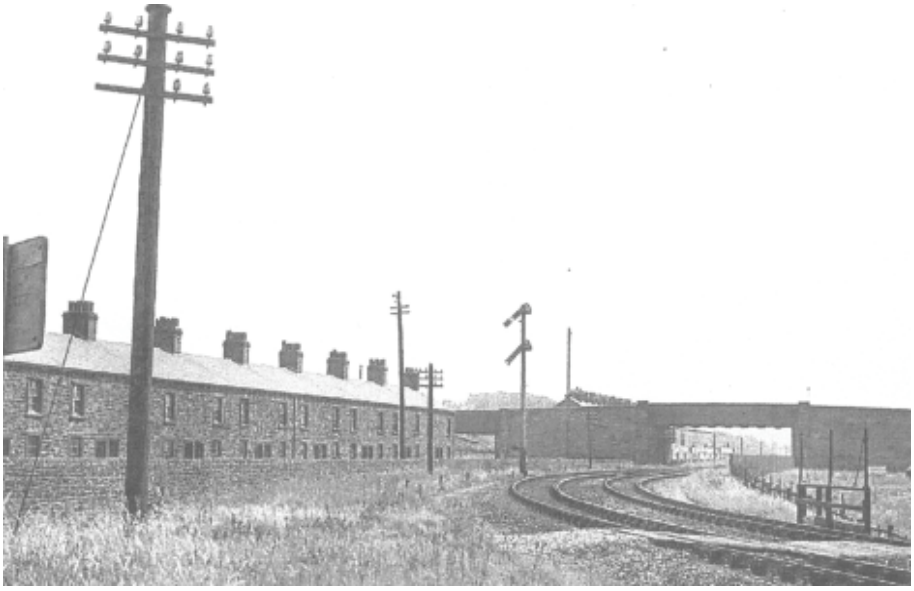

Plate 12: The road and rail spans of Northside Bridge

APPENDIX 1: PROJECT DESIGN

1. INTRODUCTION

1.1 PROJECT BACKGROUND

1.1.1 Birse Civils (hereafter 'the client') has requested that Oxford Archaeology North (OA North) submit proposals for a programme of archaeological watching brief to be undertaken during groundworks associated with the replacement of Northside Bridge, Workington, Cumbria (NGR NX 9995 2940).

1.1.2 OA North undertook an assessment of the cultural heritage resource surrounding the bridge site in 2010, on behalf of Capita Symonds and Cumbria County Council, as part of an Environmental Impact Assessment. Nine heritage assets were identified within the study area (the red line boundary of the development site and 0.25km from the central point within this), which included a findspot of an early medieval Viking sword. The remainder of the sites were of post-medieval, industrial, or modern date representing a wide range of functions and activities, including industry, domestic habitation, bridges, and sports grounds. Due to the poor state of preservation of many of these sites, most were considered to be of low or negligible significance, although the former local and regional importance of the West Cumberland Company Iron Works meant it was of medium significance. However, the potential exists for sub-surface remains, including the remains of human burials, in association with the findspot of the Viking sword.

1.1.3 In order to mitigate the impact of the groundworks on the cultural heritage resource an archaeological watching brief will be maintained during earthmoving activities. The following document represents a project design to carry out the above programme of work and has been prepared in accordance with standard IfA requirements (2008a).

1.2 OXFORD ARCHAEOLOGY NORTH

1.2.1 OA North has considerable experience of sites of all periods, having undertaken a great number of small and large scale projects throughout Northern England during the past 30 years. Evaluations, desk-based assessments, watching briefs and excavations have taken place within the planning process, to fulfil the requirements of clients and planning authorities, to very rigorous timetables. OA North has the professional expertise and resources to undertake the project detailed below to a high level of quality and efficiency. OA North is an Institute for Archaeologists (IfA) registered organisation, registration number 17, and all its members of staff operate subject to the IfA Code of Conduct (2008b).

2. OBJECTIVES

2.1 The following programme has been designed to identify and record any archaeological deposits affected by the proposed groundworks, in order that they can be preserved by record. To this end, the following programme has been designed, in accordance with IfA standards, to provide a watching brief. The required stages to achieve these ends are as follows:

2.2 ARCHAEOLOGICAL WATCHING BRIEF

2.2.1 To undertake a programme of observation and recording during any ground disturbance to determine the presence, quality, extent and importance of any archaeological remains on the site.

2.3 REPORT AND ARCHIVE

2.3.1 A report will be produced for the Client within four weeks of completion of the fieldwork. A site archive will be produced to English Heritage guidelines (1991) and in accordance with the *Guidelines for the Preparation of Excavation Archives for Long Term Storage* (UKIC 1990).

3. METHOD STATEMENT

3.1 HEALTH AND SAFETY

3.1.1 OA North provides a Health and Safety Risk Assessment for all projects and maintains a Company Safety Policy. All site procedures are in accordance with the guidance set out in the

Health and Safety Manual compiled by the Standing Conference of Archaeological Unit Managers (1997).

3.2 WATCHING BRIEF

3.2.1 ***Methodology:*** a programme of field observation will accurately record the location, extent, and character of any surviving archaeological features and/or deposits within the whole area of the proposed ground disturbance. This work will comprise observation during all earth moving activities, the systematic examination of any subsoil horizons exposed during the course of the groundworks, and the accurate recording of all archaeological features and horizons, and any artefacts, identified during observation.

3.2.2 Putative archaeological features and/or deposits identified during the observation of groundworks, together with the immediate vicinity of any such features, will be cleaned by hand, using either hoes, shovel scraping, and/or trowels depending on the subsoil conditions and, where appropriate, sections will be studied and drawn. Any such features will be sample excavated (i.e. selected pits and postholes will normally only be half-sectioned, linear features will be subject to no more than a 10% sample, and extensive layers will, where possible, be sampled by partial rather than complete removal).

3.2.3 During this phase of work, recording will comprise a full description and preliminary classification of features or materials revealed, and their accurate location (either on plan and/or section, and as grid co-ordinates where appropriate). Features will be planned accurately at appropriate scales and annotated on to a large-scale plan provided by the client, which will also show the location and extent of the ground disturbance. Sections to a suitable scale will be drawn as and where appropriate. An indexed photographic record utilising colour digital imaging will be undertaken simultaneously.

3.2.4 ***Treatment of finds:*** all finds will be exposed, lifted, cleaned, conserved, marked, bagged and boxed in accordance with the United Kingdom Institute for Conservation (UKIC) *First Aid For Finds*, 1998 (new edition) and the recipient museum's guidelines.

3.2.5 ***Treasure:*** any gold and silver artefacts recovered during the course of the excavation will be removed to a safe place and reported to the local Coroner according to the procedures relating to the Treasure Act, 1996. Where removal cannot take place on the same working day as discovery, suitable security will be employed to protect the finds from theft.

3.2.6 All identified finds and artefacts will be retained, although certain classes of building material can sometimes be discarded after recording if an appropriate sample is retained on advice from the recipient museum's archive curator.

3.2.7 ***Human Remains****:* any human remains uncovered will be left *in situ*, covered and protected. No further investigation will continue beyond that required to establish the date and character of the burial. Cumbria County Council's Historic Environment Service (CCCHES), acting on behalf of the local planning authority, and the local Coroner will be informed immediately. If removal is essential, the exhumation of any funerary remains will require the provision of a Home Office license, under section 25 of the Burial Act of 1857. The removal of human remains will be carried out with due care and sensitivity under the environmental health regulations.

3.2.8 ***Contingency plan:*** in the event of significant archaeological features being encountered during the watching brief, discussions will take place with CCCHES, as to the extent of further works to be carried out. All further works would be subject to a variation to this project design. In the event of environmental/organic deposits being present on site, it would be necessary to discuss and agree a programme of palaeoenvironmental sampling and or dating with CCCHES.

3.3 REPORT AND ARCHIVE

3.3.1 ***Report:*** three bound copies of a draft report will be submitted to the clinet within four weeks of completion of the fieldwork. Once approved three bound copies and one digital copy as a pdf of the final report will be submitted to the client, and three further copies submitted to Cumbria HER, acting on behalf of the local planning authority, within eight weeks of completion. The report will include:

- a front cover to include the planning application number and the NGR;

- a site location plan, related to the national grid;
- the dates on which the fieldwork was undertaken;
- a concise, non-technical summary of the results;
- a description of the methodology employed, work undertaken and results obtained;
- plans and sections at an appropriate scale, showing the location of features;
- other illustrations and photographic plates showing, as appropriate, features of interest or to demonstrate the absence of archaeological features;
- a description of any environmental, finds, or other specialist work undertaken, and the results obtained;
- an appropriate discussion the data generated and a consideration of its significance and implications for further development of the site;
- the report will also include a complete bibliography of sources from which data has been derived;
- a copy of this project design in the appendices, and indications of any agreed departure from that design.

3.3.2 ***Archive:*** the results of all archaeological work carried out will form the basis for a full archive to professional standards, in accordance with current English Heritage guidelines (Management of Archaeological Projects, 2nd edition, 1991). The project archive represents the collation and indexing of all the data and material gathered during the course of the project. It will include summary processing and analysis of all features, finds, or palaeoenvironmental data recovered during fieldwork, which will be catalogued by context. All artefacts will be processed to MAP2 standards and will be assessed by our in-house finds specialists.

3.3.3 The deposition of a properly ordered and indexed project archive in an appropriate repository is considered an essential and integral element of all archaeological projects by the IfA in the organisation's code of conduct (2008b). OA North conforms to best practice in the preparation of project archives for long-term storage. This archive will be provided in the English Heritage Centre for Archaeology format and a synthesis will be submitted to the local HER (the index to the archive and a copy of the report). OA North practice is to deposit the original record archive of projects with the County Record Office at Whitehaven. The material archive (artefacts and ecofacts) will be deposited with an appropriate museum following agreement with the client.

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

3.3.5 ***Confidentiality:*** all internal reports to the client are designed as documents for the specific use of the client, for the particular purpose as defined in the project brief and project design, and should be treated as such. They are not suitable for publication as academic documents or otherwise without amendment or revision. Any requirement to revise or reorder the material for submission or presentation to third parties beyond the project brief and project design, or for any other explicit purpose, can be fulfilled, but will require separate discussion and funding.

4. OTHER MATTERS

4.1 TIMETABLE

4.1.1 ***Watching brief:*** the duration of this element is dependant upon the duration of any ground disturbing activities on the site, which are currently estimated to be two weeks.

4.2.1 ***Report and Archive:*** a draft report will be submitted within four weeks and a final report will be submitted within eight weeks of the completion of the fieldwork. The archive will be submitted within six months.

4.2 PROJECT MONITORING

4.2.1 Whilst the work is undertaken for the client, CCCHES will likely wish to be kept fully informed of the work and its results, acting as advisors to the local planning authority, and will be notified in advance of the commencement of the fieldwork. Following submission of the project design to the local planning authority, any proposed changes to the document will be agreed in consultation with the client and CCCHES.

4.3 STAFFING

4.3.1 The project will be under the direct management of **Emily Mercer** (OA North project manager) to whom all correspondence should be addressed.

4.3.2 All elements of the archaeological investigation will be supervised by an OA member of field staff experienced in this type of project. Due to scheduling requirements it is not possible to provide these details at the present time.

4.3.3 Assessment of any finds from the watching brief will be undertaken under the auspices of OA North's in-house finds specialist **Christine Howard-Davis** (OA North Finds Manager). Christine has extensive knowledge of all finds of all periods from archaeological sites in northern England. However, she has specialist knowledge regarding glass, metalwork, and leather, the recording and management of waterlogged wood, and most aspects of wetland and environmental archaeology.

4.3.4 Assessment of any palaeoenvironmental samples which may be taken will be undertaken by **Elizabeth Huckerby** (OA North Palaeoenvironmental Manager). Elizabeth has extensive knowledge of the palaeoecology of the North West through her work on the English Heritage-funded North West Wetlands Survey. Assessment of any faunal material will be undertaken by **Andrew Bates** (OA North Project Officer).

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APPENDIX 2: CONTEXT REGISTER

CONTEXT NO	DETAIL	DIMENSIONS	DESCRIPTION
1000	Red sandstone wall	21m long by 0.98m high by 0.4m wide	Blocks of red sandstone from 0.4 x 0.3 to 0.16 x 0.2m. Finish of faces varies as some stone has been reused from earlier structure. Coping stones with buttress at north end, and that at south demolished. Stones retained for reuse.
1001	Topsoil	0.2m depth	Dark yellowish-brown firm clayey-silt with 5% inclusions of small rounded and angular stones, laid over terram, laid in 2009/2010.
1002	Road surface	0.9m depth	Former road surface of tarmac over layers of hardcore.
1003	Landscaped bank	4m approx	Series of dump deposits, mainly of dark blackish-grey firm clayey-silt with 50% inclusions of building rubble including whole and part bricks.
1004	Concrete slab	1.5m deep by 10.5m long	A slab of concrete, medium brownish-grey with 80% small angular and round stones.
1005	Air filled cement/grout	1.5m deep by 1m wide by 1.5m long	Solid medium bluish-grey and light pinkish - yellow. Cement lightened with air, known as grout.
1006	Iron girder	0.75m long by 0.3m wide by 20mm thick	Painted light greyish-blue with rivets, 35mm diameter, every 0.1m.
1007	Inner face of east wing wall	Approx 14m long by 2m wide by 2.8m high	Wall of roughly-worked large blocks of red sandstone, with worked and shaped smaller blocks used as levelling material. Not for public view. Some material recycled stone.
1008	Rubble dump deposit	Approx 1.5m deep	Rubble deposit of mainly red sandstone, some 1.1m by 0.7m by 0.3m, and 1.2m by 0.54m by 0.32m. Dark yellowish-brown loose sandy-silt and smaller stones mixed in.
1009	Outer face of east wing wall	Approx 14m long by 2m wide by 2.8m high.	Dressed red sandstone, some have a well-chiselled border 0.1m wide. Size varies 1.15m by 0.6m and 0.3m by 0.23m. Wall for public view.
1010	Infill	14m long by 10.5m wide by 2.8m deep	Loose dark greyish-brown coarse sandy -silt with 60% gravel and small pebbles.
1011	Lining layer	10.5m long by 1.5m wide by 0.3m thick	Dark grey plastic silty-clay with 10% small gravel and grit. Appeared to be a lining layer.
1012	Backfill	10.5m wide by 14m long by 1.8m deep	A layer of deposited river gravel as back fill, very clean with no rubble or waste material. Loose dark brownish-grey sandy-silt with 60% gravel and small stones.

1013	Void	Void	Void
1014	Road Surface	0.9m deep	Present road surface on approach road to northern end of bridge, above ***1002***, comprised tarmac over hardcore layers.
1015	Inner face west wing wall	14m long by 3.5m high by 2m wide	Roughly-hewn red sandstone blocks with worked smaller stones as levelling material. Some material recycled stone.
1016	South-facing inner wall of northern pier of Northside Bridge.	10.5m wide by 3m high	Large roughly-hewn blocks of red sandstone and smaller worked stones as levelling material. Some material recycled stone.
1017	Wall foundations	5.7m long by 1m high	Roughly-worked and hewn red sandstone blocks that formed the foundations of a wall running north to south between the east and west wing walls.
1018	Tarmac surface	Approx 3m long by 0.3m deep	A group number for a series of metalled surfaces.
1019	Construction or flooring layer	9.8m long by 3m wide by 0.3m deep and 10.7m long by 3.2m wide by 0.4m deep.	A layer of loose dark brownish-black ash and slag exposed in two machine-dug trenches.
1020	Iron girder	0.4m long by 0.15m wide by 0.25m deep	Part of an iron girder exposed in a trench excavated to locate an electric cable.
1021	Tarmac surface	Approx 10.7m by 0.3m deep	A group number for a series of metalled surfaces.
1022	Construction layer	Minimum depth 0.2m	A layer of small fragments of broken brick, red sandstone and mortar.
1023	Levelling layer	Minimum depth 0.2m	A layer of mid greyish-blue silty-clay with inclusions of charcoal and burnt material.
1024	Weep hole	Lintel 0.66m by 0.15m wide and 0.37m deep. Opening 0.35m long by 0.17m wide and 1.7m deep.	A rectangular shaped opening with a lintel. The opening is a drainage hole. Located at the base of the south-facing section of the north wall, approximately 1.8m from the junction of the east and north walls.
1025	Weep hole	Lintel 0.39m long by 0.13m wide by 0.22m deep. Opening 0.39m long by 0.19m wide and 1.75m deep.	A rectangular shaped opening with a lintel. The opening is a drainage hole. Located in the centre of the base of the south-facing section of the north wall.

1026	Weep hole	Lintel 0.98m long by 0.19m wide and 0.47m deep. Opening 0.44m long by 0.23m wide and 1.5m deep.	A rectangular shaped opening with a lintel. The opening is a drainage hole. Located at the base of the south-facing section of the north wall approximately 1.8m from the junction of the west and north walls.
1027	Cut for drain		Cut for brick drain ***1030***
1028	Backfill	0.28m deep	A backfill deposit of blueish-grey silty-coarse sand with 60% gravel and small pebbles.
1029	Backfill	0.3m deep	A backfill deposit of building rubble, comprised mortar and 40% stone fragments.
1030	Brick drain	3.7m long by 2.5m wide by 1.5m deep. Pipe 0.28m internal diameter.	A brick-lined sewerage drain, with inlet and outlet pipes, aligned east to west.
1031	Drain cover	1.52m long by 0.75m wide by 30mm deep.	Two metal plates covering the opening to brick drain ***1030***.
1032	Natural layer	0.43m deep	A mid brownish-yellow sandy-clay with 20% inclusions of small water-rounded pebbles and gravel.
1033	Natural layer	Minimum 0.6m deep	A mid bluish grey-silty clay with 40% small water-rounded pebbles.
1034	Concrete slab	2.25m long by 1.0m wide by 0.25m deep.	A large whiteish-grey concrete slab of unknown purpose.
1035	Tarmac layer	50mm	Dark bluish-black with 40% inclusions of white flecks.
1036	Tarmac layer	60mm	A layer of greeny-grey friable sandy-clay with 40% inclusions of shale.
1037	Tarmac layer	50mm	Dark greyish-black with 80% inclusions of gravel and small stones. Stones up to 30mm by 20mm by 10mm.
1038	Metalled surface	40mm	Dark brownish-black with dark brownish-red patches indicating ferous material. Comprised 90% small angular stones compacted in a silty - clay.
1039	Levelling layer	0.15m	Industrial waste, blast furnace slag, of light whitish-grey concreted pieces of limestone and vitrified material. The fragments are up to 120mm by 80 mm by 70mm.
1040	Metalled surface	80mm	A layer of water-rounded stones/cobbles up to 120mm by 110mm by 60mm set in a dark blueish-grey sandy-silt. Inclusions up to 80%.

1041	Natural	0.15m	A medium brownish-yellow clayey -sand with 60% inclusions of water-rounded stones up to 60mm by 50mm by 20mm.
1042	Building Foundation	Section 0.6m long by 0.3m wide. Bricks are 0.24m long by 70mm wide and 0.12m deep.	A small section of the wall of a building, probably the foundations. The bricks were a light whitish-yellow with 5% flecks of red and were crumbly. The bricks were bonded by a dark bluish-black mortar with 5% small white inclusions.
1043	Modern drain	0.62m square by 0.8m visible depth.	A modern brick-lined inspection drain with a metal rung set in the wall.
1044	Levelling layer	80mm deep	A loose dark yellowish-brown silty-sand with 60% gravel and small water rounded stones.
1045	Levelling layer	70mm deep	A firm dark blackish-grey silty-clay with 80% inclusions of gravel and small angular fragments of stones
1046	Levelling layer	50mm deep	A concreted dark brownish-red ash with 40% inclusions of gravel.
1047	Levelling layer	90mm deep	A layer of dark reddish-brown ash and dark bluish-grey silty-clay with 90% inclusions of gravel and small fragments of vitrified material.
1048	Hardcore	0.1m deep	A medium creamy-yellowish-brown firm silty-clay with 80% fragments of angular stone and pebbles.
1049	Natural	70mm excavated depth	Dark brownish-yellow silty-coarse sand that is loose with 70% inclusions of gravel and small water-rounded stones.
1050	Construction cut	0.2m wide by 1m long by 0.3m deep	The construction cut for the north wall.
1051	Backfill	0.4m deep	A dark purplish-brown silty-sand with 80% inclusions of small water-rounded stones.
1052	Backfill	1m deep	A mid yellowish-brown silty-clay with 40% inclusions of water-rounded pebbles.
1053	Hardcore	Approx 0.7m deep	Layer of hardcore, laid at end of first stage of ground reduction works to provide a hard standing for piling operations. Mid yellowish - brown, silty-sand, 80% gravel and small angular fragments of stone. Same as ***3028***.
1054	Concrete slab	0.13m deep	A medium bluish-grey slab of concrete.
1055	Levelling layer	0.3m	A mid greyish-blue silty-clay with inclusions of charcoal and burnt material.
1056	Sewage	0.18m deep by 0.28m wide.	A dark greyish-black silty deposit of sewage in pipe ***1057***.
1057	Pipe	0.28m diameter	A pipe in the west side if drain ***1030***.

1058	Terram	Area A	A layer of terram, laid over the standing remains of Northside Bridge following its demolition in 2009.
1059	Exterior wall of the west wing	Approx 14m long by 2m wide by 2.8m high.	The exterior wall of the west wing of the bridge.
1060	Landscaped bank	4m approx	Series of dump deposits, mainly of dark blackish-grey firm clayey-silt with 50% inclusions of building rubble including whole and part bricks.
2000	Topsoil	20mm deep by 2m wide by 25m long	Firm dark greyish-brown clay with 10% inclusions of gravel and small water-rounded pebbles.
2001	Levelling layer	Approx 1m depth exposed by 20m wide by 25m long	Loose dark blackish-grey sandy-silt with 80% inclusions of fragments of stone, brick and concrete.
3000	Topsoil	0.2m deep	A dark brownish firm clayey-silt with small water-rounded pebbles.
3001	Hard Standing	0.2m thick	Medium pinkish-brown sandy-silt with fragments of tarmac, small stones and fragments of concrete.
3002	Levelling layer	0.35m to 0.8m deep by 12m long	Rubble that comprised dark greyish-brown loose sandy-silt with 60% inclusions of fragments of red sandstone, concrete, brick and cobbles.
3003	Levelling layer	07m deep by 9m long	Dark blackish-grey firm clayey-silt with 10% inclusions of fragments of coal, mortar, vitrified waste, stone. Same as ***3004***.
3004	Levelling layer	0.6m deep by 2m long	Dark blackish-grey firm clayey-silt with 10% inclusions of fragments of coal, mortar, vitrified waste, stone. Same as ***3003***.
3005	Natural layer	0.2m deep	Light brownish-yellow firm clayey-silt with infrequent inclusions of gravel. Same as ***3006***
3006	Natural layer	0.35m deep	Light brownish-yellow firm clayey-silt with infrequent inclusions of gravel. Same as ***3005***.
3007	Natural layer	0.35m deep	Light bluish-grey firm, fine, sandy-clay with infrequent inclusions of small water-rounded pebbles. Same as ***3008***.
3008	Natural layer	0.35m deep	Light bluish-grey firm, fine, sandy-clay with infrequent inclusions of small water-rounded pebbles. Same as ***3007***.
3009	Natural deposit	2m deep	A coarse sand with 70% gravel and small to medium water-rounded stones, a deposit of shingle-type material.

3010	Foundation stones of east wing on north pier of bridge.	2.5m wide by 0.95m high and 5m long	Constructed of roughly-hewn blocks of red sandstone with a thin bonding of light pinkish - brown cement. Two courses high and two wide with rubble between the inner and outer faces.
3011	Construction cut	0.6m deep by 2.5m wide	Construction cut for ***3010***. Vertical sides and flat base. Cut into natural layers.
3012	Packing deposit	0.8m deep by 0.1m wide	Packing material between ***3010*** and ***3011***. Degraded red sandstone and firm dark yellowish-brown silty-clay.
3013	Packing deposit	0.85m deep by 0.2m wide	Dark reddish-greyish-brown loose coarse sandy-silt with 50% inclusions of red sandstone and slate fragments.
3014	Foundation stones of west wing on north pier of bridge.	Approx 1.0m high by 5.0m long	Constructed of roughly-hewn blocks of red sandstone with a thin bonding of light pinkish – brown cement. Only inner face exposed.
3015	River bank erosion barrier.	Approx 5.0m wide by 0.65m	Large quarried granite boulders deposited as an erosion barrier after demolition of bridge.
3016	Alluvial layer	0.6m deep	Dark-brownish-blue coarse sand with 80% pebbles and small water-rounded stones.
3017	Sedimentary deposit	0.1m to 0.35m deep	Medium bluish-grey, fine, silty-clay with 2% gravel in small pockets.
3018	Sedimentary deposit	0.3m to 1.2m deep	Dark bluish-grey, fine to coarse, silty-sandy clay with 50% inclusions of wood.
3019	Alluvial layer	0.15m deep	Light yellowish-grey silty-sand with 40% small gravel.
3020	Alluvial layer	0.15m deep	Dark reddish-brown coarse sand with 2% small gravel and up to 10% in pockets.
3021	Alluvial layer	0.26m deep	Dark orangey-brown coarse sand with 2% gravel.
3022	Alluvial layer	0.12m deep	Medium bluish-grey silty-coarse sand with 20% gravel.
3023	Alluvial layer	0.18m deep	Dark reddish-orangey-brown coarse sand with 50% gravel and small pebbles.
3024	Alluvial layer	0.14m deep	Medium orangey-brown coarse sand with 20% gravel and 5% small pebbles.
3025	Alluvial layer	0.4m deep	Light creamy-orangey-brown coarse sand with 90% gravel and small water-rounded stones.
3026	Alluvial layer	0.4m deep	Dark greenish-grey silty-coarse sand and gravel with small pebbles and water-rounded stones up to 0.25m by 0.1m by 0.1m.
3027	Dump deposit	0.3m to 1.75m	Dark brownish-grey silty-clay with 90% gravel and small to medium water-rounded and angular fragments of stone including part bricks.

3028	Levelling deposit	1.0m deep	Layer of hardcore, laid at end of first stage of ground reduction works to provide a hard standing for piling operations. Mid yellowish - brown, silty-sand, 80% gravel and small angular fragments of stone. Same as ***1053***.

APPENDIX 3: FINDS CATALOGUE

Context no	Object Record no	Material	Category	No	Description	Date
1023	1000	Glass	Vessel	2	Body fragments dark olive green bottle	Late nineteenth-century on
1023	1001	Ceramic	Tobacco pipe	1	Stem fragment	Late nineteenth-century on
1024	1002	Glass	Marble	8	Spherical glass marbles, seven small, one large	Late nineteenth-century on
1024	1003	Iron	Strip	4	Thin strip	Not closely dateable
1024	1003	Iron	Washer	1	Large flat washer.	Not closely dateable
1024	1004	Copper alloy	Earring?	1	Oval earring with large cabochon glass or stone gem	Late nineteenth century on
1024	1005	Ceramic	Marble	6	Six ceramic marbles	Late nineteenth century on
1024	1006	Plastic	Fragment	1	Fragment of large moulded object, brown	Twentieth century
1024	1007	Bone	Animal	1	Rib	Not closely dateable
1024	1008	Wood	Fragment	1	Fragment of thin lath	Not closely dateable
1025	1009	Rubber	Ball	1	Small spongy rubber ball	Twentieth century
1025	1010	Iron	Strip	3	Thin strip	Not closely dateable
1025	1010	Iron	Washer	1	Large flat washer	Not closely dateable
1025	1011	Wood	Peg	1	Large, roughly-made peg or trenail	Not closely dateable
1025	1012	Ceramic	Marble	1	Large ceramic marble	Late nineteenth century on
1025	1013	Glass	Vessel	3	Body fragments, colourless bottle	Twentieth century
1026	1017	Mollusc	Snail	1	One incomplete spire, H aspersa	Not closely dateable
1026	1018	Ceramic	Vessel	1	Body fragment, grey stoneware	Late nineteenth century on

1026	1018	Ceramic	Marble	2	Two ceramic marbles	Late nineteenth century on
1026	1019	Iron	Strip	5	Fragments of narrow strip	Not closely dateable
1026	1020	Glass	Vessel	1	Body fragment, colourless bottle	Twentieth century
1026	1020	Glass	Marble	1	Large opaque marble with red swirl	Twentieth century
1026	1021	Stone	Rod	2	Two cylindrical fragment of graphite	Not closely dateable
1041	1014	Bone	Animal	1	Butchered bone	Not closely dateable
1041	1015	Ceramic	Vessel	14	One small fragment black-glazed redware; one small fragment white-slipped redware; seven fragments plain white refined earthenware; three fragments underglaze transfer-printed refined white earthenware, one white earthenware plate with blue shell-edge; one small bowl rim with sponge decoration	Late nineteenth century on
1041	1016	Iron	Nail	1	Complete large nail	Not closely dateable