ARCHAEOLOGICAL SERVICES WYAS

Pickering Beck Bunded Flood Storage Scheme
Pickering
North Yorkshire

Geophysical Survey

Report no. 2364

July 2012

Client: ENVIRONMENT AGENCY

REGISTERED ORGANISATION IA

Our ref: FO/NY/PBP Your ref.:

Project No.: 3893 Contact: S. Harrison Date: 2nd August 2012

ARCHAEOLOGICAL SERVICES WYAS

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Dear Lucie

PICKERING BECK BUNDED FLOOD STORAGE SCHEME: GEOPHYSICAL SURVEY

Please find enclosed a copy of the geophysical survey report for the the Pickering Beck Bunded Flood Storage Scheme.

Yours sincerely,

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Pickering Beck Bunded Flood Storage Scheme
Pickering
North Yorkshire

Additional Geophysical Survey

Summary

A geophysical (magnetometer) covering approximately 8 hectares was carried out on behalf of the Environment Agency along a section of Pickering Beck in Newtondale prior to the commencement of groundworks for a bunded flood storage scheme, part of a project to protect Pickering from major flood events. A walkover survey in a corridor of woodland adjacent to the beck was also carried out although this did not identify any features except a dilapidated 20th century brick built sluice gate. As in the previous geophysical survey broad anomalies indicative of the former course of the beck or the deposition of alluvial material in episodes of flooding have been identified. Anomalies due to field drains and a former field boundary are also present. An area of high archaeological potential has been identified immediately south of Park Gate, on the north side of the beck. This correlates with the location of a possible Roman bath-house, previously identified by a magnetometer survey in 1995 and later partially evaluated by a single trial trench in 2000. Other anomalies of archaeological potential have also been located close by and which may also be part of the Roman villa site at Blansby Park. Further archaeological work will be required here if groundworks for the scheme are required along this section of the beck.

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Report Information

Client:	Environment Agency
Address:	Coverdale House, Aviator Court, Amy Johnson Way, Clifton Moor, York, YO30 4GZ
Report Type:	Geophysical survey
Location:	Newtondale, near Pickering
County:	North Yorkshire
Grid Reference:	SE 811 856
Period(s) of activity represented:	Roman
Report Number:	2364
Project Number:	3893
Site Code:	PBP12
Planning Application No.:	Pre-application
Museum Accession No.:	n/a
Date of fieldwork:	April 2012
Date of report:	July 2012
Project Management:	Alistair Webb BA MIfA
Fieldwork:	Alex Harrison BSc David Harrison BSc MA Chris Sykes BSc MSc Phil Weston BA MA
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1 Introduction

Archaeological Services WYAS was instructed by Emma Morrish, Senior Environmental Project Manager at the Environment Agency, to carry out a second stage of geophysical (magnetometer) survey along a corridor of land adjacent to Pickering Beck (see Fig. 1), where it is proposed to construct earth bunds as part of flood control measures on the beck upstream from Pickering. A walkover survey was also conducted further upstream to identify any potential archaeological features. All work was undertaken in compliance with current best practice and in line with the guidance outlined in Planning and Policy Statement 5: Planning for the Historic Environment and the National Planning Policy Framework (2012).

Site location, topography and land use

The site, centred at SE 811 856, is located approximately 2km north-east of Pickering in Newtondale and is situated immediately adjacent to Pickering Beck, a tributary of the river Derwent. The North Yorkshire Moors Railway delimits the northern boundary of the survey area with Pickering Beck meandering through the survey areas (see Fig. 2). The site is flat being on the narrow grassed floodplain of the beck at approximately 90m above Ordnance Datum.

The geophysical survey comprised eight separate areas. Area 1 is located in the west of the site and was under an arable crop with all the other areas (Areas 2 to 8 inclusive) under pasture. Part of Area 2 was in use as a smallholding and could not be surveyed. In total an area of 7.9 hectares was surveyed.

The walkover survey was carried out along a 2.5km stretch either side of the beck from the north-east of Area 8 (see Fig. 1).

Geology and soils

The solid geology comprises limestone in the west (Hambleton Oolite and Yedmandale Formations) and Lower Calcareous Grit (sandstone) in the east, all overlain by alluvium (BGS 2012). The soils are classified in the Elmton 2 soil association (in the west) and Rivington 1 in the east being described as shallow, well drained brashy calcareous loams over limestone and well-drained coarse loams over sandstone respectively (SSEW 1980).

2 Archaeological background

Research undertaken for the Scoping Consultation Document (Environment Agency 2010) identified five scheduled monuments (all barrows) within 1km of the study area but none within the study area itself, although a single barrow (not scheduled) is located within the search area.

A small-scale archaeological investigation (a single trial trench - Watts *et al* 2003) had previously been carried out to the south of Park Gate Farm in Area 5. The investigation identified the structural remains of a feature interpreted as a possible Roman bath-house, presumably associated with a villa/farmstead as yet unidentified.

The first phase geophysical survey (Webb 2011), covering two areas further to the east of the scheme (see Fig. 2) identified anomalies that relate to former agricultural usage of the site and to the deposition of material either in former fluvial channels or as a result of flooding. No anomalies of archaeological potential were identified by this survey.

3 Aims, Methodology and Presentation

The principal objectives of the survey were:

- to characterise as far as possible the nature of any anomalies identified and thereby,
- to determine the location and extent of any archaeological features within the defined survey areas, and
- to prepare a report summarising the results of the survey.

In order to achieve these aims detailed (recorded) magnetometer survey was undertaken over those areas where bunds are to be constructed and any other areas that may be impacted by groundworks necessary for their creation.

Magnetometer survey

Bartington Grad601 magnetic gradiometers were used during the survey taking readings at 0.25m intervals on zig-zag traverses 1m apart within 30m by 30m grids so that 3600 readings were recorded in each grid. These readings were stored in the memory of the instrument and later downloaded to computer for processing and interpretation. Geoplot 3 (Geoscan Research) software was used to process and present the data. Further details are given in Appendix 1.

Reporting

A general site location plan, incorporating the 1:50000 Ordnance Survey mapping is shown in Figure 1. Figure 2 shows the location of the site and the processed data at a scale of 1:4000. A plot of the overall interpretation is displayed in Figure 3 at 1:4000. Detailed data plots ('raw' and processed) and full interpretative figures are presented at a scale of 1:1000 in Figures 4 to 15 inclusive with larger scale (1:500) plots showing the anomalies of archaeological potential in Area 5 presented in Figures 16, 17 and 18.

Further technical information on the equipment used, data processing and survey methodologies are given in Appendix 1 and Appendix 2. Appendix 3 describes the composition and location of the site archive.

The survey methodology, report and any recommendations comply with guidelines outlined by English Heritage (David *et al* 2008) and by the Institute for Archaeologists (IfA 2010). All figures reproduced from Ordnance Survey mapping are with the permission of the controller of Her Majesty's Stationery Office (© Crown copyright).

The figures in this report have been produced following analysis of the data in 'raw' and processed formats and over a range of different display levels. All figures are presented to most suitably display and interpret the data from this site based on the experience and knowledge of Archaeological Services staff.

4 Results

Walkover survey

The walkover survey was carried out on April 5th 2012 in bright, dry conditions. The survey focused on a 2.5km stretch of Pickering Beck that was unavailable for geophysical investigation due to being heavily overgrown and in places planted with trees (see Plates 9 and 11). The surveyor followed the eastern bank of the beck exploring the water course, flood plain and the higher ground to the east before crossing over and returning along the western bank. No archaeological remains were identified during the survey but a dilapidated sluice gate built of 20th century frogged bricks was recorded at co-ordinates SE 82654 85952 (see Plate 10). Extant drainage ditches and forestry/farming trackways were also identified (see Plate 12).

Magnetometer survey

The results from the magnetometer survey have been split up by anomaly type to avoid repetition in individual survey areas.

Ferrous anomalies

Dipolar, isolated, anomalies (iron 'spikes') have been identified in the data set. These anomalies are typically caused by ferrous (magnetic) material, either on the ground surface or in the topsoil. Little importance is normally given to such anomalies unless there is any supporting evidence for an archaeological interpretation, as modern ferrous objects or material are common on rural sites, often being present as a consequence of manuring, deliberate tipping/infilling or modern landscaping. These anomalies are not considered to have any archaeological significance. It is worth noting that the majority of these anomalies are located in the western part of the survey, where the land is under an arable regime,

whereas the eastern part of the survey, where there are much fewer anomalies, is under permanent pasture.

Linear bands of magnetic disturbance around the northern edges of Areas 1, 3, 4, 5 and 6 are due to the proximity of the North Yorkshire Moors Railway and the wire strand fencing bordering it. Other areas of magnetic disturbance have been caused by modern agricultural buildings and a bridge over the beck.

Geological anomalies

A plethora of discrete anomalies can be seen throughout the site which gives the data a speckled appearance. This is particularly common in the west of the survey in Area 3 and to a lesser degree in Area 1 and Area 4. These anomalies are interpreted as geological in origin and are due to localised variation in the alluvium/soils possibly related to former fluvial channels or perhaps to the deposition of silts or sands following episodes of flooding.

Within Area 1 anomalies with a slight linear nature can be seen that may suggest former flooding extents or changes in the natural topography.

Agricultural anomalies

Three linear trend anomalies have been identified in Area 2, two of which lead to a small barn. These are thought to be probably due to a water pipe and/or field drains (see Plate 2).

A linear dipolar anomaly at the eastern edge of Area 7 locates a former field boundary.

Archaeological anomalies (see Figs 16, 17 and 18)

Area 5 contains two distinct areas of archaeological potential. A cluster of anomalies (**A**) are thought to locate the remains of a Roman bath-house that has been partially evaluated by a single trial trench (Watts *et al* 2000). Defining the western side of this cluster is a linear trend anomaly, aligned in a general north/south direction, that may represent the western side of the bath-house structure. To the east of this are numerous, strong, magnetic responses that are interpreted as being due to the presence of intensely burned or fired material. This would be consistent with the interpreted function of this building. Other slightly weaker anomalies either side of the (presumed) main focus of activity are also considered likely to be of archaeological potential.

One hundred metres to the west of the probable bath-house is a second cluster of anomalies, **B** , with a similar, but slightly less elevated magnetic response to that of anomaly **A**. These anomalies are also considered to be of some archaeological potential given the presence of the bath-house to the east and the villa site further to the north.

5 Discussion and Conclusions

The majority of the anomalies identified in the eight discrete areas covered by this phase of geophysical survey are interpreted as having a geological, agricultural or modern cause. However, anomalies in Area 5, between Pickering Beck and the North Yorkshire Moors Railway are considered to have considerable archaeological potential with one cluster of anomalies confirming the location and probable extent of a structure, interpreted on the basis of a single evaluation trench, to be the remains of a bath-house. This structure is likely to be associated with the nearby Roman villa site at Blansby Park. A second cluster of anomalies to the west of the bath-house may also have archaeological potential. Further archaeological investigation should be anticipated should any groundworks (either cut or fill) be proposed along this section of the beck.

The walkover survey has not identified any features of archaeological potential in the wooded section to the north-east of the geophysical survey areas although a modern brick-built structure, probably associated with a sluice gate, has been located and its position recorded.

The results and subsequent interpretation of data from geophysical surveys should not be treated as an absolute representation of the underlying archaeological and non-archaeological remains. Confirmation of the presence or absence of archaeological remains can only be achieved by direct investigation of sub-surface deposits.

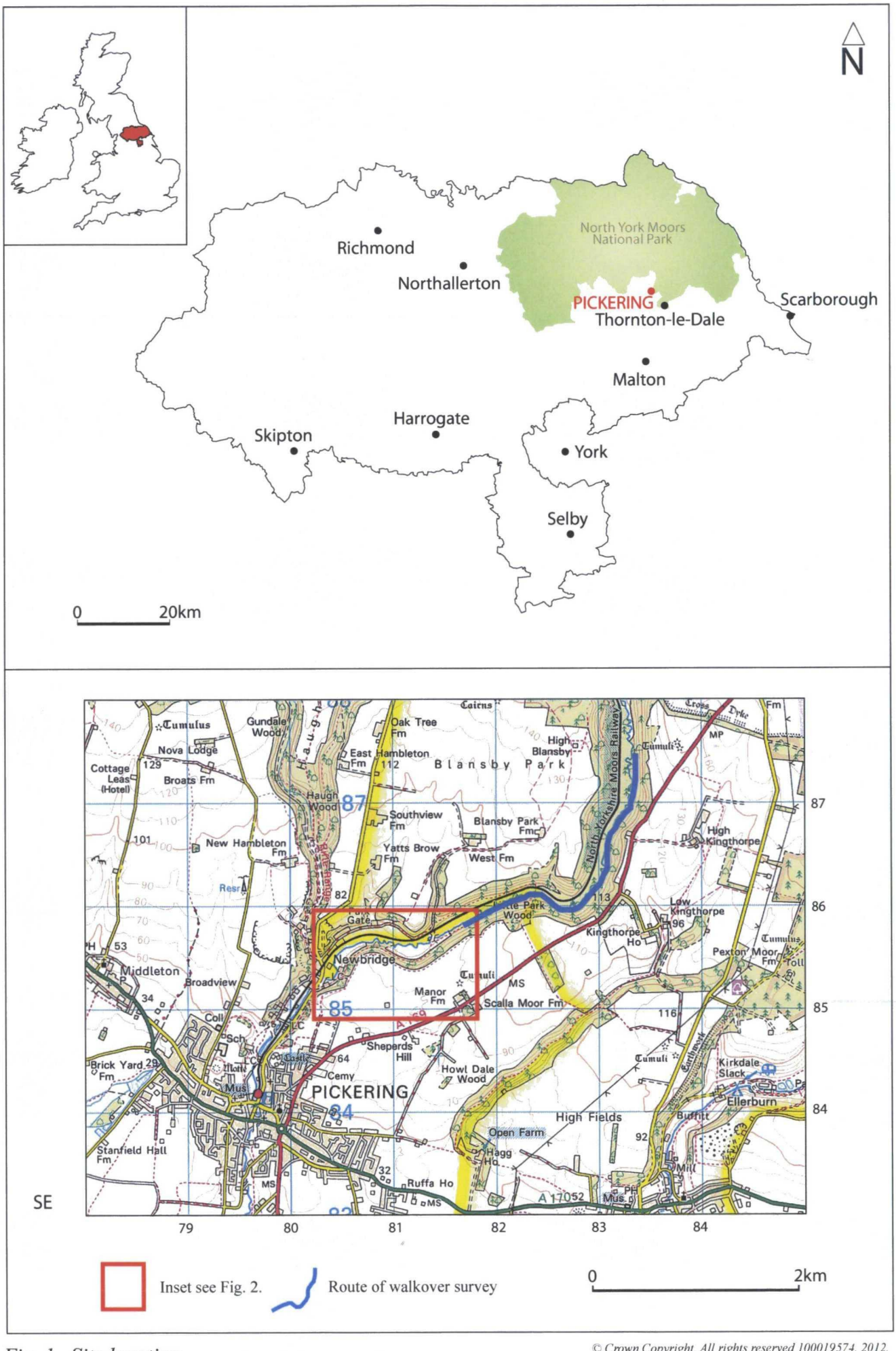

Fig. 1. Site location