

An Archaeological Watching Brief on land to the south-west of Housesteads Roman Fort, Northumberland



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Executive Summary

In January 2015 Archaeological Research Services Ltd was commissioned by the National Trust to conduct an archaeological watching brief during repair work to a domestic water supply on land to the south-west of Housesteads Roman Fort in Northumberland. Housesteads Roman Fort is a Scheduled Ancient Monument and lies within a UNESCO World Heritage Site. The watching brief was carried out under Scheduled Monument Consent.

The watching brief monitored the excavation of eight exploratory trenches along the presumed route of an existing water pipe, together with the excavation of a longer length of trench along the route of the existing water pipe, once it had been located. The watching brief did not identify any archaeological features, however, a small assemblage of Roman pottery sherds was recovered from a sandy silt deposit at a depth of 0.76m below the surface in Trench 3. These sherds have been assessed and date to the second century AD. This is consistent with the known occupation of the fort and vicus.

1. INTRODUCTION

- 1.1. In January 2015 Archaeological Research Services Ltd (ARS Ltd) was commissioned by the National Trust to undertake an archaeological watching brief on works associated with repairs to the existing water supply to the museum and holiday cottages, taking place on land to the south-west of Housesteads Roman Fort in Northumberland. Housesteads Roman Fort and its surroundings form part of a Scheduled Ancient Monument (NHLE: 1018585) and are also classified as a UNESCO World Heritage Site, 'Frontiers of the Roman Empire (Hadrians Wall)'.
- 1.2. The National Trust produced an Impact Assessment and Project Design (see Appendix 3) for the proposed works and Scheduled Monument Consent was granted (Ref: S00097700). ARS Ltd agreed a Written Scheme of Investigation (Appendix 4) for the watching brief with Mike Collins, the English Heritage Inspector of Ancient Monuments: Hadrians Wall, in advance of site works.

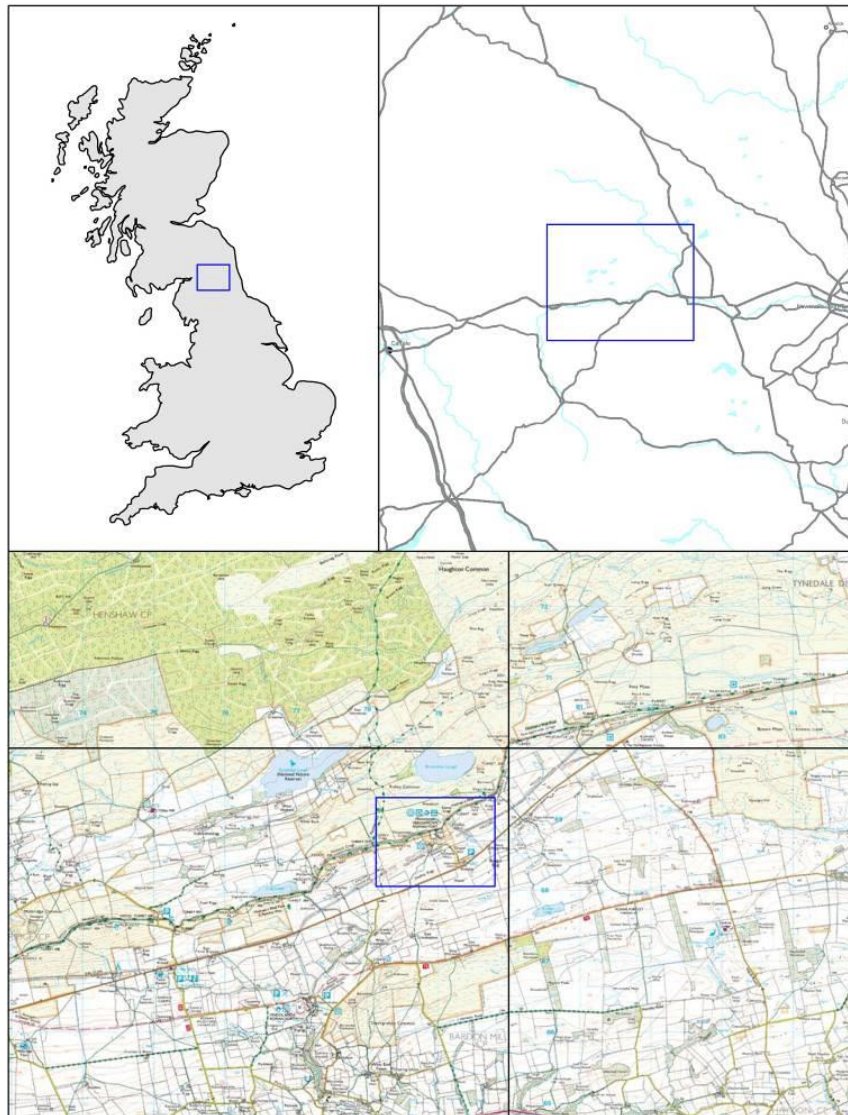


Figure 1: Site location (Ordnance Survey data copyright OS, reproduced by permission, Licence no. 100045420)

2. LOCATION AND GEOLOGY

- 2.1. The watching brief area was mainly located in the field to the west of the visitor centre, two trenches being located in the field immediately to west of that, and one trench being located in the field to the north of that (Figure 2). The watching brief area was centred on NGR: NY 79061 68500 (Figure 1).
- 2.2. The solid geology of the area consists of Alston formation limestone, sandstone, siltstone and mudstone. Overlying this are superficial deposits consisting of till (BGS 2015).

3. HISTORICAL AND ARCHAEOLOGICAL BACKGROUND

3.1. Prehistoric

- 3.1.1. The earliest feature within the landscape surrounding the Roman fort is a bowl barrow located to the south of the watching brief area. This is potentially Neolithic, Bronze Age or Roman in date. The barrow, constructed of earth, measures up to 28m in diameter and stands over 3m high.

3.2. Romano-British

- 3.2.1. Housesteads Roman fort includes extensive evidence for Roman activity. There are a substantial number of sites and findspots of Roman date within the area surrounding the study site due to the close proximity of the site to the fort. These include a lime kiln, a Mithraeum, a temple to the god Mars, cultivation terraces and quarries, as well as finds of Roman pottery, statues and inscribed tombstones. It is also possible that the bowl barrow mentioned above dates to the Roman period.
- 3.2.2. Housesteads is thought to have had three cemeteries although none of their precise locations are known. One is believed to be situated to the west of the fort while another is thought to be situated to either side of Chapel Hill where human remains and a number of tombstones have been discovered. These discoveries would indicate that the cemetery extended quite far towards the south, possibly as far as the development site.
- 3.2.3. The vicus, or civilian settlement, at Housesteads is thought to extend for approximately 200m south of the fort but it at least covers an area the same size as the fort itself. Over 20 buildings of the vicus have been excavated although only six now remain. Excavations have dated the settlement to the 3rd and 4th centuries AD.
- 3.2.4. It is beyond the scope of this report to replicate a full history of Roman occupation of Housesteads and the Hadrianic Frontier. For more detail see *Housesteads: A Fort and Garrison on Hadrian's Wall* (Crow 2004).

3.3. Medieval

- 3.3.1. There are a small number of medieval sites known in the vicinity of Housesteads. These include cultivation terraces, ridge and furrow and a possible farmstead. These sites indicate that the fort was used extensively for agricultural purposes after the fort had become disused.

3.4. Post-medieval- Modern

- 3.4.1. The majority of post-medieval sites in the wider landscape around Housesteads relate to agriculture and industry. A soil heap situated to the south-east of the fort represents the site of a 19th century drift mine while four small coal pits lie between the Mithraeum and the military road. A quarry also lies close to the military road. These quarries may have also been used during the Roman period when stone was needed for the wall, fort and vicus.
- 3.4.2. The Military Road was constructed in 1746, along the line of Hadrian's Wall, following a Jacobite rebellion when the road between Newcastle and Carlisle was in such a bad condition that it prevented General George Wade from moving his troops to stop Bonnie Prince Charlie's march from Scotland. The construction of the road was considered an urgent matter as the existing route was not sufficient enough to transfer troops. Some parts of the road are built on the foundations of Hadrian's Wall and much of the stone used to construct the road was salvaged from the wall itself (Woodside and Crow, 1999).
- 3.4.3. The existing water supply that forms the focus of repair work was installed most likely in the late 1970s, however, there is no recorded of archaeological works being undertaken during its installation.
- 3.4.4. A cultural heritage desk-based assessment (Cockburn and Scott 2012a) and archaeological evaluation (Cockburn and Scott 2012b) were undertaken by ARS Ltd in relation to a previous redevelopment of the car park and visitor centre at Housesteads Roman Fort. This evaluation did not encounter any remains of archaeological significance, although it was noted that the evaluation areas had been subject to previous landscaping activities associated with the construction of the existing car park and visitor centre and the construction of the Military Road.

4. AIMS AND OBJECTIVES

- 4.1. The purpose of the watching brief was to gain information about the archaeological resource, including its presence or absence, character, extent, date, integrity, state of preservation and quality, in order to facilitate the repair works with minimal impact upon the surviving archaeological remains. The watching brief also formulate an appropriate mitigation strategy to ensure appropriate recording, preservation or management of the archaeological resource. In particular:
- i) the presence or absence of archaeological features their quality, depth and preservation.
 - ii) an assessment of their significance and importance in line with NPPF (CLG 2012)
 - iii) the likely impact of the works upon any such features
 - iv) the appropriate mitigation of the development's impact upon those remains

5. METHODOLOGY

- 5.1. The watching brief monitored the excavation of eight exploratory trenches over the presumed location of an existing alkathene water pipe, followed by the excavation of a longer, c.43m, track over the known location of a cast iron water pipe in order to replace a leaking section of the alkathene. The exploratory trenches were intended to be dug over the location of the existing alkathene water pipe in order to pressure test the pipe in short sections to determine the location of leaks. The pipe location was traced by inserting test equipment into the pipe at its exposed southernmost extent, then tracing the route of the pipe using a jenny. In practice it was found that the signal jumped between the Alkathene pipe supplying the museum and holiday cottage and a cast iron pipe that takes water from the spring to the Hydrum pump. In places the cast iron pipe appeared to have been moled rather than trench-installed. This resulted in exploratory trenches being excavated into potentially undisturbed deposits which was not the intention of the works at the outset. The replacement pipe trench, Trench 9, followed the line of the cast iron pipe as it was easier to trace than the leaking alkathene pipe, the exact route of which could not be determined.
- 5.2. Excavations were initially undertaken by hand until it was agreed with Mike Collins, the English Heritage Inspector of Ancient Monuments: Hadrian's Wall, that excavations of short trenches could be undertaken with a 360° mini excavator fitted with a narrow, toothless bucket. The approximate locations of all trenches are shown on Figure 2 and their excavated dimensions are detailed in Table 1 below.

Trench No.	Length/m	Width/m	Depth/m
1	3.2	0.4	1.55
2	1.08	0.5	0.41
3	1.09	0.64	1.04
4	2.16	0.35	0.77
5	5	0.35	0.4 at north end, 1.08 at south end
6	9.1 – T-shaped	0.35	0.8 at east end, 0.6 at west end, 0.9m at north end
7	2	0.35	1.2
8	2	0.35	1.02
9	43	0.35	0.55

Table 1: The excavated dimension of trenches monitored as part of the watching brief

- 5.2. The deposits were recorded according to the normal principles of stratigraphic excavation. Each context was recorded on pro-forma records which included the following: character and contextual relationships; detailed description (dimensions and shape; soil components, colour, texture and consistency); interpretation and phasing as well as cross-references to the drawn, photographic and finds registers.
- 5.3. Where archaeological features were identified, a trench plan and one long section were produced at an appropriate scale, i.e. 1:10 or 1:20. A photographic record was maintained including photographs of each trench and excavation area. All images were taken in colour digital and 35mm b&w print film format, and contain a graduated photographic scale.

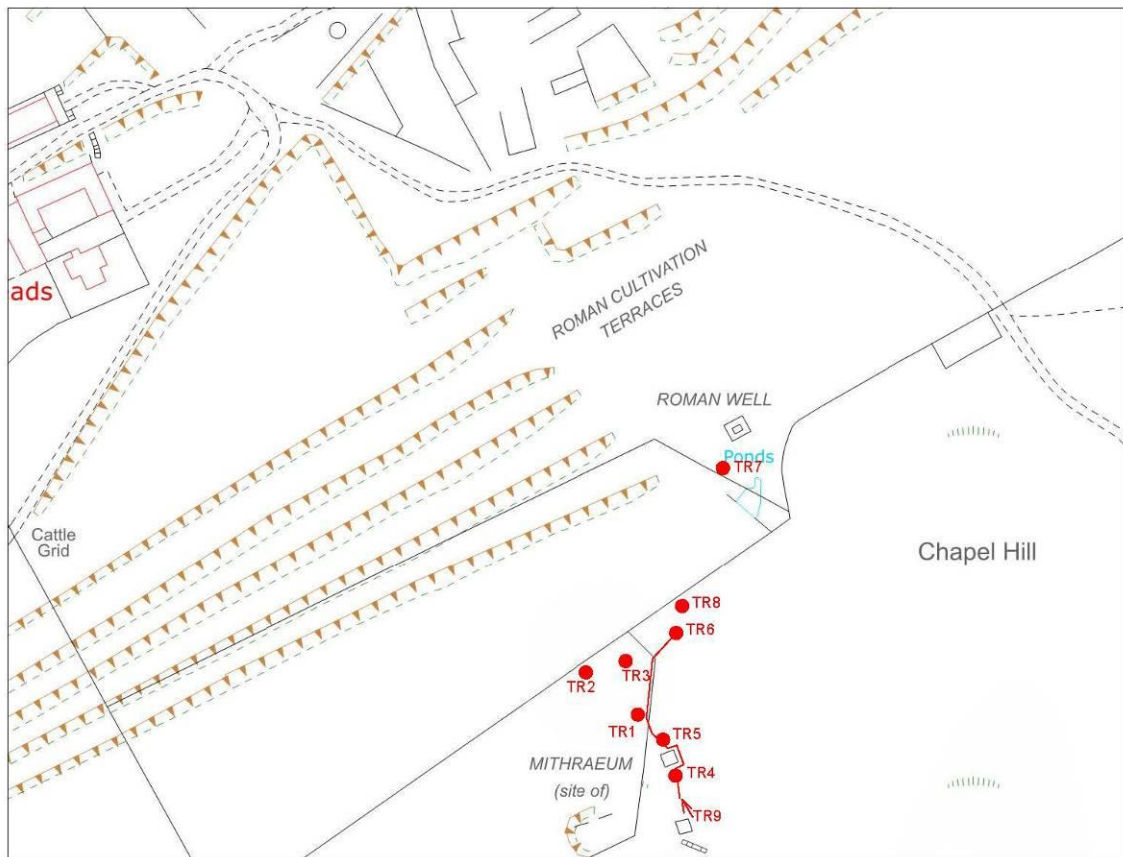


Figure 2: Approximate Trench Location Plan.

6. WATCHING BRIEF RESULTS (FIGURES 3-14, APPENDIX 1)

- 6.1. The watching brief did not identify any archaeological features within the excavated areas.
- 6.2. All exploratory trenches were dug through turf and topsoil (101-901) that varied in depth from 0.08m to 0.15m. This revealed a dark brown silty clay subsoil across all trenches which varied in depth from 0.15m to 1.05m (102-902). The areas where this deposit was deepest were Trench 7, located in the northern field, and Trench 8, located at the north end of the western field. In these trenches context (702 and 802) had depths on 1.05m and 0.73m respectively. It is likely that in this area the deposit represents hill wash sediment accumulation at the base of the slope. In Trench 7 this deposit continued beyond the limit of excavation. In other trenches deposits (102-602 + 902) ranged in depth from 0.15m to 0.32m.
- 6.3. In Trenches 1-6 and 9 the dark brown silty clay subsoil (102-602 and 902) was removed to reveal a mottled deposit of degraded limestone, sandstone and sand (103-603 and 903) that varied in depth from 0.32m in Trench 4 to 0.65m in Trench 1. This deposit continued beyond the limit of excavation in Trenches 2, 4 and 9. This deposit was not encountered within Trenches 7 and 8.
- 6.4. In Trenches 1,3 and 5, the mottled deposit of degraded limestone, sandstone and sand (103, 303 and 503) was removed to reveal a cleaner deposit of degraded sandstone boulders and sand (104, 304 and 504). In Trenches 1 and 5 this deposit

continued beyond the limit of excavation, whilst in Trench 3 it had a depth of 0.09m. This deposit was not present in Trench 6 where the mottled deposit of degraded limestone, sandstone and sand (603) was removed to reveal a mottled yellow silty sand (604) which continued beyond the limit of excavation.

- 6.5 In Trench 3 the sandstone boulders and sand (304) were removed to reveal a mid-grey sandy silt deposit which contained sherds of Roman pottery (see Section 7) (305). This deposit was excavated for a depth of 0.28m and continued beyond the limits of excavation. A similar deposit of mid-grey sandy sand (803) was also encountered in Trench 8, beneath the potential hill wash deposit of dark brown silty clay (802). In Trench 8 the sandy silt (803) was excavated for a depth of 0.21m, however, no pottery sherds were recovered from this trench.
- 6.6 The alkathene pipe was found within Trenches 4, 5, 6 and 9, whilst the cast iron pipe was found in Trenches 3, 6 and 7. Trenches 1, 2 and 8 did not locate either pipe at the excavated depth.

7. SPECIALIST ASSESSMENT

Roman Pottery – Alex Croom

- 7.1 Context (305) produced four sherds of samian and three sherds of coarse wares.
- 7.2 **Samian**
1. Rim sherd, form 37, Central Gaulish (possibly Les Martres-de-Veyre). Decorated. Hadrianic-early Antonine.
 2. Incomplete rim sherd, form 30, Central Gaulish.
 3. Body sherd, form 37 decorated, but much of exterior surface lost. Central Gaulish.
 4. Scrap. Central Gaulish.
- 7.3 **Coarse ware**
- 5-6. Two joining rim sherds from an everted rim cooking pot (cf Dore 2009, JA78), dating to the second century. Mid-grey fabric with darker surfaces, burnished on the exterior. There are some quartz inclusions and ill-sorted, well-rounded soft black inclusions up to 1mm across (Dore 2009, 523, fabric 1). Sooted under rim and on shoulder.
 7. Base sherd from a cooking pot in South East Dorset black burnished ware fabric 1.

8. DISCUSSION

- 8.1 No archaeological features were identified during the course of the watching brief, however, in Trenches 3 and 8 a mid-grey sandy silt deposit was encountered which in Trench 3 contained sherds of Roman Pottery dating to the 2nd century AD. This dating is consistent with the known occupation of the fort and *vicus*.

9. PUBLICITY, CONFIDENTIALITY AND COPYRIGHT

- 9.1. Any publicity will be handled by the client.

- 9.2. Archaeological Research Services Ltd will retain the copyright of all documentary and photographic material under the Copyright, Designs and Patent Act (1988).

10. STATEMENT OF INDEMNITY

- 10.1. All statements and opinions contained within this report arising from the works undertaken are offered in good faith and compiled according to professional standards. No responsibility can be accepted by the author/s of the report for any errors of fact or opinion resulting from data supplied by any third party, or for loss or other consequence arising from decisions or actions made upon the basis of facts or opinions expressed in any such report(s), howsoever such facts and opinions may have been derived.

11. ACKNOWLEDGEMENTS

- 11.1. Archaeological Research Services Ltd would like to thank all those involved with this work, in particular Mark Newman from the National Trust and Andrew Poad and Mike Collins from English Heritage.

12. REFERENCES

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APPENDIX 1 – FIGURES



Figure 3: Trench 1 looking north-east (scale =1m).



Figure 4: Trench 2 looking south-west (scale = 1m).



Figure 5: Trench 3 looking south-east (scale =1m).



Figure 6: Trench 4 looking north-east (scale = 1m).



Figure 7: Trench 5 looking east (scale = 1m).



Figure 8: Trench 6 looking north-east (scale = 1m).



Figure 9: Trench 6 extension northwards looking south-east (scale = 1m).



Figure 10: Trench 7 looking north-west (scale = 1m).



Figure 11: Trench 8 extension looking south-west (scale =1m).



Figure 12: Trench 9 running from Trench 6, looking south-west (scale = 1m).



Figure 13: Trench 9 looking south (scale =1m).



Figure 14: Trench 9 running around the east side of the existing man-hole, looking north-east (scale = 1m).



Figure 15: Sherds of Coarse ware pottery. Scale = 10cm.



Figure 16: Sherds of Samian pottery.

APPENDIX 2 – CONTEXT REGISTER

Context No.	Description
101, 201, 302, 401, 501, 601, 701, 801, 901	Turf and topsoil
102, 202, 302, 402, 502, 602, 702, 802, 902	Dark brown silty clay
103, 203, 303, 403, 503, 603, 903	Degraded limestone, sandstone and sand
104, 304, 504	Sandstone boulders and sand
305, 803	Mid grey sandy silt
604	Mottled yellow silty sand
404, 606, 703	Cast iron water pipe
405, 505, 605, 904	Alkathene water pipe

APPENDIX 3 – IMPACT ASSESSMENT AND WORKS DESIGN

RCSILT

Archaeology Yorkshire & the North-East Region

Application for Scheduled Ancient Monument Consent, repair of water supply to Housesteads Farm.

Impact Assessment and Works Design

Mark Newman 10th November 2014

Introduction

Housesteads Roman Fort is one of the premier components of Hadrian's Wall, part of the Roman Frontiers World Heritage Site. The fort itself sits on a high Winn Sill ridge, and is approached either from either side along the Wall National Trail, or from the south via the site visitor centre and a linking footpath. This footpath winds through the hinterland of the fort, populated with the remains of an associated civilian settlement, or *vicus*, and a range of supposed military, industrial and ceremonial zones. The latter include at least three cemeteries. The intimate geography of these zones is only incompletely understood.

The wall corridor is designated as a Scheduled Monument, as well as being inscribed as a World Heritage Site. The Scheduling extends up to the walls of the visitor centre, and indeed beneath the building.

The planned works are intended to take place on the slopes to the south of the fort, including crossing the "temple zone" to the south-east.

Archaeological Background

There is a long history of archaeological investigation of the Housesteads hinterland. However, in terms of the specific sites under consideration, detailed investigation is more limited, beyond surface features recording conducted mainly by English Heritage. There is also reported cause to suspect that remains of the *vicus* may survive (or have survived) close to the farm beyond the scope of the surface visible earthworks.

It is believed that the present plastic water pipe was installed in the later 1970s. This conveys water from a hydram (repairs to the inflow of which are believed to have been conducted in 1976) up to Housesteads Farm and the museum buildings beyond it, over a course of around 300m. There is no record of any archaeological observations having been made at the time the existing pipe was laid. Nor, unfortunately, was there any record made of its course. The trench as

reinstated well and is no evident on the surface today. There is a historic breach across earthworks running more aligned with the contours of the site, which would have made a good choice, but there is no direct evidence to record that this was done.

Reasons for this application

The domestic water supply to the museum complex and what is now a highly popular holiday cottage recently failed. Temporary repairs have restored an emergency supply via a surface pipe, but this will soon be vulnerable to freezing. This makes it imperative to restore the underground supply. The supply is believed to have failed due to a leak or leaks. Expert advice is that these are most likely to have occurred at the metal junctions between sections of plastic pipe, occurring at roughly 50m intervals.

It is possible, and is proposed, to use a testing device to locate the junctions and/or leaks. This can be inserted into the pipe from its exposed southern end and can a) pressure test sections of pipe and b) run an electrical charge into the metal joint to make it detectable using a CAT services detector.

This application seeks

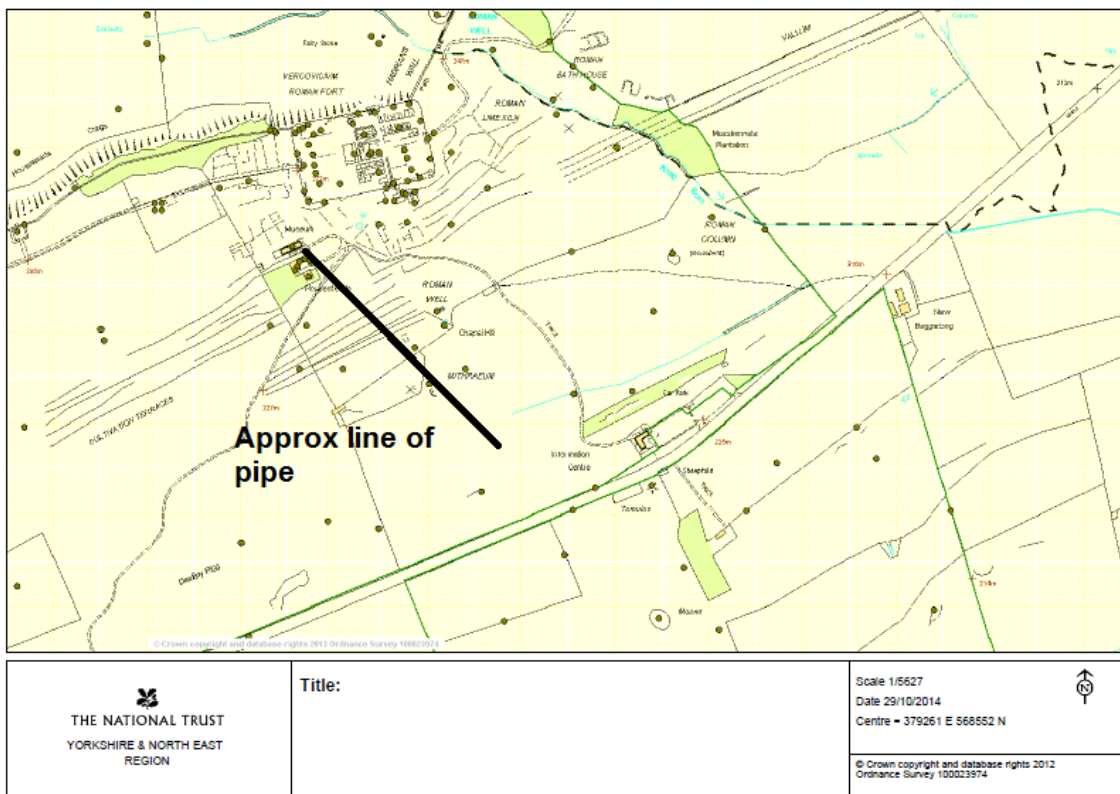
- a) Consent to carry out the leak detection and repair works (as detailed below)
- b) Consent to operate the CAT detector within the Scheduled Area (by separate grant of a Section 42 licence if deemed necessary)
- c) That consent be granted, subject to the agreement of the English Heritage Inspector for the site, for carrying out similar works to this water supply by the same techniques in future.

There remains a question as to whether this water main provides an appropriate and satisfactory water supply for current needs, or whether alternative sources need to be explored. This application for consent does not seek to address those issues, which will need considerable further planning and consultation, but the immediate needs to maintain a domestic water supply critical to the operation of the site.

Working Method

The main runs for approximate 300m roughly in the vicinity of the route shown on the map below. The testing equipment would be inserted into the exposed southern end of the pipe until the first joint is located. This will be located using a CAT scanner and then as small a hole as possible (up to 50cm square) will be excavated to expose the joint and check for leaks. If none is found work will progress to the next joint and so on. If fault is found the joint will be replaced.

If a failed section of pipe is located, the leak will be exposed and a replacement section of pipe installed. Excavation will again be by hand, carefully following the existing pipe.



Impacts

The impacts of these proposals are considered against the areas of heritage value discussed in the EH conservation principles (2008)

Evidential

Naturally, given the nature of the site, there is considerable potential for Evidential value in the areas affected. That said, none is currently directly proven, and the pipe route will have been disturbed at least once previously when the pipe was installed. The current work will only affect this previously disturbed ground. The route does, though, unavoidably cross a number of significant surface earthworks and other areas of considerable archaeological potential

The amount of ground disturbance anticipated is limited, and has been designed to be so.

Historical – Illustrative/Associative

The Historical values of the site are high. There is an obvious association, by proximity and location, to the operation of Hadrian’s Wall as a military system and the life of its associated vicus. That said, there has been enormous landscape change here since the Roman period, not least since the acquisition of the site by John Clayton. Indeed the landscape today owes more to his nineteenth century interventions than any other period.

The proposed works should not leave any long term evidence in the landscape, therefore, are not thought to impact on the Historical values of the site.

Aesthetic

There is, effectively, a designed aesthetic present on the site, represented by John Clayton's organisation of the landscape, including the construction of Housesteads Farm. However, these works will not impinge on this apart from maintaining the financial resource that supports their maintenance.

There should be no fortuitous aesthetic impact as the works involved will be temporary.

Communal values

There are no known commemorative values or other such significances associated with the site by the local (or wider) community, except perhaps for some low level perception of religious significance to the "temple zone". This should be no more than temporarily and very slightly affected by the planned works.

Archaeological Mitigation

The archaeological impact and therefore mitigation that can be offered for this proposal is limited. It is proposed that the excavation works be conducted under archaeological supervision and the results recorded. This Impact assessment will form the core of a project brief for commissioning archaeological contractors, and a resulting project design will be subject to the approval of the English Heritage Inspector for the site. Records can then be attached to the National Trust's HBSMR, the Northumberland National Park HER and EH records.

APPENDIX 4 – WRITTEN SCHEME OF INVESTIGATION

Water Supply to Housesteads Farm, Northumberland

Written Scheme of Investigation for Archaeological Watching Brief



1. Introduction

- 1.1. This scheme of works relates to leak identification works and leak repair works to an existing water supply to the museum and holiday cottage at Housesteads Farm, Northumberland, a part of the wider Scheduled Monument 'Housesteads fort, section of Wall and vallum between the field boundary west of milecastle 36 and the field boundary west of turret 37a in wall miles 36 and 37 (NHLE: 1018585)' and World Heritage Site 'Frontiers of the Roman Empire (Hadrian's Wall)'. The proposals involve the use of leak detection equipment to investigate possible leaks at the metal junctions of sections of existing pipework and the repair of any leaks thus identified. a series of minor alterations to the existing building and an addition to the current car park. Although the excavations will largely take place within previously disturbed contexts, the archaeological sensitivity of the site dictates that the proposed works have the potential to impact on significant remains associated with the SAM.
- 1.2. The National Trust produced an Impact Assessment and Project Design for the proposed repair works (see Appendix 1) and Scheduled Monument Consent has been obtained (Ref: S00097700). Archaeological Research Services Ltd (ARS Ltd) has been approached by The National Trust to undertake a watching brief on all excavation works associated with the proposed works.
- 1.3. This document is a written scheme of investigation (WSI) confirming the nature of the archaeological works to be undertaken by ARS Ltd at the Housesteads Roman Fort approval by Mike Collins, English Heritage.

2. Archaeological Background:

- 2.1 Housesteads Roman fort and vicus is a Scheduled Ancient Monument and part of a World Heritage Site, and it includes extensive evidence for Roman activity. There are a substantial number of sites and findspots of Roman date within the area surrounding the study site due to the close proximity of the site to the fort. These include a lime kiln, a Mithraeum, a temple to the god Mars, cultivation terraces and quarries, as well as finds of Roman pottery, statues and inscribed tombstones. It is also possible that the bowl barrow mentioned above dates to the Roman period.
- 2.2 Housesteads is thought to have had three cemeteries although none of their precise locations are known. One is believed to be situated to the west of the fort while another is thought to be situated to either side of Chapel Hill where human remains and a number of tombstones have been discovered. These discoveries would indicate that the cemetery extended quite far south, possibly as far as the development site.
- 2.3 The vicus, or civilian settlement, at Housesteads is thought to extend for approximately 200m south of the fort but it at least covers an area the same size as the fort itself. Over 20

buildings of the vicus have been excavated although only six now remain. Excavations have dated the settlement to the 3rd and 4th centuries AD.

- 2.4 It is beyond the scope of this WSI to replicate a full history of Roman occupation of Housesteads and the Hadrianic Frontier. For more detail see *Housesteads: A Fort and Garrison on Hadrian's Wall* (Crow 2004).
- 2.5 The existing water supply that forms the focus of this investigation was installed most likely in the late 1970s, however, there is no record of archaeological works being undertaken during its installation.

3. Objectives

- 3.1. The purpose of the work is to gain information about the archaeological resource, including its presence or absence, character, extent, date, integrity, state of preservation and quality, in order to facilitate the repair works with minimal impact upon the surviving archaeological remains. The watching brief will also formulate an appropriate mitigation strategy to ensure appropriate recording, preservation or management of the archaeological resource. In particular:
 - v) the presence or absence of archaeological features their quality, depth and preservation.
 - vi) an assessment of their significance and importance in line with NPPF (CLG 2012)
 - vii) the likely impact of the works upon any such features
 - viii) the appropriate mitigation of the development's impact upon those remains
- 3.2. The research aims for any further work required following the watching brief will be developed in an additional WSI.
- 3.3. If significant archaeological remains are identified during the watching brief that require further examination, a site meeting will be arranged with the National Trust, Mike Collins of English Heritage and ARS Ltd in order to agree the requirement and timetable for further works.
- 3.4. Any changes to the agreed WSI will be discussed with, and agreed with Mike Collins, English Heritage, Inspector of Ancient Monuments: Hadrian's Wall, before implementation.

4. Fieldwork Methodology

- 4.1. The proposal involves the insertion of testing equipment into the existing pipe at its southernmost extent until the first joint is encountered. This will be located using a CAT scanner and then as small a hole as possible (up to 0.5m square) will be dug by hand in order to expose the joint and check for leaks. If none is found work will continue to the next joint and so on. If a fault is found the joint will be replaced. If a failed section of pipe is found, the leak will be exposed and a replacement section of pipe installed.
- 4.2. All excavations will proceed by hand carefully following the line of the existing pipe; its rough location is shown in Figure 1. Excavations for repair and replacement will not penetrate intact Roman archaeological material.
- 4.3. All archaeological fieldwork, recording of archaeological features and deposits and post-excavation analysis will be carried out to acceptable standards as set out in the Chartered Institute for Archaeologists' *Code of Practice* (2000) and *Standard and Guidance for Archaeological Watching Briefs* (2008).

4.4. *Watching brief Methodology*

- 4.5. The trenches will be hand dug under the direct and continuous management and direction of a suitably qualified member of staff from ARS Ltd. Any archaeological deposits encountered will be investigated by hand by a suitably qualified member of staff from ARS Ltd. All operatives will be fully apprised of the archaeological potential of the area. The trench will be dug to the first archaeological horizon in successive level spits or to a level where it is possible to assess the presence or absence of archaeological features.
- 4.6. All those involved in the ground works will be informed that the land is designated as a Scheduled Monument under the Ancient Monuments and Archaeological Areas Act 1979 (as amended). They will also be informed of the extent of the Scheduled Monument and the implications of the designation which mean that Scheduled Monument Consent must be obtained from the Secretary of State prior to works being undertaken.
- 4.7. Following the excavation, recording and monitoring all trenches will be backfilled using excavated material.
- 4.8. The trenches will be cleaned by hand sufficiently to allow the identification and planning of archaeological features. Where archaeological features appear to be absent, sufficient work will be done to demonstrate this. Each trench will be planned at an appropriate scale; 1:20 where complex deposits are present or 1:50 in areas of lesser complexity (to be omitted if the trench is completely blank). One representative long section of each trench will be produced, at an appropriate scale, if necessary. Sections and profiles of each feature sampled will be drawn at 1:10 or 1:20, depending on the size of the feature. Spot levels relative to ordnance datum in metres will be taken as appropriate.
- 4.9. Identified archaeological features will be sufficiently sampled by manual excavation to allow their date, nature and degree of survival to be ascertained. All features thus investigated will be recorded in plan and section and all finds recovered retained for analysis.
- 4.10. If brick structures are encountered, the record should include details of brick dimensions and type (handmade/machine-made, plain/frogged), mortar (colour, composition, hardness) and the extent of structures (number of courses, thickness in skins).
- 4.11. All identified archaeological features will be accurately fixed using an EDM/Total Station, surveying in either the planning baselines or the features themselves.
- 4.12. The site archive will include plans and sections at an appropriate scale, a photographic record, and full stratigraphic records on recording forms/context sheets. Each context will be recorded on pro-forma records which will include the following: character and contextual relationships; detailed description (dimensions and shape; soil components, colour, texture and consistency); associated finds; interpretation and phasing as well as cross-references to the drawn, photographic and finds registers. Each context will be recorded on an individual record.
- 4.13. A photographic record will be maintained including photographs of all significant features and overall photographs of each area or trench. All images will be taken in black and white print, and digital format, and will contain a graduated photographic scale. The main photographic archive will comprise 35mm b/w print film, supplemented by digital SLR (minimum 12 megapixels).
- 4.14. All stratified finds will be collected by context or, where appropriate, individually recorded in 3 dimensions. Unstratified finds, which are likely to be of singular importance in this context, will be collected where they contribute significantly to the project objectives or are of

particular intrinsic interest. All pottery of Nineteenth century or earlier will be retained, whether stratified or un-stratified. Finds will be submitted for specialist assessment as to their potential and significance for further analysis and study to the following organisations/persons (depending on their availability)

- Prehistoric Pottery – Clive Waddington, ARS Ltd
- Worked lithic materials – Clive Waddington, ARS Ltd
- Roman ceramics – Ruth Leary
- Post-roman and medieval ceramics – Chris Cumberpatch
- Animal and Human Bone – Milena Grzybowska, ARS Ltd
- Metal and other artefacts – Mike Wood
- Environmental Analysis – Elise McLellan, ARS Ltd

- 4.15. Deposits that have the potential for providing environmental or dating evidence will be assessed while the work is in progress. Every archaeological context with potential for organic remains will be sampled. A bulk sample of at least 40 litres will be taken from each feature unless the context contains less than this. Initially only 10 litres from each context will be assessed so that those deposits that are worth further analysis can be identified and those that are not discarded. Pit features will be initially sampled and floated through graduated sieves. If the context has the potential to contain organic residues then further sampling will take place as appropriate. So, for example, a medieval pit with evidence for cereal production will be 100% sampled, given the rarity of such features. The sampling of contexts such as linear ditch fills will target the primary ditch silts as these have the potential to inform on the contemporary farming landscape at the time the ditch was initially cut and in use, but given the taphonomic problems associated with secondary ditch fills and their potential for intrusive and residual material, these will not be assessed in the same level of detail. However, samples will be taken where, for example, they may inform about the re-use or change in use of a feature.
- 4.16. The field method will include putting 100% of all samples through a 10mm mesh and then collecting the residue (this will remove the larger pebbles in the gravel as well as maximise finds recovery of lithics and pottery). However, where there is a possibility of human or animal remains being present, including cremated human remains, the whole sample will be floated. Of the remaining material 10 litres (or all of the material if it is less) will then be floated and the flots and residues collected. These will be collected in graduated brass sieves with the smallest having a minimum mesh size of 300 microns.
- 4.17. Once the deposits have been assessed those that show good potential for further results will be floated in full. This strategy will ensure that all deposits with potential for containing palaeoenvironmental residues (such as botanical macrofossils, animal bone and invertebrates) are assessed while at the same time ensuring that excessive time is not wasted on sterile deposits that will add nothing to furthering understanding. Furthermore, it will mean that any further work can be targeted specifically to those deposits that have demonstrable potential.
- 4.18. Samples for Pollen Analysis will be taken from any archaeological contexts that are suitable for providing an accurate indication of past environmental conditions and/or land use in the vicinity of the site. However, due to the taphonomic issues surrounding pollen samples a decision on whether to take samples will be taken on a feature by feature basis. For example, primary ditch silts, buried land surfaces and intact floor surface deposits would be considered suitable contexts to sample whilst secondary ditch deposits affected by bioturbation or root action that will have mixed pollen from different horizons would not. Secondary ditch fills will be sampled where there is the chance that they could inform about the re-use or change in use of a feature. If waterlogged deposits are identified, for example in deep cut features, separate samples for analysis will be taken for invertebrates, vegetative

plant remains *etc.*

- 4.19. Samples will be assessed by a suitable specialist with provision for further analysis as required. Specialist advice on the collection of industrial residues will be sought and their strategies implemented. The advice of the English Heritage Scientific Adviser will be followed in relation to the collection of palaeoenvironmental evidence.
- 4.20. All retained finds and palaeoenvironmental samples will be treated in accordance with the English Heritage guidance document *A Strategy for care and investigation of find (1995)* and the UKIC's document *Guidelines for the preparation of excavation archives for long term storage*.
- 4.21. Provision will be made for additional specialist advice, e.g. for finds analysis and conservation.
- 4.22. Finds of "treasure" will be reported to the Coroner in accordance with the Treasure Act procedures.
- 4.23. If grave cuts are discovered on site, then they will be sampled through hand excavation to determine the presence/absence, depth and preservation of the uppermost burials, with every effort made to maintain the burials in-situ. If excavation of human remains is deemed essential through consultation with NNPA and NT, a license will be obtained from the Ministry of Justice and work will be carried out under appropriate environmental health regulations and, if appropriate, in compliance with the Disused Burial Grounds (Amendments) Act 1981.
- 4.24. Disarticulated human bone will be quantified and characterised prior to reinterment on site.
- 4.25. The record of the extent and vulnerability of features will be sufficiently detailed to facilitate discussions regarding the need for preservation beneath any future potential development, or any other mitigation measures including further excavation or recording.
- 4.26. A risk assessment will be undertaken before commencement of the work and health and safety regulations will be adhered to at all times.
- 4.26. Equipment and machinery shall not be used or operated in the scheduled area on conditions or in a manner likely to result in ground disturbance other than that which is expressly authorised under the Scheduled Monument Consent.

5. Monitoring Arrangements

- 5.1. The watching brief programme will be ultimately dictated by the nature of the client's work, but is anticipated to take approximately 1-2 days. Should complex archaeological features be discovered, requiring detailed recording, a contingency may be required. The allocation of this contingency will be agreed with the client and English Heritage. Consultation between the client, English Heritage and ARS Ltd will be required at the end of the archaeological watching brief to ensure that all the below ground archaeology has been adequately recorded.
- 5.2. ARS Ltd will liaise with Mike Collins of English Heritage at regular intervals throughout the course of the work and will provide reasonable notice of the commencement of site works:

Mike Collins
Inspector of Ancient Monuments: Hadrian's Wall
English Heritage North East Region
Bessie Surtees House
41-44 Sandhill
Newcastle upon Tyne
NE1 3JF

Direct Dial: 0191 2691212

6. Report

6.1 Following completion of the evaluation ARS Ltd will produce a report which will include:

- Non-technical summary
- Introductory statement
- Aims and purpose of the project
- Methodology
- A location plan showing all excavated areas and any archaeological features with respect to nearby fixed structures and roads
- Illustrations of all archaeological features with appropriately scaled hachured plans and sections.
- An objective summary statement of results
- Conclusions
- Supporting data – tabulated or in appendices
- Index to archive and details of archive location
- References
- Statement of intent regarding publication
- Confirmation of archive transfer arrangements
- A copy of the approved WSI
- A copy of the OASIS number

6.2 Within the report:

- All plans will be clearly related to the national grid.
- All levels will be quoted relative to ordnance datum.

6.3 If significant archaeological remains are identified the report will include

- Detailed description and plans (at 1:50 scale) of any areas which provided significant archaeological information, all feature plans and sections (at 1:10 or 1:20 scale), select artefact illustrations, photographs and an overall site plan showing all recorded archaeological features.
- Finds quantification and assessment.
- Assessment of any palaeo-environmental samples taken.
- A summary of the extent, depth and state of preservation of archaeological deposits across the site.

6.4 Copies of the final report will be deposited with Mike Collins of English Heritage, the Northumberland National Park Authority HER and the Northumberland County Council HER, within 3 months of the completion of the works, unless otherwise agreed.

7 Archive Deposition

7.1 A digital, paper and artefactual archive, which will consist of all primary written documents, plans, sections, photographs and electronic data will be submitted to the a suitable repository museum, in a format agreed in discussion with Northumberland National Park Authority.

- 7.2 All artefacts and associated material will be cleaned, recorded, properly stored and deposited in the archive (see above).
- 7.3 If they are forthcoming as a result of the work, a full set of annotated, illustrative pictures of the site, excavation, features, layers and selected artefacts will be supplied to the HER and deposited with the archive as digital images on a CD ROM.
- 7.4 English Heritage will be notified on completion of fieldwork, with a timetable for reporting and archive deposition.
- 7.5 Written confirmation of the archive transfer arrangements, including a date (confirmed or projected) for the transfer, will be included as part of the final report.
- 7.6 An OASIS online record <http://ads.ahds.ac.uk/project/oasis/> will be initiated and the watching brief data will be added to this record. Key fields will be completed on Details, Location and Creators forms. All parts of the OASIS online form will be completed for submission to the HER. This will include an uploaded .pdf version of the entire report (a paper copy will also be included within the archive).
- 7.7 English Heritage will be notified of the final deposition of the archive.
- 7.8 Publication of the results, in summary form, will be included in *Archaeology in Northumberland* and, depending on the results, in *Archaeologia Aeliana* or a relevant specialist journal.

8 Changes to Methodology or Work Programme

- 8.1 Changes to the approved methodology or programme of works will only be made with the prior written approval of the clients and English Heritage.

9 Publication

- 9.1 In the event of significant remains being encountered and excavated, there will be the need for a more formal publication than in the summary form. In this instance a suitable programme and timetable for publication and dissemination will be discussed and agreed upon by all stakeholders.

10 References

Department for Communities and Local Government (CLG). 2012. *National Planning Policy Framework*. London, The Stationery Office.

English Heritage, 1995. *A strategy for the care and investigation of finds*, English Heritage.

Chartered Institute for Archaeologists. revised 2010a. *Code of Conduct*. Reading, Institute for Archaeologists

Chartered Institute for Archaeologists (IfA). 2008. *Standard and Guidance for an Archaeological Watching Briefs*. Reading, Institute for Archaeologists.

Museum of London Archaeological Services (MoLAS). 2002. *Site Manual*. London, Museum of

London.

Figure 1: Site Location Plan

