

**South Newsham Road, Blyth,
Northumberland**

**A Geophysical Survey and Archaeological
Evaluation**



Trench 4, looking east

ARS Ltd Report No. 2013/27

March 2013

OASIS No.: archaeo15-146024

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South Newsham Road, Blyth, Northumberland
A Geophysical Survey and Archaeological Evaluation

ARS Ltd Report 2013/27

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Executive Summary

In March 2013 Archaeological Research Services Ltd. was commissioned by GVA to undertake an archaeological evaluation on land adjacent to South Newsam Road, Blyth, Northumberland, prior to development. The proposed development involves the construction of new dwellings on land which has previously been used as arable farmland.

The evaluation was carried out in order to provide sufficient information to properly assess the archaeological impact of this application in line with policy HE6 of PPS5 (now superseded by the NPPF). The evaluation was specifically designed to evaluate features identified on a geophysical survey carried out prior to the evaluation. Trenches were placed to examine possible anomalies detected during that survey.

The archaeological evaluation noted the presence of north-south aligned broad furrows of probable medieval date, but did not record any further archaeological remains, either through the geophysical survey or through the evaluation trenching. Possible archaeological features noted in the geophysical survey were targeted during the evaluation; however no corresponding archaeological features were recorded.

1. INTRODUCTION

1.1. In March 2013 Archaeological Research Services Ltd. (ARS Ltd.) was commissioned by GVA to undertake a geophysical survey and archaeological evaluation on land adjacent to South Newsham Road, Blyth, Northumberland. The evaluation was carried out in the pre-determination phase for the construction of new dwellings within a field that had previously been under cultivation. The client has been recommended by Northumberland County Council Development Management Team, on behalf of Northumberland Conservation, that archaeological evaluation and an appraisal of relevant Historic Environment Record information be carried out before the application is determined.

1.2. The evaluation was carried out in order to provide sufficient information to properly assess the archaeological impact of this application in line with Paragraph 126 of the National Planning Policy Framework. The evaluation is specifically designed to evaluate anomalies detected during the geophysical survey. The results of the evaluation will enable an informed decision to be made on the planning application.

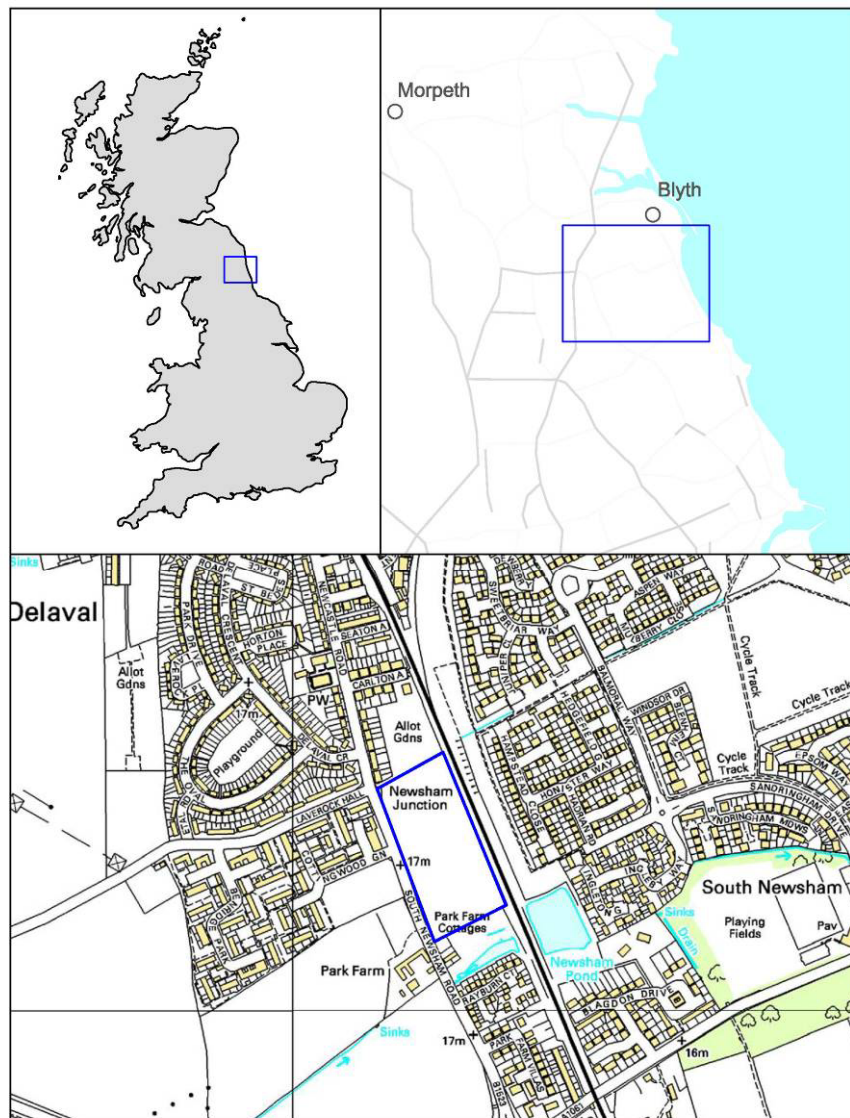


Figure 1: Location map of the development site. Ordnance Survey data copyright OS, reproduced by permission, Licence no. 100045420

2. LOCATION AND GEOLOGY

2.1. The site is situated in Newsham, Blyth, and is centred at NZ 30300 79250. It sits on the coastal plain approximately 2.0 km southwest of the centre of Blyth. It lies immediately north of Park Farm Cottages, bounded to the west by South Newsham Road (B1523) and to the east by the Tyne to Lynemouth mineral railway line. The bedrock geology of the area comprises Pennine Middle Coal Measures Formation – Mudstone, Siltstone and Sandstone. Sedimentary Bedrock formed approximately 308 to 314 million years ago in the Carboniferous Period. The superficial geology consists of Quaternary Diamicton Till (BGS 2013).

3. BACKGROUND

3.1 The area to the south and southwest of the development site was subject to geophysical survey by GSB Prospection on behalf of Northern Archaeological Associates (HER: 14770) and evaluation trenching by Tyne and Wear Museums Archaeology (TWM Archaeology), both in 2011 (HER: 14930).

3.2 The geophysical survey was hampered by the extent and strength of ridge and furrow across much of the area. However, a linear anomaly of archaeological potential was identified, along with a number of trends and anomalies of possible natural origin.

3.3 The evaluation trenching undertaken by TWM Archaeology comprised 27 trenches across the area immediately to the south of the development site and a larger area across the road, to the southwest, in the vicinity of the former Park Farm. A linear feature of unknown date (possibly a ditch or gully; HER 25381) was detected to the southwest of the development site and was found to contain a prehistoric flint scraper and a sherd of medieval pottery. A flint core was also uncovered, along with a series of water channels of unknown date (HER: 25383).

3.3 The development site lies around 200m northwest of the supposed site of the medieval village of Newsham (HER: 11960; based upon Wrathmell 1975, 457-8). Precise detail of the size and layout of this village is not known as its site was occupied in more recent times by Newsham Colliery, though it may well have extended into the proposed development area. Evidence of ridge and furrow cultivation (HER: 25384) was also detected in 2011 to the south and southwest of the site (HER: 24699).

3.5 Park Farm was a former model farm dating to around 1840 (formerly called Newsham Park) located to the southwest of the development site. It was recently redeveloped into housing. Immediately south of the development site are Park Farm Cottages (HER: 24700), and these are thought to have been built between 1858 and 1863 to house agricultural workers at the adjacent Park Farm. Spreads of mixed silty clay and compacted ash (HER: 25385), thought to represent general scattering of material from the farm over time, were encountered during evaluation trenching in this location in 2011.

4. AIMS AND OBJECTIVES

4.1. The aim of the geophysical survey and archaeological evaluation was to gather sufficient information to establish the extent, condition, character and date of any archaeological features and deposits within the area of proposed development, and to record any features or deposits at an appropriate level. The targeted evaluation work was designed to ascertain whether there were any archaeological constraints that would affect the planned development.

5. METHODOLOGY

5.1 Geophysical Survey

5.1.1 Magnetometry is a non-intrusive scientific prospecting technique that is the preferred geophysical technique used to determine the presence or absence of buried archaeological features. It is an efficient and effective method of locating anomalies corresponding with archaeological features.

5.1.2 The instrument chosen for this survey was a Bartington Grad 601 dual sensor fluxgate gradiometer which can detect weak changes in the Earth's magnetic field caused by buried features. All fieldwork and reporting was undertaken following English Heritage and Institute for Archaeologists standards and guidance (Gaffney, *et al.* 2008; IfA 2010a).

5.1.3 The 30m by 30m survey grids were located to cover the proposed development area as shown in Figure 2 and the survey was carried on 8th March by Richard Durkin of ARS Ltd. The weather was clear and dry throughout the survey.

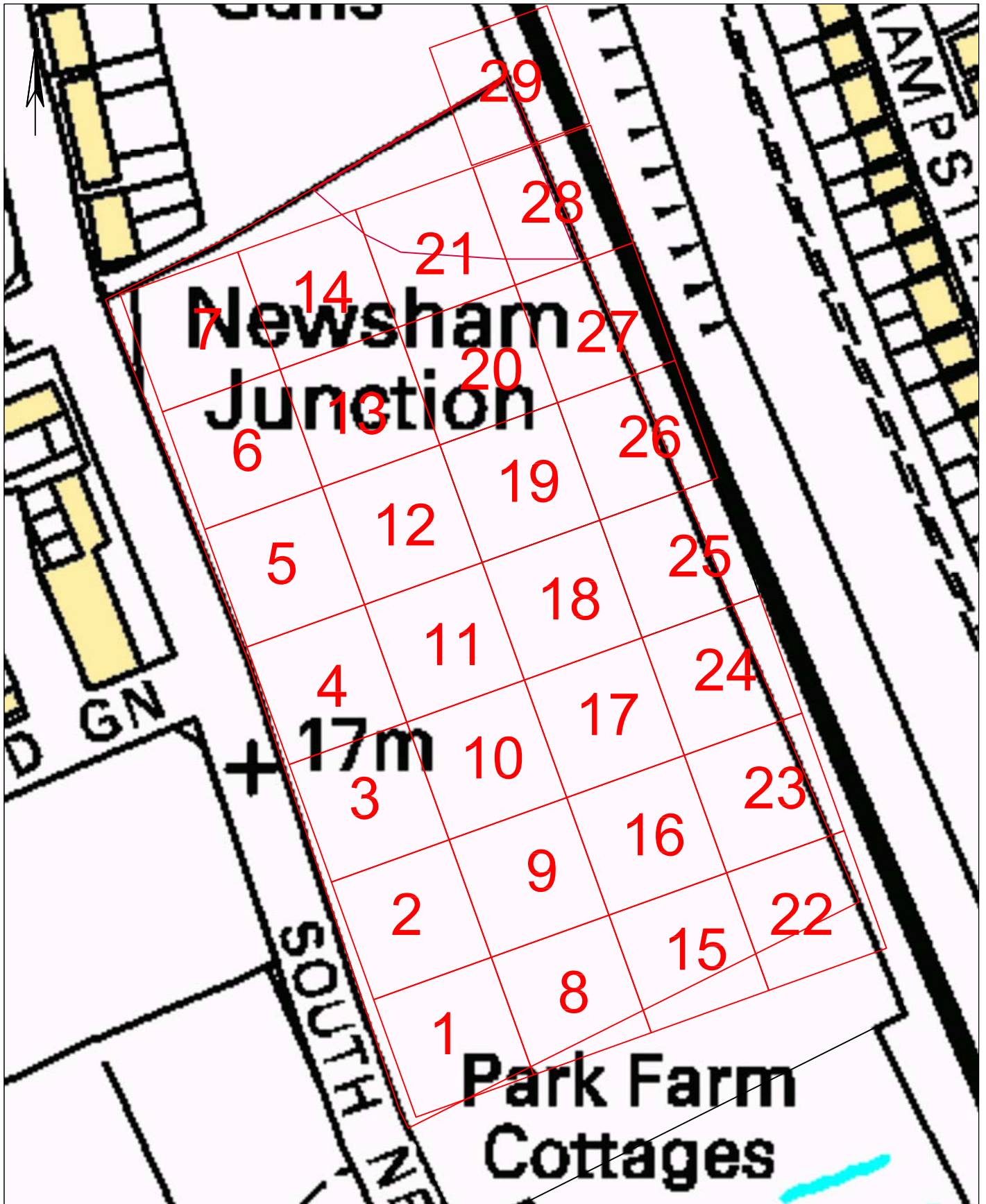
5.1.4 In total 29 survey grids were accurately set out on site using a hand-held GPS unit. Each grid was then surveyed at 1m traverse intervals with the sampling at 0.250m (4 readings per metre) intervals. The survey was carried out in north-south aligned traverses. The range of the instrument was set at 100nT (0.01nT resolution).

5.1.5 An area of uniform magnetic field was located in each area and the gradiometer was "zeroed" or adjusted for local conditions. The gradiometer was adjusted at the start of the day, after the completion of four grids and again at lunchtime.

5.1.6 The proposed development area has been recently ploughed and was uneven underfoot and waterlogged in places. A trench had been excavated (not part of the present archaeological works) running approximately north-south and slightly west of centre of the survey area. A further area had been excavated in the northwest corner of the survey area. The arisings from both trenches were stockpiled adjacent to the trenches. The trenches were holding water and could not be surveyed.

5.1.7 The vast majority of the survey area was successfully surveyed. However, some waterlogged areas were omitted as follows: the north-south aligned trench discussed in Section 5.1.7, partial waterlogged areas in Grids 4, 6, 21, 23 and 24, and large waterlogged areas in Grids 28 and 29. These areas will appear blank on the survey results.

5.1.8 At the end of the day, the data was downloaded onto a computer, checked and archived on the ARS Ltd server. The data was downloaded using Bartington Instruments' *Grad 601 Communication Application*.



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Figure 2
 Geophysical Survey Grids

Key

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5.2 Archaeological Evaluation

5.2.1 The archaeological evaluation took the form of eight machine-excavated trenches measuring 30 x 2m representing 2% of the development area. The positioning of the trenches was agreed in advance of works with the Assistant County Archaeologist for Northumberland, Nick Best. Where possible, trenches were located in order to investigate potential anomalies detected during the geophysical survey.

5.2.2 All fieldwork and reporting was undertaken following the Institute for Archaeologists standards and guidance (IfA 2010b).

5.2.3 The trenches was opened by machine using a toothless ditching bucket in level spits to the level of the natural subsoil, around 0.3 - 0.50m, at which point the trenches were examined and cleaned by hand. All machine excavation was carried out under careful archaeological supervision.

5.2.4 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.

5.2.5 Each trench was planned at 1:50. All deposits and the base of each trench were levelled and heights are expressed in metres above Ordnance Datum.

5.2.6 A photographic record was maintained including photographs of each trench. All images were taken in digital format, and contain a graduated photographic scale.

6.0 GEOPHYSICAL SURVEY RESULTS

6.1 Introduction

6.1.1 The data was processed using Geoplot software. To improve graphical presentation various Geoplot processing functions were utilised. The data was clipped at +/-7 nT (nanotesla), random iron spikes were removed by setting the “despike” function to 2.0 and the striping that can often appear in gradiometer data was removed by utilising the zero mean traverse function. The affect of utilising other processing tools such as “de-stagger” were utilised where appropriate.

6.1.2 Occasionally, processing the data to compensate for directional sensitivity or to remove iron spikes caused by miscellaneous ferrous objects can also inadvertently disguise more subtle anomalies that may be of archaeological origin, particularly long linear features in the direction of the traverses. The data has therefore been interrogated at all stages of processing.

6.1.3 The survey results are presented as shade plot of the processed data (Figure 3).

6.1.4 A number of magnetic anomalies were recorded during the survey; however these have limited potential to be archaeological in origin. The anomalies are illustrated in Figure 4 and described in Section 6.2.



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Figure 3
 Processed Geophysics Data

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Figure 4
 Processed Geophysics Data with Anomaly
 Classification

- Key
-  Mixed High Contrast Anomaly
 -  Positive Discrete Anomaly
 -  Bipolar Anomaly

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6.2 Anomalies

6.2.1 A number of mixed, high contrast anomalies were recorded and these are shown as anomalies numbered 1 to 7 in Figure 4. These probably relate to modern ferrous objects and Anomaly 5 represents a modern water service. Magnetic disturbance from the boundary metallic fencing has been recorded along both the eastern and western boundaries.

6.2.2 A number of weak positive discrete anomalies were recorded in the southeastern portion of the field and these are shown as anomalies numbered 8 to 14 in Figure 4. These anomalies may be natural in origin, but have some low potential to be associated with buried archaeological cut features.

6.2.4 A linear bipolar anomaly was recorded in the northwestern corner of the field and this is shown as anomaly 15 in Figure 4. This anomaly almost certainly relates to a modern service or pipe.

6.3 Discussion

6.3.1 The results of the geophysical survey were good and although a small number of magnetic anomalies was recorded, it appears that the majority are modern in origin.

6.3.2 It is notable that the survey area has been subjected to regular deep ploughing over many years and this will have destroyed any shallow surviving archaeology.

6.3.3 This geophysical survey will form only one part of the archaeological evaluation process and the geophysical survey results have demonstrated that there is no definite evidence of buried archaeology in the areas that were successfully surveyed. The group of weak positive anomalies in the southeastern portion of the field may be natural in origin, but an association with buried archaeology cannot be ruled out and they are therefore deemed worthy of further investigation through excavation.

6.3.4 For the reasons stated in 6.3.2, and the results of the geophysical survey, it may be that the site is largely devoid of surviving buried archaeology. Due to the presence of waterlogging and trenching some areas of the survey were omitted. However, these were generally small, except for the north-south aligned trench in the centre of the field. This trench is, however, likely to have destroyed any surviving archaeological remains that were located in this area.



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Figure 5
 Trench Location Plan with Processed Geophysics
 Data and Anomaly Classification

- Key
- Mixed High Contrast Anomaly
 - Positive Discrete Anomaly
 - Bipolar Anomaly
 - Evaluation Trench Location

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7. EVALUATION RESULTS

7.1 Trench 1 (Figure 6)

7.1.1 Trench 1 was located in the southwest side of the field, aligned east-west. Dark brown silty clay plough soil with stubble remnants (101) was excavated to a maximum depth of 0.2m onto the yellow/orange clay natural superficial geology (102). A series of four furrows were noted along the length of the trench running in a roughly north-south alignment (Figure 14). These were generally 1-1.5m in width and were spaced at semi-regular intervals of 6-6.5m. The furrows were filled by a mid-brown silty clay (103) with frequent charred flecks occasional small angular stone inclusions.

7.2 Trench 2 (Figure 7)

7.2.1 Trench 2 was located on the centre west side of the field, aligned north-south. Dark brown silty clay plough soil with stubble remnants (201) was excavated to a maximum depth of 0.21m onto the yellow/orange clay natural superficial geology (202). This trench was archaeologically sterile.



Figure 6: Trench 1, looking west



Figure 7: Trench 2, looking south

7.3 Trench 3 (Figure 8)

7.3.1 Trench 3 was located in the northwest side of the field, aligned east-west. Dark brown silty clay plough soil with stubble remnants (301) was excavated to a maximum depth of 0.2m onto the yellow/orange clay natural superficial geology (302). Two furrows were noted along the length of the trench running in a roughly north-south alignment (Figure 14). These were generally 1.5-1.7m in width and were 6-6.5m apart. The furrows were filled by a mid-brown silty clay (303) with frequent charred flecks occasional small angular stone inclusions.

7.4 Trench 4 (Figure 9)

7.4.1 Trench 4 was located in the northeast side of the field, aligned east-west. Dark brown silty clay plough soil with stubble remnants (401) was excavated to a maximum depth of 0.38m onto the yellow/orange clay natural superficial geology (402). A series of four furrows were noted along the length of the trench running in a roughly north-south alignment (Figure 14). These were generally 1-1.5m in width and were spaced at semi-regular intervals of 5-6m. The furrows were filled by a mid-brown silty clay (403) with frequent charred flecks occasional small angular stone inclusions.



Figure 8: Trench 3, looking east



Figure 9: Trench 4, looking east

7.5 Trench 5 (Figure 10)

7.5.1 Trench 5 was located in the upper east side of the field, aligned north-south. Dark brown silty clay plough soil with stubble remnants (501) was excavated to a maximum depth of 0.28m onto the yellow/orange clay natural superficial geology (502). One furrow was noted along the length of the trench running in a north northwest-south southeast alignment (Figure 15). This was 0.75m in width and was filled by a mid-brown silty clay (503) with frequent charred flecks occasional small angular stone inclusions.

7.6 Trench 6 (Figure 11)

7.6.1 Trench 6 was located in the upper east side of the field, to the east of Trench 5, and was aligned north-south. Dark brown silty clay plough soil with stubble remnants (601) was excavated to a maximum depth of 0.25m onto the yellow/orange clay natural superficial geology (602). One furrow was noted along the length of the trench running in a north northwest-south southeast alignment (Figure 15). This was 4m in width and was filled by a mid-brown silty clay (603) with frequent charred flecks occasional small angular stone inclusions.



Figure 10: Trench 5, looking north



Figure 11: Trench 6, looking south

7.7 Trench 7 (Figure 12)

7.7.1 Trench 7 was located in the east side of the field, aligned roughly east-west. Dark brown silty clay plough soil with stubble remnants (701) was excavated to a maximum depth of 0.27m onto the yellow/orange clay natural superficial geology (702). A series of four furrows were noted along the length of the trench running in a roughly north-south alignment (Figure 15). These were generally 1.5-2m in width and were spaced at semi-regular intervals of 5-5.5m. The furrows were filled by a mid-brown silty clay (703) with frequent charred flecks occasional small angular stone inclusions. Trench 7 was located over two discrete positive anomalies noted in the geophysical survey; however no archaeological features associated with these anomalies were noted during the evaluation.

7.8 Trench 8 (Figure 13)

7.8.1 Trench 8 was located in the east side of the field, aligned northwest-southeast. Dark brown silty clay plough soil with stubble remnants (801) was excavated to a maximum depth of 0.39m onto the yellow/orange clay natural superficial geology (802). A series of three furrows were noted along the length of the trench running in a roughly north-south alignment (Figure 15). These were generally 1.5-2m in width and were 7.5m and 10m apart. The furrows were filled by a mid-brown silty clay (803) with frequent charred flecks occasional small angular stone inclusions. Trench 8 was located over two discrete positive anomalies noted in the geophysical survey; however no archaeological features associated with these anomalies were noted during the evaluation. One small patch of blue/grey clay was noted in the southeast end of this trench that may have corresponded with geophysical anomaly number 13; however this was clearly natural in original.



Figure 12: Trench 7, looking west



Figure 13: Trench 8, looking northeast

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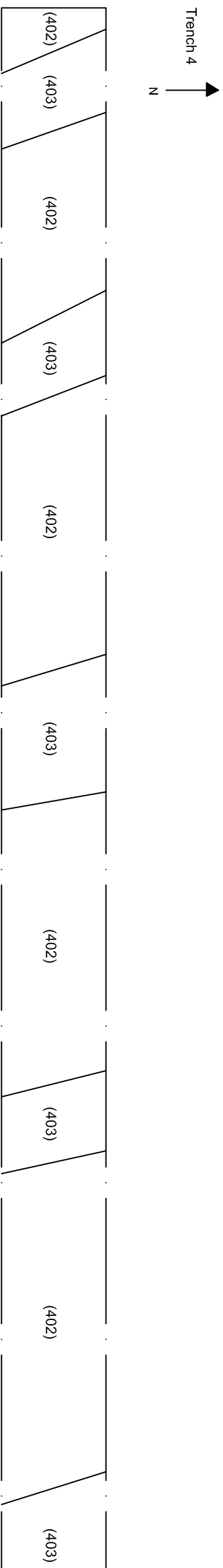
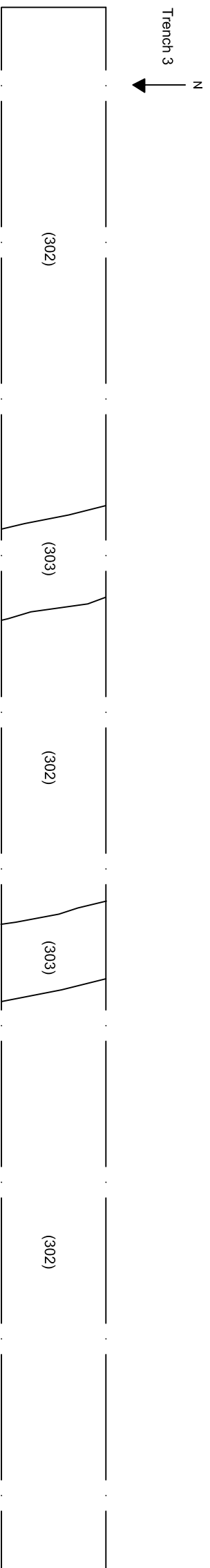
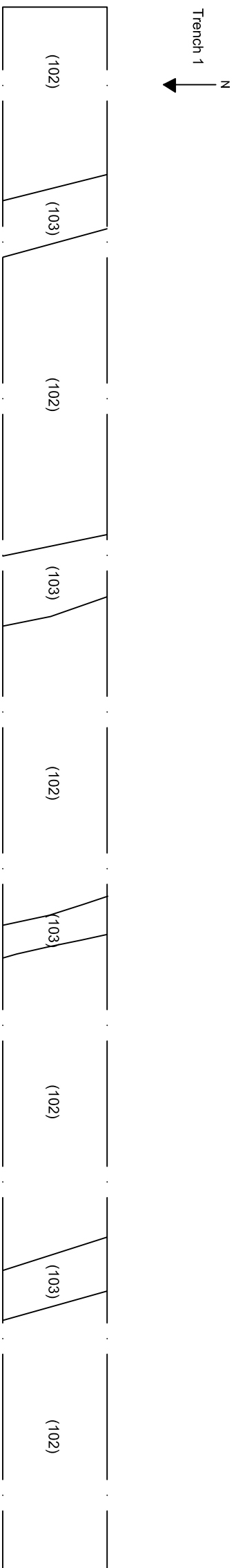


Figure 14:
 Plans Trenches 1, 3 and 4

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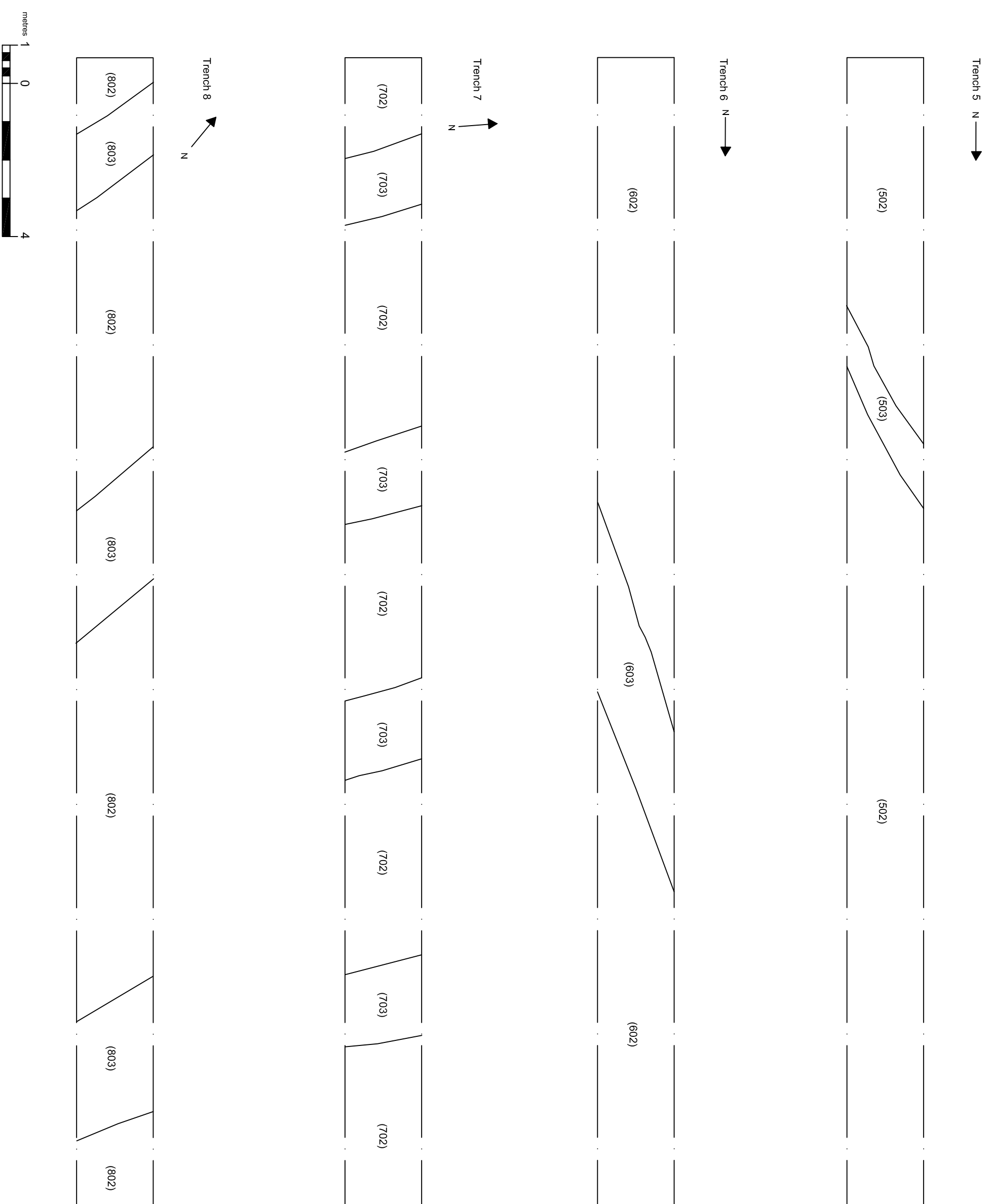
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Figure 15:
Plan of Trenches 5 - 8

Key:



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7.9 Discussion

7.9.1 The archaeological evaluation trenches were sterile except for the furrows noted in Trenches 1 and 3-8. These furrows were broad and were spaced at intervals ranging from 5-10m. This suggests that the furrows are the remnants of medieval agricultural practices within this field. This corresponds well with its location c.200m northwest of the proposed location of the medieval village of Newsham. There was no surface expression of ridge and furrow remains in the field.

7.9.2 The development area is shown as a field from the 1st edition Ordnance Survey mapping up until the present day and the plough soil across the field contains evidence of 'night-soiling' in the form of finds of post-medieval pottery, glass, brick, animal bone and clay pipe stems and bowls. This suggests that the field continued to be used for arable cultivation throughout the post-medieval and into the modern period.

7.9.3 One of the aims of the evaluation was to evaluate areas of anomalies detected during the geophysical survey and this was conducted in Trenches 3, 4, 7 and 8. However no archaeological features associated with these anomalies were noted during the evaluation trenching.

8. CONCLUSIONS AND RECOMMENDATIONS

8.1 The archaeological evaluation did not record any significant archaeological remains, either through the geophysical survey or through the evaluation trenching. Possible archaeological features noted in the geophysical survey were targeted during the evaluation; however no corresponding archaeological features were recorded. It is therefore not recommended that any further archaeological work be carried out on the site prior to commencement of the proposed development should planning permission be granted.

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 Julie Hunter of GVA and Nick Best, Northumberland Assistant County Archaeologist.

12. REFERENCES

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

Gaffney, V., Gater, J. and Ovenden, S. 2008. *Geophysical Survey in Archaeological Field Evaluation*. English Heritage.

Institute for Archaeologists. 2010a. *Draft Standards and Guidance for Archaeological Geophysical Survey*. Reading, Institute for Archaeologists.

Institute for Archaeologists. 2010b. *Standard and Guidance for archaeological field evaluation*. Revised edition. Reading, Institute for Archaeologists.

Wrathmell, S. 1975. Deserted and shrunken villages in Southern Northumberland from the Twelfth to the Twentieth Centuries. Unpublished PhD Thesis, Cardiff University.

Websites:

British Geological Survey: <http://www.bgs.ac.uk/>

APPENDIX I: CONTEXT REGISTER

Context No.	Within	Description
101, 201, 301, 401, 501, 601, 701, 801	Trenches 1 - 8	Dark brown silty clay plough soil with stubble remnants
102, 202, 302, 402, 502, 602, 702, 802	Trenches 1-8	Yellow/ orange clay natural superficial geology
103, 303, 403, 503, 603, 703, 803	Trenches 1, 3-8	mid-brown silty clay with frequent charred flecks occasional small angular stone inclusions



Written Scheme of Investigation Detailed Gradiometer Survey : South Newsham Road, Blyth

1. Introduction

- 1.1. This scheme of works relates to a proposed development on land adjacent to South Newsham Road, Blyth.
- 1.2. This written scheme of investigation details the works to be undertaken during a detailed gradiometer survey at the site as requested by Northumberland County Council Conservation Team. These surveys form an initial phase of archaeological work that may then require further evaluation by trial trenching. The scope of any further trial trenching will be negotiated by ARS Ltd. (on behalf of the client) with the Northumberland County Council Conservation Team upon completion of the geophysical survey and submission of an interim report.

2. Site Specific Requirements

- 2.1. The client for this work is Galliford Try Partnerships North.
- 2.2. The objective of the detailed gradiometer survey is to identify anomalies of possible archaeological origin within the survey area in order to inform the client of the:
 - 1) The location and potential significance of buried archaeology on the site,
 - 2) The likely impact of the proposed development upon such buried archaeological remains,
 - 3) Minimising the impact of the proposed design and layout upon the archaeology,
 - 4) The appropriate level of archaeological mitigation in accordance with PPS 5 (Planning for the Historic Environment).
- 2.3. The presentation of and interpretation of the results shall be carried out in accordance with industry standards (Gaffney, Gater and Ovenden, 2002).

3. Project Management and Standards

- 3.1. The project will be carried out in compliance with the codes of the Institute for Archaeologists (IfA 2010a and 2010b) and will follow the English Heritage guidelines 'Geophysical Survey in Archaeological Field Evaluation (2002)'. In addition to this ARS is a corporate member of the International Society of Archaeological Prospection (ISAP).
- 3.2. All staff employed on the project will be suitably qualified and experienced for their respective project roles and have practical experience of geophysical survey.
- 3.3. All staff will be made aware of the archaeological importance of the area surrounding the site and will be fully briefed on the work required by this specification.
- 3.4. Each member of staff will be fully conversant with the aims and methodologies and will be given a copy of this written scheme of investigation to read. All members of staff employed by Archaeological Research Services Ltd are fully qualified and experienced archaeologists.

4. Geophysical Survey Methodology

- 4.1. A survey grid comprising 30mx30m individual grids will be set up over the survey area using a Leica TCR307 Total Station, theodolite or similar. The location of these grids will be referenced using nearby topographic features such as fences, gateposts etc.
- 4.2. These grids will then be surveyed using a Bartington Grad 601-2 gradiometer. The Grad 601-2 has two gradiometer sensors and therefore collects two lines of data during each traverse. Data are collected in a zigzag fashion within the grid starting in the north-west corner, facing east. Readings are taken every 0.25m on traverses 1m apart. This equates to 3600 readings in a complete 30mx30m grid.
- 4.3. At the end of each day the data are downloaded to a PC or laptop using Bartington's 'Grad601' download software.
- 4.4. The data are then imported into specialist processing software known as 'Geoplot 3.0.' The type of processing required differs on a site by site basis, and only minimal processing is carried out, however the following basic processing steps are often used on gradiometer data:
 - Zero Mean Grid: this function sets the mean background of each grid within a composite to zero. It is particularly useful for removing grid edge discontinuities often found in gradiometer data. The following basic parameter is applied to the data;

$$\text{Threshold} = 0.25 \text{ std. dev}$$

- Zero Mean Traverse:- this function sets the mean background of each traverse within a grid to zero. It is particularly useful for removing the striping effects that can sometimes occur in gradiometer data. The following basic parameter is applied to the data;

Least mean square fit = off

- Despike:- This function can be used to automatically locate and remove “ferrous spikes” often evident in gradiometer data. It operates over the whole of the data set. The following basic parameters are applied to the data;

X Radius = 1 Y Radius = 1

Threshold = 3 std dev

Spike Replacement = mean

6. Report

- 6.1. The report will describe the work undertaken and the results obtained. It will (as a minimum) include:
- A Non-technical summary
 - Introduction
 - Geological and topographical setting
 - Methodology
 - Discussion of archaeological and historical background
 - Discussion on the results of the survey
 - Conclusions and recommendations
 - Sources
 - Copy of brief
 - Figure showing location of the site
 - Figure showing location of survey grids and referencing
 - Figure showing raw gradiometer data
 - Figure showing processed data
 - Figure showing abstraction and interpretation of anomalies
- 6.2. Preliminary results comprising processed data and an interpretation can be made available shortly after the fieldwork has been completed, before the full report is issued. Upon completion one bound and one unbound copy of a written synthetic report will be submitted to the client, and a further three copies submitted to the Northumberland County Council Conservation Team.
- 6.3. 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. The project archive represents the collation and indexing of all the data and material gathered during the course of the project. A properly ordered and indexed project archive will also be deposited with the Northumberland Archives.

7. OASIS

- 7.1. Archaeological Research Services Ltd will complete an on-line OASIS form for this evaluation. ARS Ltd is a registered contractor on the OASIS system and has uploaded archaeological reports before.

8. Dissemination/Publication

- 8.1. All publication costs, if required, will be discussed with all parties upon completion of the evaluation.

9. References

Department for Communities and Local Government (CLG). 2010. *Planning Policy Statement 5: Planning for the Historic Environment*. London, The Stationery Office.

Institute for Archaeologists. revised 2010a. *Code of Conduct*.

Institute for Archaeologists. 2010b. *Draft Standards and Guidance for Archaeological Geophysical Survey*

Gaffney, V., Gater, J. and Ovenden, S., 2002. *Geophysical Survey in Archaeological Field Evaluation*, English Heritage.

South Newsham Road, Blyth

Written Scheme of Investigation for Archaeological Evaluation Trenching



1. Introduction

- 1.1. This scheme of works relates to a proposed development on land adjacent to South Newsham Road, Blyth.
- 1.2. This written scheme of investigation details the works to be undertaken during an archaeological evaluation at the site as requested by Northumberland County Council Conservation Team. This phase of archaeological work follows on from a detailed gradiometer survey carried out at the site in advance of evaluation trenching. The gradiometer survey identified seven positive discrete anomalies at the southeast of the development area, but aside from these it was largely devoid of features that were deemed to have archaeological potential.

2. Site Specific Requirements

- 2.1. The client for this work is Galliford Try Partnerships North.
- 2.2. The evaluation trenching will be subject to an ecological watching brief to be conducted by E3 Ecology. The method statement for this work has been agreed with Richard Willis of Northumberland County Council

3. Project Management and Standards

- 3.1. The project will be carried out in compliance with the Institute for Archaeologists *Code of Conduct* (IfA 2010a) and the Institute for Archaeologists *Standard and Guidance for archaeological field evaluation* (IfA 2010b).
- 3.2. All staff employed on the project will be suitably qualified and experienced for their respective project roles and will be fully briefed on the work required by this specification.
- 3.4. Each member of staff will be fully conversant with the aims and methodologies and will be given a copy of this Written Scheme of Investigation to read. All members of staff employed by Archaeological Research Services Ltd (ARS Ltd.) are fully qualified and experienced archaeologists.

4. Evaluation Trenching

4.1 Aims and Objectives

4.1.1 The aim of the evaluation trenching is to identify and assess archaeological features within the survey area in order to inform on:

- 1) the location and potential significance of buried archaeology on the site
- 2) the likely impact of the proposed development upon such buried archaeological remains
- 3) the potential to minimise the impact of the proposed design and layout upon the archaeology
- 4) appropriate archaeological mitigation that may form a condition attached to the planning permission.

4.1.2 This will provide sufficient information to properly assess the archaeological impact of this application in line with policy HE6 of PPS5.

4.2 Coverage

4.2.1 Following submission of interim results from the detailed gradiometer survey, a targeted evaluation trench layout has been proposed as Figure 1 at the end of this document, for agreement with the Assistant County Archaeologist for Northumberland, Nick Best. Evaluation trenching will cover 2% of the development area and will comprise eight trenches, each measuring 30m in length and 2m in width. The evaluation trenches will be targeted to assess areas that are thought to have the potential to host buried remains, as well as areas that do not appear to host buried remains, based on the results of the gradiometer survey.

4.2.2 Any changes to the agreed trenching WSI will be discussed with, and agreed with, Nick Best, the Assistant County Archaeologist for Northumberland, before implementation.

4.3 Methodology

4.3.1 Each trench will be machine stripped under continuous archaeological supervision 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. A toothless ditching bucket will be used. The location of the trench will be accurately recorded in relation to the Ordnance Survey national grid.

4.3.2 Each trench will be cleaned by hand to allow the identification and planning of archaeological features. 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. All features will be investigated - discrete features will be half-sectioned in the first instance. Linear features will be sampled at a minimum of 20% along their length, or a minimum of a 1m sample if the feature is less than 10m long. The deposits at junctions or interruptions in linear features will be sufficiently excavated for the relationship between components to be established.

4.3.3 Identified archaeological features will be sampled by manual excavation to allow their date, nature and degree of survival to be ascertained. Provision will be made to establish whether earlier features/surfaces are sealed beneath later layers. All features investigated will be recorded in plan and section and all finds recovered retained for analysis.

4.3.4 For brick structures the record will 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).

- 4.3.5 All identified archaeological features will be accurately fixed using an EDM/Total Station, surveying in either the planning baselines or the features themselves.
- 4.3.6 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 feature will be recorded on an individual record.
- 4.3.7 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 SLR print film supplemented by digital SLR (minimum 7 megapixels).
- 4.3.8 All stratified finds will be collected by context or, where appropriate, individually recorded in three dimensions. Unstratified finds will only be collected where they contribute significantly to the project objectives or are of particular intrinsic interest. All finds and pottery will be initially retained for rapid assessment other than material which is demonstrably modern.
- 4.3.9 Where features have the potential to contain palaeoenvironmental or datable remains, a sampling strategy will be implemented in order to extract necessary samples to answer key research questions about the deposits. Where deposits have the potential to contain palaeoenvironmental remains or datable material, the entire fill, or a 40litre sample of larger deposits, will be floated. Flotation of all feature fills with organic content will be undertaken on site employing graduated brass sieves, with 300 μ as the smallest fraction. This strategy and approach will be refined dependent on on-site conditions. Provision will be made available for recovery, processing and suitable assessment/analysis. The above strategy will be sufficient to identify botanical macrofossils and charred remains in order to inform on both human activity and the palaeoenvironment.
- 4.3.10 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 sought in relation to all scientific sampling strategies.
- 4.3.11 All retained finds and palaeoenvironmental samples will be treated in accordance with the English Heritage guidance document *A Strategy for Care and Investigation of Finds (1995)* and the UKIC's document *Guidelines for the Preparation of Excavation Archives for Long Term Storage*. Ironwork and a selection of other metalwork, including all coins, from stratified contexts will be X-rayed for identification (which material warrants this approach will be discussed and agreed with the Northumberland County Conservation Team) and stored in a stable environment along with other fragile and delicate material.
- 4.3.12 Provision will be made for additional specialist advice (e.g. for finds analysis, conservation and scientific dating).
- 4.3.13 Finds of "treasure" will be reported to the Coroner in accordance with the Treasure Act procedures.

- 4.3.14 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, before being initially left in situ. Where excavation of human remains is necessary, 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.
- 4.3.15 Disarticulated human bone will be quantified, characterised and retained for assessment.
- 4.3.16 Following the excavation and recording of each trench they will be backfilled using excavated material.
- 4.3.17 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.
- 4.3.18 A risk assessment will be undertaken before commencement of the work and health and safety regulations will be adhered to at all times.

5. Monitoring Arrangements

- 5.1 ARS Ltd will liaise with the Assistant County Archaeologist for Northumberland, Nick Best, at regular intervals throughout the course of the work so that appropriate monitoring visits can be arranged.

6. Report

- 6.1 Following completion of the evaluation trenching ARS Ltd will produce a report detailing the work undertaken and the results obtained. It will (as a minimum) include:
- A non-technical summary
 - Introduction and objectives of the evaluation
 - Methodology of the evaluation
 - An objective summary statement of results
 - A phased stratigraphic discussion of the archaeological features
 - An interpretive discussion of the results, placing them in a local and regional framework and an assessment of the significance of any remains
 - Appropriate supporting illustrations, including a site plan, trench and section plans, feature sections and plans and a phased site plan
 - A site location plan at 1:2500 or 1:10000 as appropriate and a phased interpretation of the site as appropriate
 - The results of an assessment of artefacts, ecofacts and industrial residues carried out by suitable specialists, who will be furnished with relevant contextual and stratigraphic information
 - If sufficiently significant remains are recovered then an analysis of the above based upon the specialist assessment recommendations
 - In the event that significant remains are encountered, then a timetable for wider dissemination will be included in the report
 - A detailed context index and supporting data in tabulated form or in appendices
 - References

Within the report:

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

6.2 Copies of the final report will be deposited with the Northumberland County Council Historic Environment Record, and will be submitted to the Assistant County Archaeologist within six weeks of the completion of fieldwork.

6.4 Additional project dissemination will be undertaken, as required, in consultation with the client and the Northumberland County Council Conservation Team.

7. Archive Deposition and OASIS

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 the Northumberland County Council Conservation Team.

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 The Northumberland County Council Conservation Team 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 compiled. 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 The Northumberland County Council Conservation Team will be notified of the final deposition of the archive.

8. Dissemination/Publication

8.1 All publication costs, if required, will be discussed with all parties upon completion of the evaluation.

9. References

Department for Communities and Local Government (CLG). 2010. *Planning Policy Statement 5: Planning for the Historic Environment*. London, The Stationery Office.

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

Institute for Archaeologists. Revised 2010b. *Standard and Guidance for archaeological field evaluation*. Reading, Institute for Archaeologists.