

**Land off Netherton Moor Road,
Netherton,
West Yorkshire**

**Geophysical Survey
Project Design**

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Project Design for Geophysical Survey

Land off Netherton Moor Road

1. Introduction

- 1.1 This Project Design has been prepared by Archaeological Services WYAS (ASWYAS) for Persimmon Homes West Yorkshire (the Client) in advance of a magnetometer survey of land off Netherton Moor Road, Netherton, West Yorkshire.
- 1.2 The scheme of work will be undertaken in accordance with the requirements of the National Planning Policy Framework (MHCLG 2019).
- 1.3 This document details a proposed programme of non-intrusive geophysical (magnetometer) survey.
- 1.4 The Project Design was produced to the standards laid down in English Heritage's guideline publication Geophysical Survey in Archaeological Field Evaluation (David *et al.* 2008) and the Chartered Institute for Archaeologists (CIfA) Standard and Guidance for Archaeological Geophysical Survey (CIfA 2018).

2. Site location and Description

- 2.1 The proposed development site covers two areas. Area 1 is approximately 4.55ha centred on SE 13256 12869 and Area 2 is approximately 3.45ha centred on SE 13040 12683. The site is located to the south of Huddersfield on the southern outskirts of Netherton village. The site is located on an area of open land between Netherton village and Spring Wood which follows the line of Mag Brook with Mag Wood to the east of site. To the north is housing and to the south and west are open fields. The site slopes northwest to southeast from approximately 155m above Ordnance Datum (aOD) to 150m aOD.

3. Geology and Soils

- 3.1 The proposed development site is situated on the sandstone of the Rough Rock group described as sedimentary bedrock formed approximately 319 to 320 million years ago in the Carboniferous Period. No superficial geological deposits have been recorded (BGS 2021). The overlying soils belong to the East Keswick 2 association, characterised as deep well drained fine and coarse loamy soils (SSEW 1983).

4. Archaeological Background

- 4.1 The following archaeological background has been summarised from an archaeological desk based assessment (Govier 2018) within a 1km radius of the site.

- 4.2 The study area contains one designated Scheduled Monument; Honley Old Wood scheduled monument no. 31505 designated in 1999. The site comprises approximately nineteen cairns/stone mounds and two stone banks which lie within the northeast corner of the mature native woodland, southwest of the proposed development site on an escarpment overlooking the valley of the Mag Brook. There is also a shallow circular hollow about 9m in diameter which may be a hut circle. The cairns have been interpreted as forming a rectilinear enclosure known as a cairnfield typical of the middle Bronze Age, which are usually interpreted as the product of clearance activity in preparation for cultivation. The two banks may relate to a later period of Iron Age field development.
- 4.3 There is little evidence to demonstrate Palaeolithic occupation within West Yorkshire, apart from finds to the north-east of Huddersfield there is also a dearth of Mesolithic sites between Huddersfield and Holmfirth. The Early Bronze Age in West Yorkshire is characterised by ring cairns and enclosed cemeteries with a material culture of beakers, food vessels, collared urns and bronze work. The Late Bronze Age is characterised by palisaded enclosures, possibly including the early phases at Castle Hill, Almondbury, approximately 2.35km to the east-northeast of the study area. Prehistoric activity has been identified within the search area at Honley Wood c.0.90km to the southwest of the proposed development site.
- 4.4 There are two findspots within the search area from the Roman period (1822 and 1823). These are both hoards, one (1822) was found in the late 19th century and the exact location is not recorded but it contained a selection of coins in a hollow bone and bronze box dating to the 1st century, the other (1823), comprising several 3rd-century copper coins, was found in the 18th century.
- 4.5 The name 'Netherton' is a common placename and usually comes from the Old English for 'lower farmstead or estate' (Key to English Place Names). Netherton is not listed in the Domesday Survey. Instead the nearest listed place is Honley, approximately c.0.60km to the southeast. Honley is described as part of the hundred of Agbrigg, worth a total of 2 geld units (quite small) with three ploughlands and two woodlands measuring 1.5 leagues. It fell under the lordship of Cola of Honley in 1066 and Ilbert of Lacy in 1086 (Open Domesday 2021).
- 4.6 The site of a medieval hermitage is recorded to the northeast of the proposed development site (6224). The hermitage is recorded in c.1212 AD and the exact location is undetermined.

5. Aims and Objectives

- 5.1 The aims and objectives of the programme of geophysical survey is to gather sufficient information to establish the presence/absence, character, extent, of any archaeological remains within the specific area and to inform further strategies should they be necessary.

The aims of the survey are to:

- to provide information about the nature and possible interpretation of any magnetic anomalies identified;
- to therefore determine the presence/absence and extent of any buried archaeological features;
- to produce a comprehensive site archive and report.

6. Fieldwork Methodology

- 6.1 A geophysical (magnetometer) survey will be carried out across all of the areas amenable for survey. The total area for survey will be approximately 8 hectares and is scheduled to start on the 19th April 2021.
- 6.2 The geophysical survey site grid will be established using a Trimble R8s Virtual Reference Station (VRS) differential Global Positioning System (dGPS). The site grid will be tied into the Ordnance Survey National Grid so that the survey can be accurately re-located during any later stages of archaeological investigation.
- 6.3 The survey will be undertaken using Bartington Grad601 instruments. The Bartington instruments take readings at 0.25m intervals on zig-zag traverses 1m apart within 30m by 30m grid squares, allowing 3600 readings to be recorded in each grid square. These readings will be stored in the memory of the instrument and later downloaded for processing and interpretation. Bespoke in-house software will be used to process and present the data. This non-invasive technique will be able to detect the magnetic contrast between natural and infilled material for any archaeological material. This methodology is favoured over other methods (e.g. earth resistance), as it allows for a rapid assessment of the survey area and therefore subsequent analysis for potential further informed future work.
- 6.4 The geophysical survey will comply with guidelines outlined by the EAC (Schmidt *et al.* 2015) and by the Chartered Institute for Archaeologists (CIfA 2014). All figures will be reproduced from Ordnance Survey mapping with the permission of the controller of Her Majesty's Stationery Office (Crown copyright).
- 6.5 On completion of the geophysical survey, a report will be produced containing all relevant information including:
 - i) Site code/project number; dates for fieldwork visits; grid references; location plan, and a plan showing the limits of the detailed study area.
 - ii) A non-technical summary of the reason, aims and main results of the assessment.
 - iii) An introduction to outline the circumstances leading to the commission of the report and any restrictions encountered.
 - iv) The aims and objectives of the study.
 - v) The methodology used.
 - vi) A summary and synthesis of the archaeological results in relation to the methods used. This shall be supported by a survey location plan (minimum scale 1:2500), a plot

of raw data (preferred minimum scale 1:1000, greyscale format, and/or XY trace format as appropriate to the technique(s) used), a plot of enhanced data and one, or more, interpretative plots. Each plan/plot will have a bar scale and accurately oriented north sign.

vii) References to all primary and secondary sources consulted.

- 6.6 The project will be archived in-house in accordance with recent good practice guidelines (http://guides.archaeologydataservice.ac.uk/g2gp/Geophysics_3). The data will be stored in an indexed archive and migrated to new formats when necessary.
- 6.7 If required, the archive will be deposited with the Archaeology Data Service (ADS).
- 6.8 Following completion and submission of the final report to the client, and compiling of the archive, copies of the report (digitally and if needed a hard copy) will be sent to the relevant Historic Environment Record, local authority Planning Archaeologist and/or Conservation Officer. In addition, ASWYAS will make their work accessible to the wider research community by submitting digital data and copies of the report on line to OASIS, after an appropriate length of time.

7. Copyright, Confidentiality and Publicity

- 7.1 The copyright of any written, graphic or photographic record and reports produced as part of this project shall belong to the client, unless otherwise agreed, with ASWYAS being acknowledged as the originating body.
- 7.2 The circumstances under which the report or records can be used by other parties will be identified at the commencement of the project, as will the proposals for the distribution of the report. ASWYAS will respect any requirements regarding confidentiality, but will endeavour to emphasise the company's professional obligation to make the results of archaeological work known to the wider archaeological community within a reasonable time.

8. Health and Safety

- 8.1 All work will conform to the ASWYAS Health and Safety Policy (a copy of which can be supplied if requested), which makes particular reference to the FAME (Federation of Archaeological Managers and Employers) Health and Safety Manual and will be carried out according to the relevant Health and Safety Legislation. This includes, in particular, the following regulations:

- Health and Safety at Work 1974
- Construction (Design and Management) Regulations 2007
- The Management of Health and Safety at Work Regulations 1999
- Personal Protective Equipment at Work Regulations 1992
- Provision and Use of Work Equipment Regulations 1998

- Manual Handling Operations Regulations 1992
- Workplace (Health, Safety and Welfare) Regulations 1992

- 8.2 In addition each project undergoes a 'Risk Assessment' which sets project specific Health and Safety requirements to which all members of staff are made aware of prior to on-site work commencing.
- 8.3 Health and Safety will take priority over archaeological matters. Necessary precautions will be taken with regard to protecting ASWYAS staff and the public.
- 8.4 Archaeological Services WYAS is a fully accredited member of the Contractors Health and Safety Assessment Scheme (CHAS).

9. Insurance

- 9.1 ASWYAS is covered by the insurance and indemnities of the City of Wakefield Metropolitan District Council. Insurance has been effected with: Zurich Municipal, PO Box 568, 1st Floor, 1 East Parade, Leeds, LS1 2UA (policy number QLA-03R896 0013). Any further enquiries should be directed to: City of Wakefield Metropolitan District Council, Corporate Services, Financial Services (Insurance, Room 403), County Hall, Bond Street, Wakefield WF1 2QW.

10. Quality

- 10.1 ASWYAS is an accredited ISO 9001:2015 organisation and a Registered Archaeological Organisation with the Chartered Institute for Archaeologists, operating to nationally agreed guidelines, processes and procedures. These are set within a framework that endeavours to carry out the required work and submit the final report in a manner that meets with our client's specific needs, providing quality assurance throughout the project and for the end product. These guidelines, processes and procedures are contained within a Quality Manual and all staff work in accordance with this manual.

11. Monitoring

- 11.1 A standard working day will involve driving to site, condition surveys of the survey area, survey area setting out and detailed earth resistance and/or magnetic survey recording. Constant updating of the survey work will be relayed back to the office by telephone.

Contacts

Office Manager: Jane Richardson	0113 535 0182
Project Supervisor: Emma Brunning	0756 243 9487
Health and Safety Coordinator: David Williams	0113 535 0183
Survey team:	0756 243 9487

12. Staffing

- 12.1 Archaeological Services WYAS currently employs four dedicated geophysicists together with a further two staff with extensive field experience. Summary Curriculum Vitae for all the staff to be employed on the proposed project are detailed below together with their proposed role in the scheme.

Project Manager (Office):	Emma Brunning BSc MCIfA
Project Officer (Office/Field):	Alastair Trace BSc MSc
Geophysicist:	Jake Freeman BA
Geophysicist:	Amy Chatterton BSc MA

Name: Emma Brunning BSc MCIfA

Current Position: Project Manager (Geophysics)

Proposed Role: Geophysics Manager

Emma graduated in 2000 from the University of Bradford with a degree in Archaeology. In 2002 Emma began work as an archaeological geophysics assistant with GSB Prospection, working on hundreds of projects all over the UK. She worked herself up the ladder to become senior archaeological geophysicist supervising teams and writing projects. Emma was also involved with Channel 4's Time Team and became Survey Officer for the last 2 years of the programme. In 2004 Emma gained a Post Graduate Certificate in Landscape Archaeology through distance learning from the University of Leicester. Emma joined Archaeological Services WYAS in September 2015.

Name: Alastair Trace BSc (Hons) MSc

Current Position: Project Officer (Geophysics and Geomatics)

Proposed Role: Geophysics Project Officer

Alastair graduated from the University of Birmingham in 2014 with a BSc in Geology and Archaeology. He has since graduated from the University of Leeds with an MSc in Structural Geology and Geophysics in 2016, primarily researching how oil and gas industry standard techniques, can be applied to near surface geophysics, in the fields of Archaeology and Engineering using Ground Penetrating Radar data. Alastair joined Archaeological Services WYAS in September of that year. He is CSCS certified, CRB checked and has a full driving licence.

Name: Jake Freeman BA

Current Position: Archaeologist (Geophysics)

Proposed Role: Site Supervisor

Jake graduated from the University of York in 2014 with a BA in Archaeology. Post-graduation, Jake volunteered his services on community archaeological projects in South Yorkshire during the summer of 2015, assisting in both geophysical survey and excavation roles. Building on his university and community experience, he began working for Headland Archaeology as a geophysics assistant in September 2015.

Whilst working for Headland, Jake regularly performed a variety of archaeological prospection including, GPR, EM and ERT, and associated software packages. In addition to a broad range of survey skills, he has also worked on a variety of excavation projects across the country and has assisted with both environmental processing and osteology work in the lab.

Jake joined Archaeological Services WYAS in March 2017. He is CSCS certified and has a full driving licence.

Name: Amy Chatterton BSc (Hons), MA

Current Position: Archaeologist (Geophysics)

Proposed Role: Site Assistant

Amy joined ASWYAS in September 2018 after graduating from the University of Sheffield with a BSc degree in Archaeology and an MA degree in Landscape Archaeology, where she learnt how to conduct magnetometry survey work. Amy has been working on geophysics projects since 2016 including work in partnership with Snowdonia National Park to study the changing landscape and character of the Dysynni Valley, Wales. As part of her Landscape degree Amy managed and supervised a geophysical survey in search of Towthorpe DMV at the National Trust's Belton House, Grantham. This project led to the discovery of the extensive field systems and water management course relating to the DMV.

Having previously worked as an excavator for Trent and Peak Amy has also worked on a number of excavations for ASWYAS and on volunteer digs for the National Trust and the University of Sheffield. These have included the excavations at Thornton Abbey, North Lincolnshire to uncover the mansion and chapel at the Monastic site. Her experience has provided her knowledge of magnetometry, resistivity, GPS, Geoplot 4.0 and data processing. Amy has a full UK driving licence.

12.2 Archaeological Services WYAS project personnel may be subject to change.

13. References

- BGS, 2021. <http://mapapps.bgs.ac.uk/geologyofbritain/home.html> (viewed March 2021)
- ClfA, 2018. *Standard and Guidance for archaeological geophysical survey*.
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- MHCLG, 2019. National Planning Policy Framework. Ministry of Housing, Communities and Local Government
- Open Doomsday 2021 <https://opendomesday.org/> (viewed April 2021)
- SSEW, 1983 Soils of Northern England, Sheet 1. Soil Survey of England and Wales
- Schmidt, A. Linford, P., Linford, N., David, A., Gaffney, C., Sarris, A, and Fassbinder, J.
2015. EAC Guidelines for the Use of Geophysics in Archaeology. English Heritage