

ENVIRONMENT

Avant Homes Ltd

Hay Green Lane, Birdwell
South Yorkshire

Specification for Trial Trenching

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FIGURES

Figure 1: Site Location

Figure 2a: Location of trial trenches overlaid on to geophysical survey results and recent aerial photograph

Figure 2b: Location of Trial Trenches overlaid on to proposed layout

APPENDICES

APPENDIX 1: Archaeological Standards and Guidelines

APPENDIX 2: Archaeology Assessment

APPENDIX 3: Geophysical Survey Report

1. INTRODUCTION

- 1.1 This Specification has been prepared by BWB the 'Consultant'. It describes the objectives and methodology for a programme of archaeological trial trenching.
- 1.2 BWB Consulting has been appointed by Avant Homes Ltd to devise a strategy for trial trenching within the site at Hay Green Lane, Birdwell to further determine the archaeological potential of the site.
- 1.3 The results of the trial trenching and geophysical survey will aid in the design of an appropriate mitigation strategy (where necessary) which will be discussed and agreed with South Yorkshire Archaeology Service (SYAS).
- 1.4 This Specification and accompanying drawing (**Figure 2**) detail the requirements for the trial trenching.
- 1.5 The Specification has been prepared in line with the written Code of Conduct of the Chartered Institute for Archaeologists (CIfA 2021) and other best practice guidelines (**Appendix 1**) including SYAS' standard brief for evaluation (2015). Approval for it will be sought from SYAS.
- 1.6 The archaeological works specified in this document will be undertaken by Archaeological Services WYAS (ASWYAS; 'the Contractor'), under the supervision of the Consultant.
- 1.7 All works, operations and visits are to be undertaken subject to the requirements of Principal Contractor's health and safety procedures.
- 1.8 The archaeological fieldwork, post-survey assessment, archiving, analysis and preparation of the fieldwork report text will be undertaken by the Contractor, unless otherwise specified in this Specification.

Site Location and Topography

- 1.9 The proposed development lies to the south of the centre of Birdwell, south of Hay Green Lane. It comprises pasture to the east and a mix of rough pasture and allotments to the west. It covers an area of approximately 3.6ha and is bound to the north by Hay Green Lane, to the west by Sheffield Road and pastoral fields to the south and east.

- 1.10 The Site is centred approximately on National Grid Reference SE 3485 0125 and lies at 121m aOD (above Ordnance Datum). The proposed site boundary is shown on **Figure 1**.

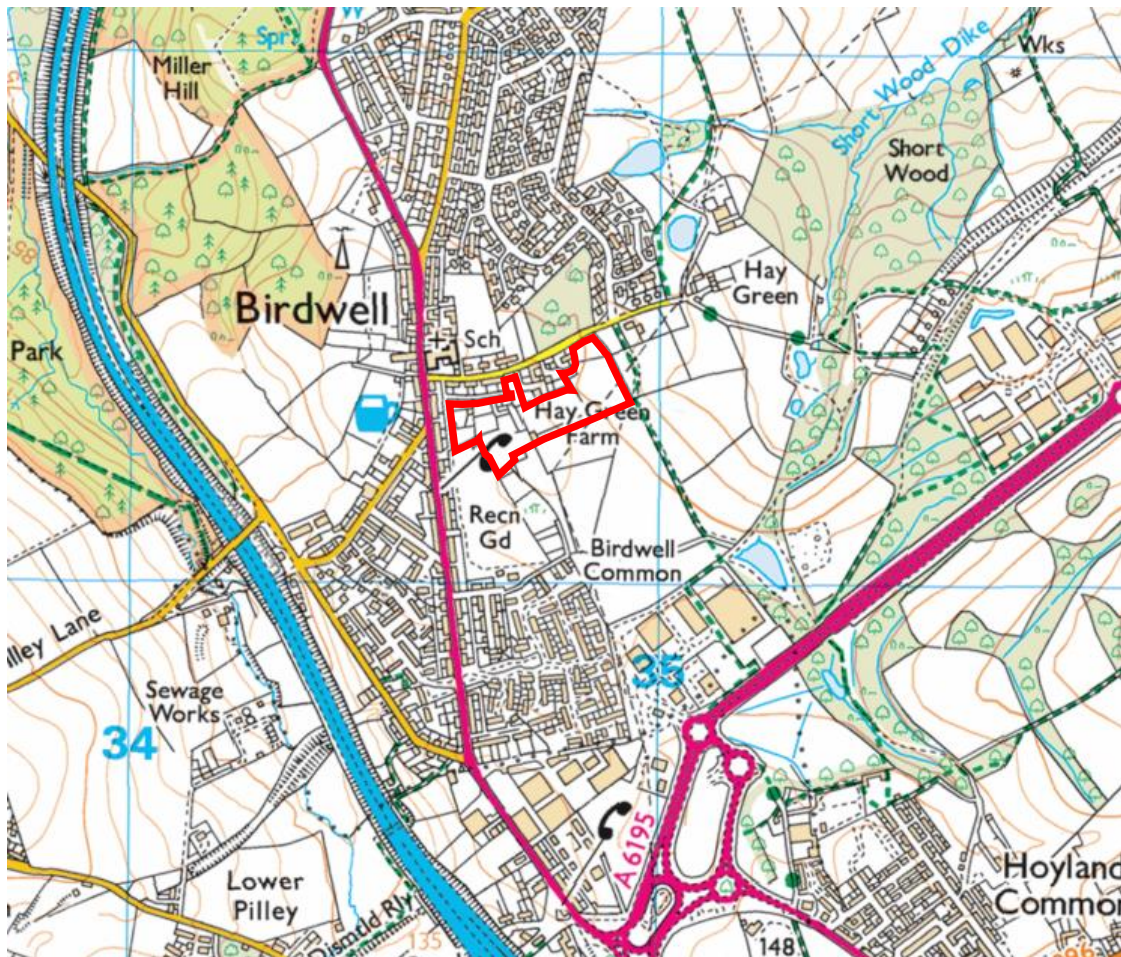


Figure 1: Site Location

Geology and Soils

- 1.11 Bedrock geology across the Site comprises Pennine Coal Measures Formation – Sandstone. No superficial deposits are recorded.

2. ARCHAEOLOGICAL BACKGROUND

- 2.1 An Archaeology Assessment was completed by Prospect Archaeology in 2019 (**Appendix 2**). The following provides a summary of this.
- 2.2 The assessment determined the presence of eight designated assets within the study area, all of which are grade II listed including a listed barn (NHL1315079) located adjacent to the site.
- 2.3 Two undesignated assets have been recorded in the study area and include a post-medieval bath house and the cropmark enclosure of late Iron Age/Roman date. Ridge

and furrow and anomalies possibly relating to buildings and mining have been identified within the site. Coal pits are shown on historic Ordnance Survey maps near to the site.

- 2.4 Documentary evidence for settlement at Birdwell is limited, however, it is recorded in Yorkshire Diaries of 1642 as 'the Birdwell' (Smith 1961). The place-name is traditionally believed to have originated from a large bird seen drinking at a well (Hudson 1965).
- 2.5 Trial trenching was undertaken on land off Sheffield Road to the south of the site. No archaeological features were found other than those relating to recent drainage (McNaught 2000).

3. GEOPHYSICAL SURVEY

- 3.1 Archaeological Services WYAS were commissioned to carry out a magnetometer survey to further determine the potential for archaeological features and/or deposits to occur within the site (**Appendix 3**). The survey was undertaken using Bartington Grad601 magnetic gradiometers.
- 3.2 The survey determined the presence of significant archaeological activity, in the form of two enclosures which appear to overlap one another.
- 3.3 The survey determined the presence of possible post-medieval ridge and furrow and field boundaries which relate to those depicted on early Ordnance Survey maps. Other possible anomalies of uncertain origin were recorded. In addition to this magnetic disturbance was recorded around the edges of the survey areas.

4. SCOPE OF WORKS

- 4.1 The trial trenching will be carried out in accordance with this specification. This design takes account of assessment guidance in the Standard and Guidance for field evaluation prepared by the Chartered Institute for Archaeologists (CIfA, 2020), the CIfA Code of Conduct (CIfA, 2021) and other current and relevant best practice and standards and guidance (refer to **Appendix 1**). These standards will be adhered to by the Contractor.
- 4.2 It is the responsibility of the Contractor to ensure that the works undertaken are carried out in accordance with the latest versions of the standards and guidelines. The works will also be undertaken with due regard to the relevant frameworks and strategies including updated Research Agendas.

Specific Works

- 4.3 The trial trench evaluation will comprise the excavation of 18 20x2m trenches as shown on **Figure 2**. The trenches should be positioned using metric-survey equipment to an accuracy of $\pm 100\text{mm}$ of the specified trench location.
- 4.4 It may be necessary for the Contractor to undertake a preliminary assessment of ground conditions prior to the commencement of the fieldwork. The Contractor will notify the Consultant of any areas that in their opinion are unsuitable for evaluation.

- 4.5 All trenches are to be the stated dimensions at their base.

5. OBJECTIVES

- 5.1 The objective of the trenching is to gain an understanding of the potential archaeology within the Site and its extent. The objectives are detailed below:
- to characterise and date the anomalies identified by the geophysical survey;
 - to assess the potential for other archaeological deposits and/or features to occur;
 - to assess apparent blank areas;
 - to determine the likely range, quality and quantity of artefactual and environmental evidence present;
 - to inform the scope of archaeological mitigation works, where necessary; and
 - to record all remains to an appropriate level.

6. CONTINGENCY

- 6.1 The 'Contractor' should make provision for a contingency for up to 10% of the area covered by the trenching outlined in Section 3. The use of the contingency will depend upon the results obtained during the works and will be implemented (if required) with the agreement of BWB and SYAS. The decision to invoke all or part of the contingency will be issued in writing, in retrospect after site discussions if necessary.

7. WORKS SPECIFICATION

General Details

- 7.1 Prior to commencement of the trial trenching the contractor is required to complete a project initiation form (www.sheffield.gov.uk/home/planning-development/south-yorkshire-archaeology-service/guidance-for-archaeological-projects). This should be submitted to SYAS and the appropriate Museum.
- 7.2 The on-site recording and recovery techniques will be in line with current industry best practice and should be fully understood by all.
- 7.3 All paper and digital records made during the course of the fieldwork, and the treatment of artefacts and environmental remains, will be reviewed continuously. Record checking and collation will be completed at regular intervals, as appropriate, and before an area is considered complete, abandoned, backfilled or the site closed. Errors or omissions in recording discovered during post-excavation cannot be recovered. The Contractor must make suitable allowance for this task.

Specific Works

Access

- 7.4 Access will be in accordance with the approved Access Plans provided by the Consultant as part of the Works information bundle.

Trial Trenches

- 7.5 Trial trenches will be excavated at the locations indicated by the Consultant (**Figure 2**). The trenches should be positioned to an accuracy of $\pm 100\text{mm}$ of the specified trench location using survey-grade GPS (Historic England 2015) or equivalent metric-survey equipment. All trenches should be the stated dimensions at their base.
- 7.6 The arisings from the archaeological works will be stored adjacent to the trench (within a safe working distance but not less than 1m) and will be separated according to material, so that topsoil will be separated from subsoil and made ground separated from topsoil.
- 7.7 The arisings from the trenches shall be subject to a rapid metal detector scan, in order to recover metal artefacts not recovered during mechanical excavation of the trench.
- 7.8 The excavation will proceed under direct archaeological supervision, in level spits, until either the top of the first archaeological horizon or undisturbed natural deposits are encountered.
- 7.9 Particular attention should be paid to achieving a clean and well-defined horizon with the machine.
- 7.10 Care should be taken when excavating within suspected occupation sites or entrances in order that subtle features or deposits are not inadvertently machined off.
- 7.11 Trench faces will be cleaned by hand to aid in the identification of archaeological features and/ or deposits within the trench. In addition to this an allowance of a minimum of a week will be made for appropriate weathering of the trenches to allow for full interpretation of any archaeological remains.
- 7.12 Under no circumstances should the machine be used to cut arbitrary sondage trenches down to natural deposits. If the Contractor deems that this is necessary to ensure that the correct surface is reached they must contact the consultant to agree this. This will then be agreed with SYAS. The surface achieved through machine excavation will be inspected for archaeological remains. The mechanical excavator will not traverse any machined areas.
- 7.13 If important concentrations of artefacts are uncovered during machining, suggestive of significant activity, these should be left in situ in the first instance. The treatment of these will be agreed with the consultant and SYAS.

- 7.14 The machined surface will be cleaned by hand, for the acceptable definition of archaeological remains. Following cleaning, all archaeological remains will be planned followed by their excavation.
- 7.15 The trial trenches will be clearly demarcated with netlon fencing (or similar), supplied by the Contractor, to ensure that persons or plant cannot inadvertently traverse across the area of investigation whilst archaeological works are in progress. The netlon fencing will be regularly inspected and maintained until works in the area have been completed, inspected and approved by the Consultant and the trenches have been backfilled.
- 7.16 The trial trenches shall only be backfilled by machine under appropriate conditions and with direct archaeological supervision and following approval from SYAS. Arisings will be returned strictly in the correct order.
- 7.17 Any land drains encountered during the trial trenching will be left in situ and photographed. Upon completion of the works they will be carefully backfilled and covered over to avoid damage. A buffer of 0.5m will be left either side of a land drain and excavation will proceed either side of it. Any damage to land drains must be rectified immediately. The consultant must be informed if any damage occurs. Any repairs undertaken should be photographed.
- 7.18 In some circumstances it may be necessary to remove land drains to adequately investigate archaeological remains. Allowances should be made for this.

Hand Excavation

- 7.19 All man-made features will be investigated. Apparently natural features (such as tree throws) will be sampled sufficiently to establish their origin and to characterise any related human activity given that Mesolithic and Neolithic artefacts have been recovered from apparently 'Natural' Features on numerous investigations in South Yorkshire. Hand excavation and feature sampling will be sufficient to establish date and character, and to allow appropriate levels of recording.
- 7.20 Sample excavation shall be restricted to that required to meet the key objectives of the evaluation.
- 7.21 Archaeological deposits and layers (including buried soils) will be sampled sufficiently to enable a confident interpretation of their character, date and relationships with other features. Hand excavation will be undertaken in an archaeologically controlled and stratigraphic manner in order to meet the objectives of the evaluation. Care must be taken to excavate stratigraphically and allocate all recovered artefacts to their correct deposit. A sufficient number of deposits/ features will be investigated through sample excavation in each trench to record the horizontal and vertical extent of the stratigraphic sequence down to the level of undisturbed natural deposits. No archaeological deposit should be entirely removed unless this is unavoidable or necessary to meet the aims and objectives of the evaluation. Excavation must be undertaken with a view to avoiding damage to any features or deposits which would be better understood during future stages of work and those which appear to be worthy of preservation in situ. Priorities should be discussed with the consultant and SYAS.

The following sampling strategies will be employed:

- 7.22 At least 20% (or a percentage sufficient to achieve information on the character, function and dating) of linear and/or very large and deep features not associated with structural remains will be hand excavated. Investigation slots through all linear features will be at least 1m in length. Particular attention will be given to terminals and intersections to ascertain stratigraphic and physical relationships.
- 7.23 At least 20% of linear features (ditches and gullies) associated with structural remains will be hand excavated. Investigation slots through all linear features will be at least 1m in width. Particular attention will be given to terminals and intersections to ascertain stratigraphic and physical relationships. Excavated sections/ segments should be placed against the trench edge where possible and sections drawn perpendicular to the features alignment. Overly oblique sections should be avoided.
- 7.24 Discrete man-made features, including pits and wells (excavated in half sections or in quadrants where large) will be subject to a minimum of 50% excavation to characterise them.
- 7.25 Structures: Each structure will be sampled sufficiently to define the extent, form, stratigraphic complexity and depth of the component features and its associated deposits to achieve the objectives of the evaluation. All intersections will be investigated to determine the relationship(s) between the component features.
- 7.26 At this stage features should not be entirely removed through excavation. For large features it may be appropriate to excavate in quadrants.
- 7.27 All intersections will be investigated to determine the relationship(s) between the component features.
- 7.28 The evaluation will provide a representative sample of the site's archaeology at no significant cost to the value or integrity of archaeological remains therein. Judgement regarding the removal of human remains, structural remains (in situ wood or masonry), or other special remains or deposits, will be led by this consideration, and will be made in consultation with SYAS and relevant specialists.
- 7.29 Should remains or features of possible national archaeological importance, and possibly schedulable quality be observed, fieldwork will cease on the relevant part of the site until these remains have been inspected by SYAS (as advisors to the local planning authority) and the appropriate historic England Inspector of Ancient Monuments.
- 7.30 No archaeological deposit will be entirely removed unless this is unavoidable to meet the aims of the trial trenching.

Recording

- 7.31 The perimeter of each trench and all archaeological remains within the trenches will be recorded in plan using metric survey-grade equipment (or its equivalent) (English Heritage, 2003).

- 7.32 Where no archaeological remains are recorded a representative section of each trench, showing the soil profile should be drawn and included in the report.
- 7.33 A full written, drawn and photographic record will be made of each trench even where no archaeological features are identified. Hand drawn plans and sections of features will be produced at an appropriate scale (normally 1:20 for plans and 1:10 for sections). Where archaeological features are present one long section of each trench will be drawn at a scale of not less than 1:50. All plans and sections will include spot heights relative to Ordnance Datum in metres, correct to two decimal places.

Photographs

- 7.34 Black and white photography using orthodox monochrome chemical development should be used. Film should be no faster than ISO400. Slower films should be used where possible as their smaller grain size yields higher definition images. Technical Pan (ISO 25), Pan-F (ISO50), FP4 (ISO125) and HP5 (ISO400) are recommended. The use of dye-based films such as Ilford XP2 and Kodak T40CN is unacceptable due to poor archiving qualities. Black and white photography should be supplemented by colour photography using 35mm colour slide film.
- 7.35 Digital photography can be used but only as a supplement to black and white film and colour transparencies.
- 7.36 Digital photography will be undertaken in accordance with standards set by Historic England and the recipient archive. All digital photography will be undertaken using a high-quality camera recommended to have no less than an APS-C or DX size sensor of 10 megapixels and to be capable of generating images in TIF (v6) or unprocessed RAW format.

Artefact Recovery

- 7.37 In advance of the commencement of the Historic England Advisor for Archaeological Science Dr Andy Hammon (Andy.Hammon@historicengland.org.uk, Tel 07747 486255) will be contacted to advise on the specific strategies on collection, selection of material for retention, on-site processing, recording and dating of the ceramic finds. To aid this a site visit should be arranged with the aforementioned parties.
- 7.38 All artefacts will be collected, stored and processed in accordance with standard methodologies and national guidelines (refer to **Appendix 1**). Except for modern artefacts all finds will be collected and retained. Each 'significant find' will be recorded three dimensionally. Similarly, if artefact scatters such as evidence of flint working are encountered these should be also recorded three dimensionally.
- 7.39 Where necessary the artefacts will be stabilised, conserved and stored in accordance with the current conservation guidelines and standards (see **Appendix 1**). Artefacts will be properly conserved after excavation and will be stabilised for storage. If necessary, a conservator will visit the site to undertake 'first aid' conservation treatment.
- 7.40 All metalwork from stratified contexts would be expected to be x-rayed.

- 7.41 Artefacts will be stored in appropriate materials and conditions, and monitored to minimise further deterioration.

Environmental Sampling

- 7.42 Bulk samples (40 Litres or more) must be taken from all securely stratified deposits using a strategy which combines systematic and judgement sampling, but which also follows the methodologies outlined in the English Heritage (2011) 'Environmental Archaeology: A Guide to the Theory and Practice of Methods, from Sampling and Recovery to Post-excavation (Second Edition)' guidance.
- 7.43 Samples for specialist environmental analysis and scientific dating (soil profiles, archaeomagnetic dating, radiocarbon dating, and luminescence dating etc.) should be taken if suitable material is encountered during the excavation. The Historic England Science Advisor should be consulted and provision should be made for an appropriate specialist(s) to visit the site, take samples and discuss the sampling strategy, if necessary. Any samples taken must come from appropriately cleaned surfaces, be collected with clean tools and be placed in clean containers. They will be adequately recorded and labelled and a register of all samples will be kept. Once the samples have been obtained they should be stored appropriately in a secure location prior to being sent to the appropriate specialist.

Human Remains

- 7.44 Any human remains that are discovered must initially be left in-situ, covered and protected. SYAS will be notified at the earliest opportunity. If removal is necessary, the remains must be excavated archaeologically in accordance with the ClfA Technical Paper 14 "Excavation and Post-Excavation Treatment of Cremated and Inhumed Remains (Mckinley and Roberts 1994). The treatment of human remains will be in accordance with Guidance for Best Practice for Treatment of Human Remains Excavated from Christian Burial Grounds in England (Advisory Panel on the Archaeology of Burials in England 2017).
- 7.45 In the event of the discovery of human remains the Contractor will notify the Consultant and SYAS and the Ministry of Justice.

Treasure Trove

- 7.46 Any artefacts which are recovered that fall within the scope of the Treasure Act 1996 and the Treasure (Designation) order 2002 will be reported to the Consultant, the Senior Archaeological Officer and to H. M. Coroner by the Contractor. Any finds must be removed to a safe place and reported to the local coroner as required by the procedures as laid down in the 'Code of Practice' as detailed in the Treasure (Designation) Order (HMSO 2002). Where removal cannot be effected on the same working day as the discovery, suitable security measures must be taken to protect the finds from theft.

Unexpected or Complex Archaeological Remains

- 7.47 Should there be unexpectedly significant or complex discoveries made that warrant, in the professional judgement of the archaeologist on site, more detailed recording than is appropriate within the terms of this specification, then the Contractor should contact the Consultant and the Senior Archaeological Officer with the relevant information to enable them to resolve the matter. No works should be undertaken until a strategy is formulated.

8. REPORTING

- 8.1 An Interim Statement of the results of the evaluation will be prepared and submitted to the Consultant within 2 weeks of the completion of the fieldwork. It will include:
- a brief summary of the results;
 - a plan showing all the trenches and the features excavated at an appropriate scale;
 - a plan of each trench at an appropriate scale, showing the mapped features; and
 - a quantification of the primary archive including contexts, finds, samples and copies of specialist assessment reports (where available).
- 8.2 The finds and samples will be processed (cleaned and marked) as appropriate.
- 8.3 Artefact analysis is to include the production of a descriptive catalogue, quantification by context and discussion/interpretation if warranted, with finds critical for dating and interpretation illustrated.
- 8.4 The full evaluation report will be prepared and accepted by SYAS prior to further fieldwork commences. This will be submitted within 4 weeks of completion of the fieldwork (subject to required specialist analysis of samples and finds). Reporting will be undertaken in accordance with relevant archaeological standards and national guidelines (**Appendix 1**).
- 8.5 The evaluation report will include the following:
- a QA sheet detailing as a minimum - title, author, version, date, checked by, approved by;
 - the dates of the fieldwork;
 - a non-technical summary;
 - a site location drawing;
 - the archaeological and historical background;
 - the methodology employed for the evaluation;
 - the aims and objectives of the investigations;

- the results of the evaluation (to include full description, assessment of condition, quality and significance of the remains, specialist artefact and environmental reports; and phased interpretation);
 - a stratigraphic matrix for each trench (as appropriate);
 - assessment /conclusion and a statement of potential with recommendations for further work and analysis. The Environmental analysis is to include identification of the remains, quantification by context, discussion/interpretation if warranted, and a description of the processing methodology. Radiocarbon results must be presented in full (laboratory sample number, conventional radiocarbon age, delta C13 value, calibration programme). Copies of the laboratory-issued dating certificates must be included as an appendix to the report;
 - details of the projects selection and retention policy should be given with reference to each category of evidence accessed;
 - a statement of the significance of the results in their local, regional and national context cross referenced to the current research agendas;
 - publication proposals if warranted;
 - the current and proposed arrangements for archive storage (including recipient museum details). As a minimum this should include details of the location of the (intended) repository;
 - general and detailed plans showing the location of the survey accurately positioned on an Ordnance Survey base map (at an appropriate and recognised scale). This should include levels on features and at the base of the trial trench;
 - detailed plans and sections illustrating archaeological features (at an appropriate and recognised scale);
 - colour photographic plates illustrating the site setting, work in progress and archaeological discoveries; and
 - a cross-referenced index of the project archive d detailed context index.
- 8.6 In order to inform a mitigation strategy for the project, the fieldwork report will include a statement of potential and recommendations for further excavation and assessment.
- 8.7 A digital pdf copy (complete with illustrations and plates) of the completed report will be submitted to the Consultant as a draft for comment. In finalising the report the comments of the Consultant will be taken into account.
- 8.8 One bound copy of the report will be submitted to SYAS within one week of the receipt of comments on the draft report. A PDF which is ISO19005-1 PDF-A compliant will also be submitted to the Historic Environment Record and the Planning Authority via weTransfer. A PDF copy should also be sent to Historic England's Science Advisor.
- 8.9 Shapefiles of the excavated trenches will be submitted to SYAS on completion of the reporting.

9. MONITORING, PROGRESS REPORTS & MEETINGS

- 9.1 The fieldwork will be subject to suitable monitoring visits by the Consultant and SYAS who will have unrestricted access to the site, site records or any other information. The work will be inspected to ensure that it is being carried out to the required standards and that it will achieve the stated objectives.
- 9.2 During fieldwork monitoring visits SYAS officers will take digital photographs which may be published on the Advisory Service's social media feeds as part of an ongoing strategy to enable public access to information about current fieldwork in the county.
- 9.3 Weekly written progress reports will be provided to the Consultant by the Contractor during the fieldwork.
- 9.4 Progress meetings between the Consultant, SYAS and the Contractor will be held on site during the course of the fieldwork. These meetings will be arranged by the Consultant.
- 9.5 The Contractor will only accept instruction from the Consultant and SYAS.

10. ARCHIVE PREPARATION & DEPOSITION

- 10.1 Before commencing any fieldwork, the archaeological contractor must contact the recipient Museum to determine the museum's requirements for the deposition of the excavation archive. Deposition should be confirmed in writing by the Contractor; with correspondence copied to SYAS.
- 10.2 The Contractor is encouraged to use the ClfA 'Toolkit for selecting Archaeological Archives' (<http://archaeologists.net/selection-toolkit>).
- 10.3 The recipient Museum will be contacted to obtain an accession number. The Contractor will liaise with the Museum regarding the timescale for deposition of the physical archive and resources for box storage and other matter relevant to the long term curation of the archive.
- 10.4 It is the responsibility of the Contractor to endeavour to obtain consent of the landowner, in writing, to the deposition of finds with the Museum. It is the responsibility of the Contractor to meet the Museums' requirements with regard to the preparation of excavation archives for deposition. The archive of finds and records generated during the fieldwork will be kept secure at all stages of the project. All records and materials produced will be quantified, ordered, indexed and internally consistent. The archive will be produced to the standards outlined by Historic England on the Management of Research Projects in the Historic Environment; The MoRPHE Project Managers Guide (2015) and the Society for Museum and Archaeology (2020) Standards and Guidance in the Care of Archaeological Collections.
- 10.5 Archaeological material recovered from fieldwork is irreplaceable and data recorded in the course of fieldwork can and should be copied and additionally held securely in a separate location in line with current best practice until it can be deposited in the recipient repository (English Heritage 2011).

- 10.6 The artefacts discovered are the property of the Landowner. The Landowner will be contacted on completion of the fieldwork to agree for the artefacts to be deposited with the recipient museum as part of the site archive.
- 10.7 The deposition of the archive forms the final stage of each phase of fieldwork at the site. The 'Contractor' shall provide the Consultant with copies of communication with the accredited repository and written confirmation of the deposition of the archive. The Consultant will deal with the transfer of ownership and copyright issues.
- 10.8 The Contractor should commence an OASIS fieldwork summary form at the beginning of a project. Within 3 months of the completion of the report, the Contractor will also prepare and submit the online OASIS form (<http://ads.ahds.ac.uk/project/oasis>). When completing the form the Contractor must make reference to the Regional Research Framework. The Contractor is advised to ensure that adequate time and costings are built into their budget to allow sufficient time to complete the form.

11. PUBLICATION

- 11.1 If significant results are obtained and it is likely that further stages of archaeological work will be required, publication shall be deferred until such time as the project works are substantially complete.
- 11.2 The format of any publication shall be commensurate with the importance of the results and be agreed in advance with the Consultant and SYAS.
- 11.3 Where appropriate a note on the fieldwork should be prepared for inclusion in the Council for British Archaeology's Yorkshire Forum publication (the contractor should contact the editor or CBA's website for more information forum-editor@cba-yorkshire.org.uk).

12. CONFIDENTIALITY & PUBLICITY

- 12.1 All communication regarding this project is to be directed through the Consultant. The Contractor will refer all inquiries to the Consultant without making any unauthorised statements or comments.
- 12.2 The Contractor will not disseminate information or images associated with the project for publicity or information purposes without the prior written consent of the Consultant.

13. COPYRIGHT

- 13.1 The Contractor shall retain full copyright of any commissioned reports, tender documents or other project documents, under the Copyright, Designs and Patents Act 1988 with all rights reserved; excepting that it will provide an exclusive licence to the client for the use of such documents by the client in all matters directly relating to the project as described in the Specification subject to due acknowledgement. The Contractor should agree to assign copyright to the client upon written request but retains the right to be identified as the author of all project documentation and reports as defined in the Copyright, Designs and Patents Act 1988 (Chapter IV, s.79).

- 13.2 Please note that by depositing this report, the contractor gives permission for the material presented within the document to be used by the SYAS, in perpetuity, although The Contractor retains the right to be identified as the author of all project documentation and reports as specified in the Copyright, Designs and Patents Act 1988 (chapter IV, section 79). The permission will allow the SYAS to reproduce material, including for commercial use by third parties, with the copyright owner suitably acknowledged.

14. RESOURCES AND TIMETABLE

- 14.1 All personnel involved in the project should be suitably qualified and experienced professionals.
- 14.2 The Archaeological Contractor will be led by Dave Williams (Senior Project Manager) with support from Kevin Moon (Project Officer).
- 14.3 The following specialists will be used:
- Blaise Vyner Prehistoric pottery (External)
 - Ruth Leary IA and RB pottery (External)
 - Dr Chris Cumberpatch Late prehistoric/post-Roman - modern pottery (External)
 - Gail Drinkall Roman glass, iron and copper alloy objects (External)
 - Anne Clarke Flint (External)
 - Dr Rod Mackenzie or Gerry MacDonald Slag (External)
 - Dr Phil Mills CBM specialist (External)
 - Peter Hammond Clay pipe (External)
 - Malin Holst Osteo-archaeologist (External)
 - Dr Diane Alldritt Archaeobotanical (External)
 - Dr Jane Richardson Animal bone (WYAS)
 - John Carrott Macrofossils, insects, snails (External)
 - Steve Allen Waterlogged wood and leather conservation (External)
- 14.4 The trial trenching will commence in April/ May 2022.
- 14.5 A brief summary/ interim report will be made available to BWB and SYAS one week after the completion of the fieldwork. This will include an overview of the works and will provide a preliminary interpretation of the archaeology encountered.
- 14.6 The full report will be sent to the Consultant and SYAS within four weeks of completion of the fieldwork.

15. ADHERENCE TO SPECIFICATION

- 15.1 Prior to the commencement of the work, the Contractor must confirm adherence to this specification in writing via email to the Consultant.
- 15.2 If, on first visiting the site or at any time during the course of the recording exercise, it appears in the Contractors professional judgement that:
- i. a part or the whole of the site is not amenable to recording as detailed above, and/or;
 - ii. an alternative approach may be more appropriate or likely to produce more informative results;
- 15.3 Then it is expected that the Contractor will contact SYAS and the Consultant as a matter of urgency in order that the matter can be resolved in liaison with the developer and the Local Planning Authority.
- 15.4 It is the Contractor's responsibility to ensure that they have obtained SYAS' consent in writing to any variation of the specification prior to the commencement of on-site work or (where applicable) prior to the finalisation of the tender. Unauthorised variations may result in SYAS being unable to recommend determination of the planning application to the Local Planning Authority based on the archaeological information available and are therefore made solely at the risk of the Contractor.

16. ACCESS ARRANGEMENTS AND WELFARE

- 16.1 Access to the site is restricted to authorised personnel only.
- 16.2 The Consultant will organise access to the site.

17. INSURANCES & HEALTH AND SAFETY

- 17.1 The Contractor will provide the Consultant with details of public and professional indemnity insurance.
- 17.2 The Contractor will have their own Health & Safety policies compiled using national guidelines and which conform to all relevant Health & Safety legislation.
- 17.3 The Contractor will undertake a risk assessment detailing project specific Health & Safety requirements. The risk assessment shall be submitted to the Consultant for approval prior to the commencement of site work. Health & Safety will take priority over archaeological issues.
- 17.4 The supervisor will keep a record of staff site attendance.
- 17.5 All site personnel will familiarise themselves with the following:
- site emergency and evacuation procedures;

- the first aider; and
 - the location of the nearest hospital and doctors surgery.
- 17.6 All site personnel will wear full P.P.E consisting of hard hat, steel toe-capped boots and high-visibility vest or jacket at all times. Additional P.P.E will be issued by the Contractor as required, i.e. goggles, ear defenders, masks, gloves etc. In addition, site personnel will ensure that any visitors to the site are equipped with suitable P.P.E prior to entry. The Contractor has the right to prevent access on to the site if visitors do not have the proper P.P.E.
- 17.7 The Contractor will make a record of all parties attending the site including time attended and time left. The Contractor will also inform the visitors of the Health and Safety procedures, emergency evacuation procedures, the location of the nearest doctor's surgery and hospital and who the site first aider is.
- 17.8 The site will be left in a tidy and workman-like condition and the Contractor will ensure they remove all materials brought onto the site.

18. GENERAL PROVISIONS

- 18.1 Any technical queries arising from this document will be addressed to the Consultant without delay.
- 18.2 All communications on archaeological matters will be directed through the Consultant.
- 18.3 This specification is valid for a period of 6 months from date of issue. After that time it may need to be revised to take account of new discoveries, changes in policy, standards and guidelines or the introduction of new working practices or techniques.

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Prospect Archaeology, 2019, Proposed Residential Development, Hay Green Lane,
Birdwell, South Yorkshire

West Yorkshire Archaeology Service, 2020, Hay Green Lane Birdwell, South Yorkshire –
Geophysical Survey

FIGURES



Figure 2a Location of Trial Trenches overlaid on to geophysical survey interpretation and recent aerial photograph



Figure 2b Location of Trial Trenches overlaid on to proposed layout

APPENDICES

APPENDIX 1
Archaeological Standards and Guidelines

ARCHAEOLOGICAL STANDARDS AND GUIDELINES

Advisory Panel on the Archaeology of Burials in England (APABE) 2013. Science and the Dead: A guideline for the destructive sampling of archaeological human remains for scientific analysis

AAF, 2007, Archaeological Archives. A guide to best practice in creation, compilation, transfer and curation. Archaeological Archives Forum

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Society for Museum and Archaeology 2020, Standards and Guidance in the Care of Archaeological Collections.

APPENDIX 2
Archaeology Assessment



Proposed Residential Development, Hay Green Lane, Birdwell, South Yorkshire

Desk-Based Heritage Assessment

Client: Harworth Group

Local Planning Authority: Metropolitan Borough of Barnsley

Planning Reference: TBC

NGR: SE 3480 0126

Date of Report: November 2019

Author: Jim Bonnor

Report No.: HEL10-01

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Every effort has been made to ensure the accuracy of reporting and appropriateness of recommendations. This report is based on information available at the time of writing, from the sources cited. It does not preclude the potential for future discoveries to be made, or for other unidentified sources of information to exist that alter the potential for archaeological impact. Any opinions expressed within this document reflect the honest opinion of Prospect Archaeology. However, the final decision on the need for further work rests with the relevant planning authority.
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Executive Summary

A planning application is being submitted for residential development with associated access, services and public open space at land south of Hay Green Lane in Birdwell, South Yorkshire. Prospect Archaeology Ltd has prepared a desk-based heritage assessment report on behalf of the Harworth Group to accompany this planning application.

This report has been prepared to consider the archaeological and historical implications of the proposed development in support of the planning application. A map regression exercise and documentary search have provided background information about the history of the site. In addition, a site visit was made to assess existing ground conditions and archaeological potential.

Eight designated assets have been identified within the study area, all of which are grade II listed. A listed barn (NHL1315079) is located adjacent to the site.

A further two undesignated assets have been identified in the study area. These are a post-medieval bathhouse and a cropmark enclosure of late Iron Age/Roman date. Ridge and furrow and various earthworks, possibly relating to buildings and mining, have been identified within the site. Coal pits are marked on historic mapping in the vicinity.

Open space and screening of the development will reduce the effect on the setting of the listed barn to Negligible. There is a low to moderate potential for the site to contain prehistoric or Roman remains of Regional significance and a high potential to contain medieval and post-medieval remains of Local significance. Some disturbance may have been caused by opencast mining and allotment gardens.

Further investigation of the potential is recommended in the form of an archaeological evaluation comprising of geophysical survey and possibly trial trenching. Where archaeology is confirmed to be present, full excavation and recording work based on the results of geophysical survey and evaluation excavation would be required, secured through a condition on the planning permission. All work should be carried out in accordance with written specifications approved by South Yorkshire Archaeology Service. This is in line with National Planning Policy Framework (NPPF) guidelines.

1.0 Introduction

- 1.1.1 Prospect Archaeology Ltd has been appointed by the Harworth Group to prepare a heritage assessment to assess the cultural heritage impact of a proposed residential development at land south of Hay Green Lane in Birdwell, South Yorkshire. This report considers the known and suspected built heritage and archaeological remains lying within and adjacent to the proposed development.

2.0 Site Description

- 2.1.1 The site is composed of two areas, A and B (Fig. 2). Both are irregular parcels of land, located on the eastern edge of Birdwell, South Yorkshire, centred at SE 3481 0131. The site lies in Barnsley District though historically lay in the township of Worsborough.
- 2.1.2 Area A is approximately 4 hectares is a mixture of grass fields and paddocks used for horse grazing and stabling and current allotments. Area B is approximately 2 hectares and comprises grazing paddocks and former, overgrown, allotments.

3.0 Geology and Topography

- 3.1.1 The site undulates but broadly slopes down from west to east, being c.135m AOD in the northwest corner and 126m OAD at the eastern end of Hay Green Way: at its southern extent the land is c.132m AOD.
- 3.1.2 The site is situated on the Pennine Middle Coal Measures Formation of interwoven Mudstone, Siltstone and Sandstone, with no recorded superficial geology (<http://mapapps.bgs.ac.uk/geologyofbritain/home.html>). According to the National Coal Authority website the site is crossed by a coal outcrop north south along the western side and much of the site is described as having probable shallow coal mine workings. It also suggests that surface mining extended into the southern part of the site (<http://mapapps2.bgs.ac.uk/coalauthority/home.html>).

4.0 Assessment Methodology and Significance Criteria

4.1 Built Heritage

- 4.1.1 Built heritage includes listed buildings, conservation areas, registered parks and gardens, and scheduled monuments. It also includes non-listed buildings of local architectural or historic interest which are included in the Historic Environment Record. All statutorily protected built heritage assets are of national importance.
- 4.1.2 The historic built environment is assessed in accordance with the procedures set out in Historic England Advice Notes. Of particular significance in this report is The Setting of Heritage Assets, Historic Environment Good Practice Advice in Planning: 3 (2nd Edition) (Historic England 2015). Within this document a staged approach is proposed:

Step 1: identify which heritage assets and their settings are affected

Step 2: assess whether, how and to what degree these settings make a contribution to the significance of the heritage asset

Step 3: assess the effects of the proposed development, whether beneficial or harmful, on that significance

Step 4: explore the way to maximise enhancement and avoid or minimise harm

Step 5: make and document the decision and monitor outcomes

4.2 Buried Heritage

4.2.1 The buried heritage (archaeology) has been considered through desk-based assessment and a site visit. A full list of referenced sources is provided and references are given. Staff at the South Yorkshire Historic Environment Record (HER) gave advice and information about known archaeological sites of interest in the vicinity of the study area, and where relevant, these were further investigated. Relevant primary and secondary sources were consulted at the Barnsley Archives (BA), and Sheffield Archives (SA). Additional sources consulted included:

- information available on a variety of internet sites including, The National Archives (<http://discovery.nationalarchives.gov.uk/>) and the Archaeology Data Service (<http://ads.ahds.ac.uk/>); the Heritage Gateway (www.heritagegateway.org.uk); and data from PastScape (www.pastscape.org.uk). A full list of sites accessed can be found in the Bibliography section;
- cartographic sources held by the Ordnance Survey and Promap (www.promap.co.uk);
- A site visit was undertaken by Jim Bonnor.

4.2.2 The historical development of the site has been established through reference to these sources and is described in the Baseline Conditions section of this report. This has been used to identify areas of potential archaeological interest. Each area of archaeological potential has been assessed for its archaeological significance in geographical terms, although it should be noted that despite the national policy guidance's reliance on geographical significance, there is no statutory definition for these classifications:

- International – cultural properties in the World Heritage List, as defined in the operational guidelines for the implementation of the World Heritage Convention;
- National – sites or monuments of sufficient archaeological/historical merit to be designated as Scheduled Ancient Monuments. Other sites or monuments may also be considered of national importance but not appropriate for scheduling due to current use(s) or because they have not yet been fully assessed;
- Regional – sites and monuments of archaeological or historical merit that are well preserved or good examples of regional types or that have an increased value due to their group associations, regional rarity or historical associations.
- Local – sites and monuments of archaeological or historical interest but that are truncated or isolated from their original context and are of limited use in furthering archaeological or historical knowledge.
- Negligible – areas of extremely limited or no archaeological or historic interest. These commonly include areas of major modern disturbance such as quarries, deep basements etc.

4.2.3 The concluding chapter of this document summarises the findings and provides an opinion on the potential for archaeological remains to be identified, the likely importance of such remains should they exist and the likely impact of the proposed development. Recommendations for further work are provided.

5.0 Baseline Conditions

5.1.1 The assessment of existing conditions has been based on a 'study area' extending 1000m from

the boundary of the proposed development. This enables the significance of existing and potential archaeological features to be considered in their local, regional and national contexts.

- 5.1.2 The source of the monuments (Figure 2; Tables 1 and 2) noted in the following text are from the South Yorkshire Historic Environment Record (HER) and the National Heritage List for England (NHLE) and have the prefixes HER and NHL respectively. Known and suspected archaeological remains are summarised and discussed in the following sections.

5.2 Designated Heritage Assets

Step 1: Identification

- 5.2.1 There are 8 designations within the study area. The closest of these is a mid-18th century barn on Green Hay Way (NHL1315079), now a house, which is adjacent and overlooks the site from the east.
- 5.2.2 To the south of the site, 400m away, is the Birdwell Obelisk (NHL1192461), dated 1775 and erected for the 2nd Earl of Strafford. South of this is the Tankersley Mine Rescue Station (NHL1376008), the first purpose-built Coal Mines rescue station, built in 1902. And south of this is Stone Bar Farmhouse and attached stable and barn (NHL1191991), dating to the 18th and turn of the 19th century.
- 5.2.3 Just over 300m west of the site are two grade II listed buildings: Roxley Old Hall (NHL1151048) and the Hall's Great Barn (NHL1286642). These constitute early 18th century cow houses and a barn, now converted to dwellings.
- 5.2.4 Close to the northern edge of the study area, at Quarry Hill, is Balk Farmhouse (NHL1151049) and associated barn (NHL1192453). Neither share views with the site.

Step 2: Contribution of Setting to Significance

- 5.2.5 The barn at Hay Green Lane (NHL1315079) is a mid-18th century agricultural building, now converted into a dwelling. It is constructed of thinly coursed sandstone with large quoins and a stone slate roof. Originally of a single-storey, and 5 bays, it has a central cart entry facing the road (north) framed by quoined jambs and wood lintel. There are two rows of slit vents and a square hatch to bay 1. To the rear there is a narrower quoined central opening. The end gables have slit vents and hatches.
- 5.2.6 It is surrounded by drystone sandstone field walls and surrounded by paddock. There are two other more recent and complementary sandstone buildings to the south. Historic mapping (Figs. 3 & 4) shows a string of buildings along Hay Green Lane from the 18th century. A building (no longer extant) is shown to the west and the 1840 map of Worsborough shows this and the listed asset to be within the same field. Earthworks in the field to the west, across the public footpath may correspond with this, or other demolished buildings. The rural setting of the building has been eroded by the encroachment of modern development, notably the estate to the north, though the immediate setting of the barn to the south still displays a rural character.

Table 1: Designated Heritage Assets within 1000m of the site

NHL No	Name / description	Grade
1151048	Rockley Old Hall	II
1151049	Balk Farmhouse	II

1191991	Stone Bar Farmhouse with Attached Stable and Barn	II
1192453	Barn southeast of Balk House Farm	II
1192461	Birdwell Obelisk	II
1286642	Rockley Old Hall (The Great Barn)	II
1315079	Barn, Hay Green Lane	II
1376008	Tankersley Mine Rescue Station	II

5.3 Undesignated Heritage Assets

Prehistoric Period (10,000BC – 43AD)

- 5.3.1 There is little evidence for Prehistoric activity in the study area. There is a probable cropmark enclosure (HER4448), probably prehistoric or Roman, to the north of the site. Previous assessments mention a flint found near Roxley Old Hall (HER4374).

Roman Period (43AD to 410AD)

- 5.3.2 There is similarly little evidence for Roman period activity and nothing in the study area bar the cropmark HER4448. There are no recorded finds of this date in the study area and the nearest recorded asset, c.300m south of the study area, would appear to be the finding of two coins of the 3rd century AD at Tankersley church in 1881 (HER806). Further coins have been found near Roxley Old Hall (HER4138) and during the construction of Roxley Abbey in the 19th century (ASWYAS, 2000).

Early Medieval & Medieval (5th – 16th centuries)

- 5.3.3 The settlement of Birdwell lies in the parish of Worsborough. There are no known early Medieval assets in the study area. Worsborough is mentioned in the Domesday Book under the lands of Ilbert de Lacey, having a mill and woodland. The name Birdwell is not mentioned until the Civil War period, when the Duke of Newcastle's memoirs refer to it in connection with the aftermath of the engagement at Tankersley Moor (Hudson, D, 1965).. The name reportedly comes from the simple story of a bird drinking at a well; and the Ordnance Survey map of 1855 places the Bird Well near the Cock Inn (NHL (Jones, M, 2017).

Table 2 Undesignated Heritage Assets within 1km of the site

HER No.	Name / description	Period / date
4448	Cropmark Enclosure	Iron Age/Roman
6494	Birdwell Obelisk Folly (NHL1192461)	Post- medieval
7033	Tankersley Mine Rescue Station (NHL1376008)	Post-medieval
12551	Bath House	Post-medieval

Post-medieval – Modern Periods (mid-16th – present)

- 5.3.4 The manor of Worsborough passed through a number of hands before being acquired by Frederick

T.W.V. Wentworth of Wentworth Castle in the 18th century and at the time of enclosure at the end of the 18th century, he owned land along Hay Green Lane.

- 5.3.5 Hay Green Lane is one of the earliest settled parts of what is now Birdwell; buildings appear along the lane in Jeffrey's map of 1771 and the location is known as Hay Green on the OS historic mapping. The name may relate to communal land by an enclosure, from the Old English word *gehaeg* meaning 'enclosure' and green. The listed barn NHL1315079 is mid-18th century. A well is marked within the site on the 1855 Ordnance Survey map. A further well was located over to the west, in Wentworth Old Park, known locally as Constantine's well (HER12551), where a bathhouse was constructed in 1734.
- 5.3.6 The site lies east of the centre of Birdwell which sits to the west of the Sheffield Road at the junction of Rockley Lane and Pilley Lane. The A61 Sheffield road running north-south, west of the site was known as Colt Lane Turnpike Road and probably established shortly after 1759 when an act was passed to establish a road between Leeds, Barnsley, Wakefield and Sheffield (Hudson, D, 1965).
- 5.3.7 There were agricultural labourers listed in Birdwell in an agricultural tour published in 1769 (Hudson, D, 1965) but as the industrial revolution took hold Birdwell became a dormitory town for workers in the iron and coal industries: in 1851 there were 89 miners living in Birdwell, split between the coal and ironstone industries. Later, the collieries took over as the main centres of employment.
- 5.3.8 Construction on the Barnsley to Sheffield Branch of the South Yorkshire Railway (SYR) began in 1852. Initially promoted as the South Yorkshire Coal Railway, it was enacted in 1847 as the South Yorkshire Doncaster and Goole Railway Company. Also known as the Blackburn Valley Line, the Barnsley to Sheffield Branch became operational for passengers and goods 1854 (http://www.spick.co.uk/railways_one.htm). The line was doubled in 1876, no doubt in response to increased traffic with the establishment of operations such as Rockingham Colliery. The Wharncliffe Branch line was established at the turn of the 19th century to serve the Wharncliffe Silkstone Colliery.
- 5.3.9 Coal was being extracted in Worsborough before 1700 (Hey, D, 1979) and there is an old coal pit marked at the west end of Hay Green Lane on the OS historic mapping. The listed Tankersley Mine Rescue Station (NHL1376008) is situated in Birdwell; it has a date stone of 1902 and is believed to be the first purpose-built coal mine rescue station. To the north is the listed Birdwell Obelisk Folly (NHL1192461); it is a tall pyramid topped square sandstone column, dating to 1775 and was built for the 2nd Earl of Strafford.
- 5.3.10 Opencast mining took place in the area to the south surrounding Rockingham Colliery in the 1980s and 1990s. The boundary of the opencast area appears to have been just to the south of the site boundary on the eastern side although there is some suggestion that some of the works may have extended into the site (see sections 3.1.2 above and 5.5 below).
- 5.3.11 The narrow ridge and furrow visible in LiDAR images (see Figure 11) and aerial photographs in the fields at the eastern end of the site is most likely to be a result of post-medieval steam ploughing.

5.4 Map Regression

Jeffery's Map of Yorkshire 1771 (Figure 3)

- 5.4.1 The site can only be located generally. Hay Green is labelled and there are buildings along Hay Green Lane. The rest of the site is shown as open/agricultural land.

Plan of the Township of Worsborough in the Parish of Darfield 1840 (Figure 4) Error! Reference source not found.)

- 5.4.2 This shows the site divided into several enclosed fields. The listed barn NHL1315079 is easily identifiable as are other buildings along Hay Field Lane both within and without the site.

Ordnance Survey 1855 (1:10,560) (Figure 5)

- 5.4.3 There is little change since 1840. The fields within the site adjacent to the listed barn have been further divided site and the building to the west within the site boundary has been removed. A well is marked within the site.

Ordnance Survey 1893 (1:2,500) (Figure 6)

- 5.4.4 No significant change.

Ordnance Survey 1905-6 (1:2,500) (Figure 7)

- 5.4.5 Some boundary changes have occurred and some of the western part of the site has been turned over to allotments. A track runs north-south through the allotments.

Ordnance Survey 1931 (1:2,500) (Figure 8)

- 5.4.6 Buildings are starting to appear in the allotments and there is a track leading down into the site from Hay Green Farm. New boundaries have appeared.

Ordnance Survey 1962 (1:2500) (Figure 9).

- 5.4.7 No significant change.

Ordnance Survey 1978-89 (1:10,000) (Figure 10)

- 5.4.8 No significant change. The straight northeast-southwest boundary, roughly forming the southeastern edge of Area B, has not been established yet.

5.5 Site visit, LiDAR and Historic Landscape Characterisation

- 5.5.1 A site visit was undertaken on 16th October 2019 by Jim Bonnor. The eastern half of Area A was generally pasture fields used for horse grazing with some stable buildings toward the centre. The fields along Hay Green Lane in the northeast corner of the site contained ephemeral earthworks, possibly relating to former buildings while to the south of these were earthworks of ridge and furrow oriented east-west and a marked bank runs east-west through the small plot of land between the terrace and Hay Green Farm. The western part of this area was dominated by small allotments and sheds with some small paddocks and stable buildings.

- 5.5.2 Area B also comprised grass paddocks on the eastern side through which a wide depression and bank ran from the southern end of the track from Green Hay Farm that is depicted on the 1931 OS map. It is oriented northwest-southeast and runs to the eastern boundary. It is visible on the LiDAR image (Fig. 11). The strip of land along the western boundary, bordering the recreation ground, was heavily overgrown and impenetrable.

- 5.5.3 The South Yorkshire Historic Landscape Characterisation divides the site into three types. The majority of the site to the east is classed as modern (1970-2003) enclosed land (HSY6954). To the west, covering the area of current and abandoned allotments, the area is classed as Ornamental, Parkland and Recreational (1931-2003) (HSY6911). The small plot west of the terrace on the Hay Green Lane frontage is classed as Industrial to Modern (1750-2003) Residential (HSY6963).

- 5.5.4 The LiDAR data misses the eastern end of the site (Fig. 11). Ridge and furrow is clear in the eastern

most fields from this and satellite images. The wide linear earthwork in the Area B is also visible along with parallel linear features to the west. To the east are possible traces of ploughing, perhaps ridge and furrow. The wide linear earthwork is at an angle to the ploughing and incongruous with the rest of the landscape, suggesting it is a modern feature and may have something to do with the opencast mining area to the south.

6.0 Assessment

6.1 Proposed Development

6.1.1 A detailed masterplan has been prepared for Area A (Fig. 12). This proposal consists of residential development and associated access and services and public open space (Fig.12). There is no indicative layout for Area B.

6.2 Designated Assets

Step 3: Effects of proposed development

6.2.1 There will be no direct impact on any designated assets. The development will be within view of the listed barn NHL1315079 which is listed primarily for its architectural value as an example of a rural vernacular building. There will be an area of open space between the nearest houses and the asset that will maintain the asset's rural setting and not impede the current views to the asset. The asset is currently well screened from much of the development area by existing hedgerows and trees. The impact on the setting of the asset would be Negligible. Any development in Area B would also be screened.

Step 4: Enhancement / Avoiding Harm

6.2.2 It is recommended that the screening between the listed asset NHL1315079 is maintained and enhanced to reduce the visual impact of the proposed development. The use of traditional materials to boundaries on the Hay Green frontage is also recommended.

Step 5: Conclusions

6.2.3 There will be no direct impact on any designated assets. The indirect impact on the listed barn (NHL1315079) will be Negligible.

6.3 Archaeological Potential

6.3.1 There are very few assets within the study area and the archaeological potential of the site is largely unknown. The presence of the cropmark enclosure HER4448 demonstrates a low-moderate potential in the area for remains of the later prehistoric and/or Roman period of probably no more than regional significance.

6.3.2 Evidence for early Medieval and medieval activity is not present, though there is evidence of post-medieval agriculture within Area A in the form of the ridge and furrow earthworks. The origins of the occupation at Hay Green is not known and there is a high potential for post-medieval or earlier structures on the Hay Green Lane frontage associated with the hamlet, in addition to a well toward the eastern end of the site. Any such remains are likely to be of no more than Local significance.

6.3.3 The large linear earthwork in Area B corresponds with the Coal Authority areas of surface working. This earthwork, and land to the west up to the abandoned allotments, may have been part of the opencast mine workings and, if so, it is unlikely that earlier remains survive in this area. While there was no surface evidence of historic coal extraction (i.e. pre-opencast), coal pits are marked in the vicinity on historic OS mapping. The intensive working of the allotment areas may also have had a detrimental effect on any archaeological remains.

7.0 Conclusions

- 7.1.1 The proposed development will have no direct effect on any designated assets and a negligible indirect effect on listed barn NHL1315079. There is a low-moderate potential that prehistoric and/or Roman period remains of Regional significance may be present, along with a high potential that Locally significant remains of medieval/post-medieval date are present in the form of agricultural earthworks, a well and building remains on the Hay Green Lane frontage.
- 7.1.2 It is recommended that the archaeological potential of the site is clarified through field evaluation. In the first instance geophysical survey should be undertaken on those available areas. Dependent on the results, trial trenching may be used to confirm the archaeological potential. Where archaeology is confirmed to be present, full excavation and recording work based on the results of geophysical survey and evaluation excavation would be required, secured through a condition on the planning permission. All work should be carried out in accordance with written specifications approved by South Yorkshire Archaeology Service. This is in line with National Planning Policy Framework (NPPF) guidelines.

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<https://www.barnsley.gov.uk/documents/wessex/H4%20Site%20Assessment.pdf>

<https://www.barnsley.gov.uk/documents/wessex/AC33%20Site%20Assessment.pdf>

http://www.spick.co.uk/railways_one.htm

9.0 Figures



Figure 1: Site Location Map (source OS Opendata)

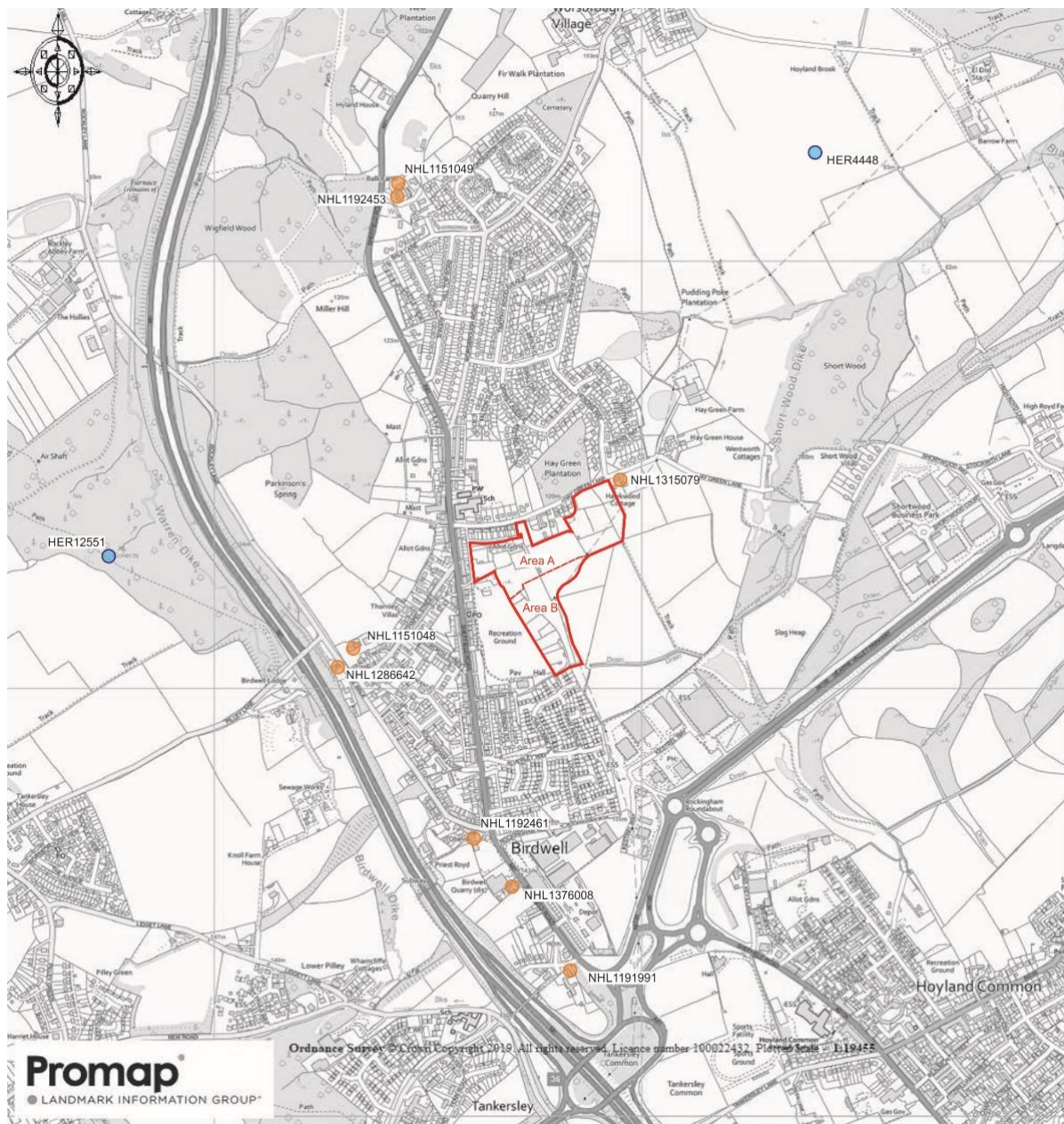


Figure 2: Heritage assets (South Yorkshire HER)



Figure 3: Jeffery's Map of Yorkshire, 1771.



Figure 4: Plan of the township of Worsborough 1840

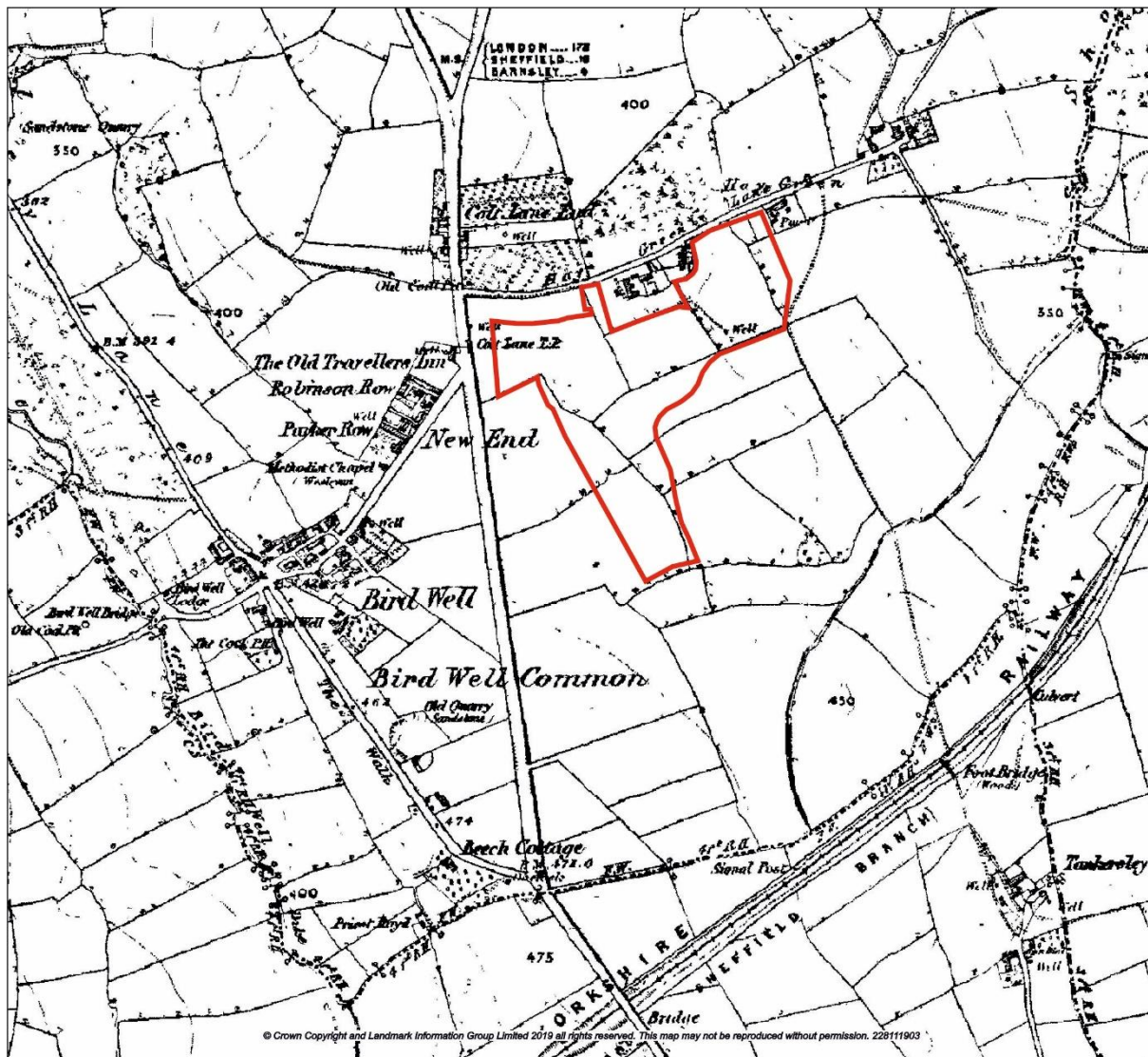


Figure 5: Ordnance Survey 1854, 1:10,560

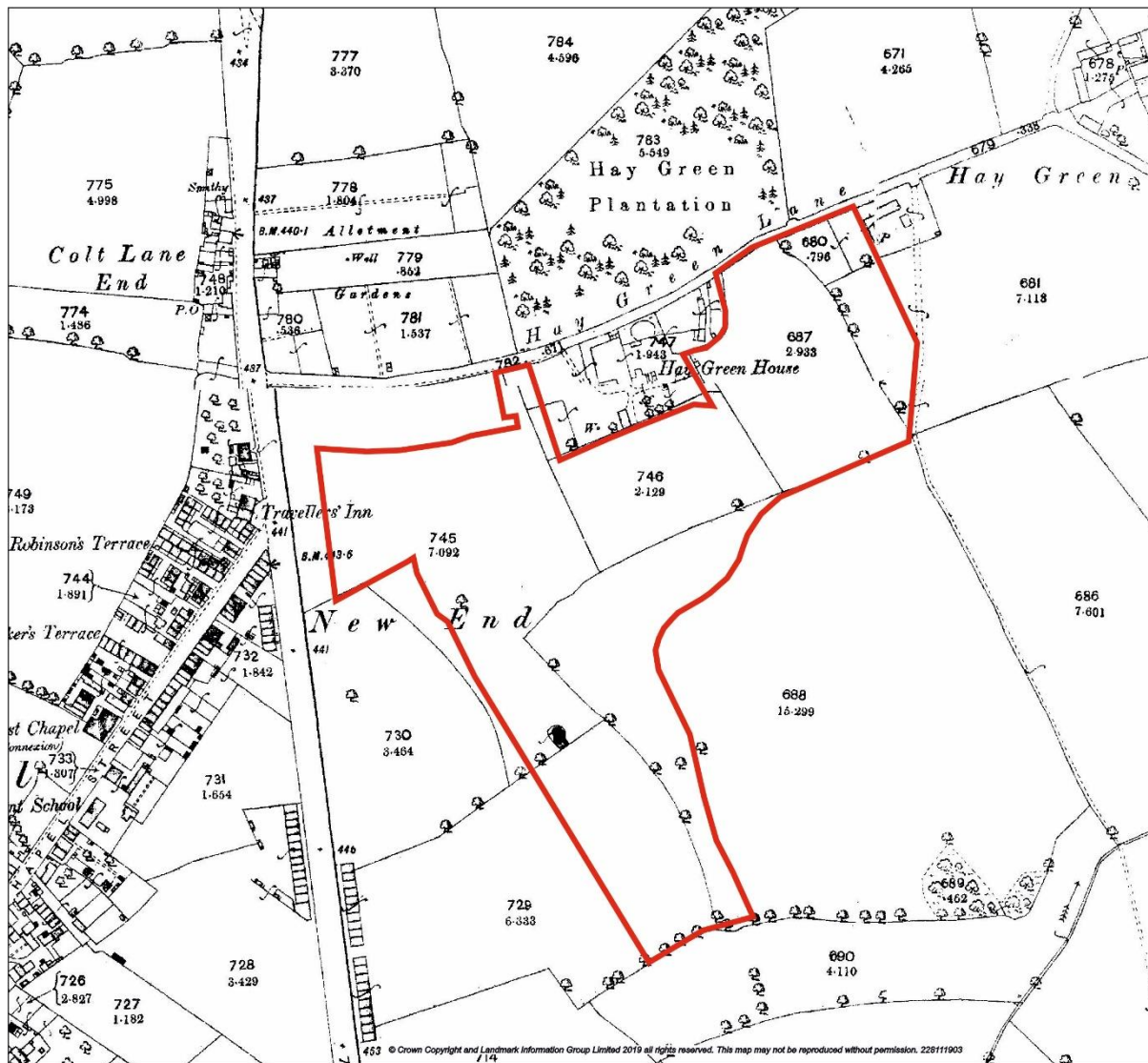


Figure 6: Ordnance Survey 1893, 1:2500

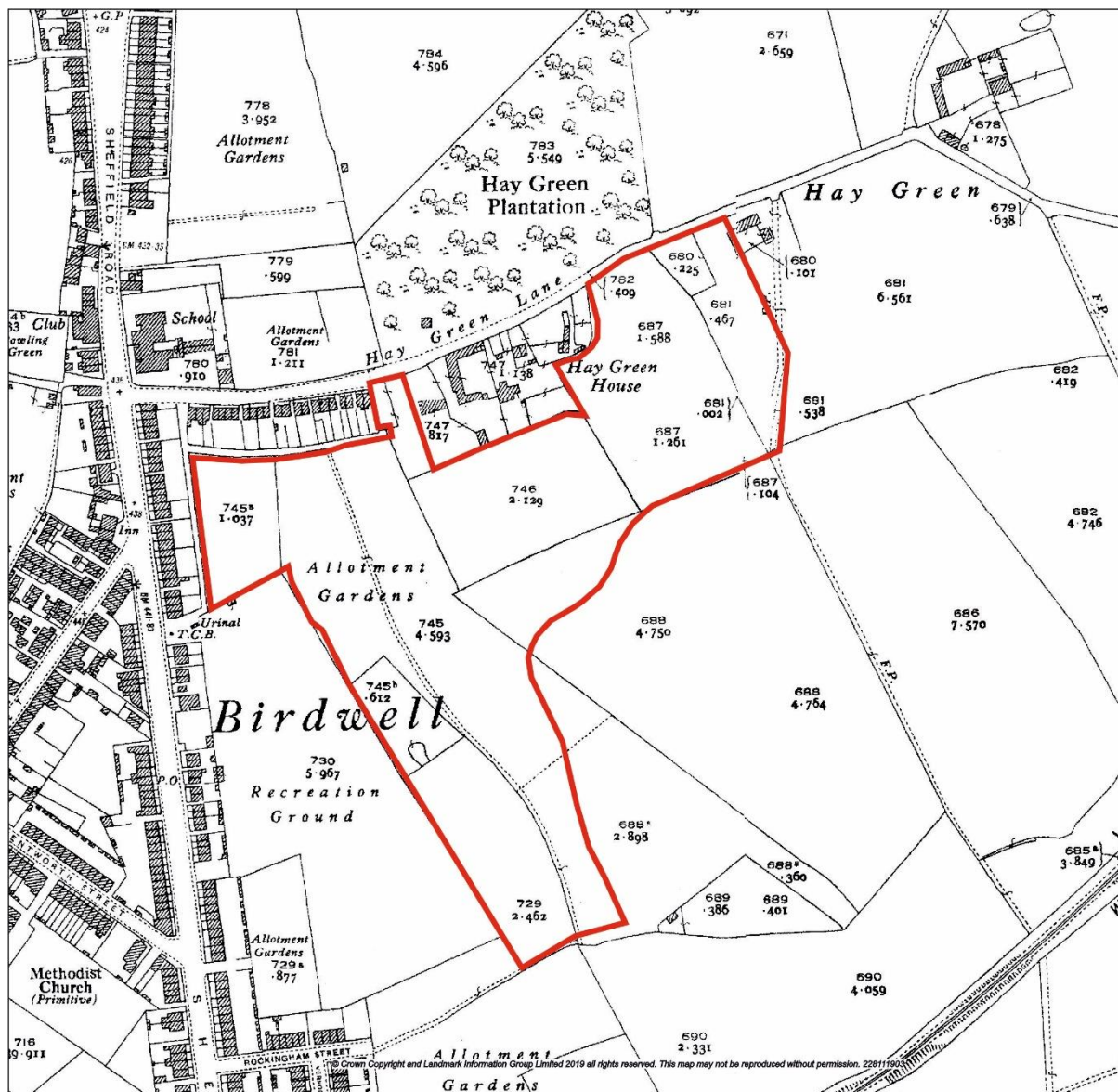


Figure 7: Ordnance Survey 1905-6, 1:2500

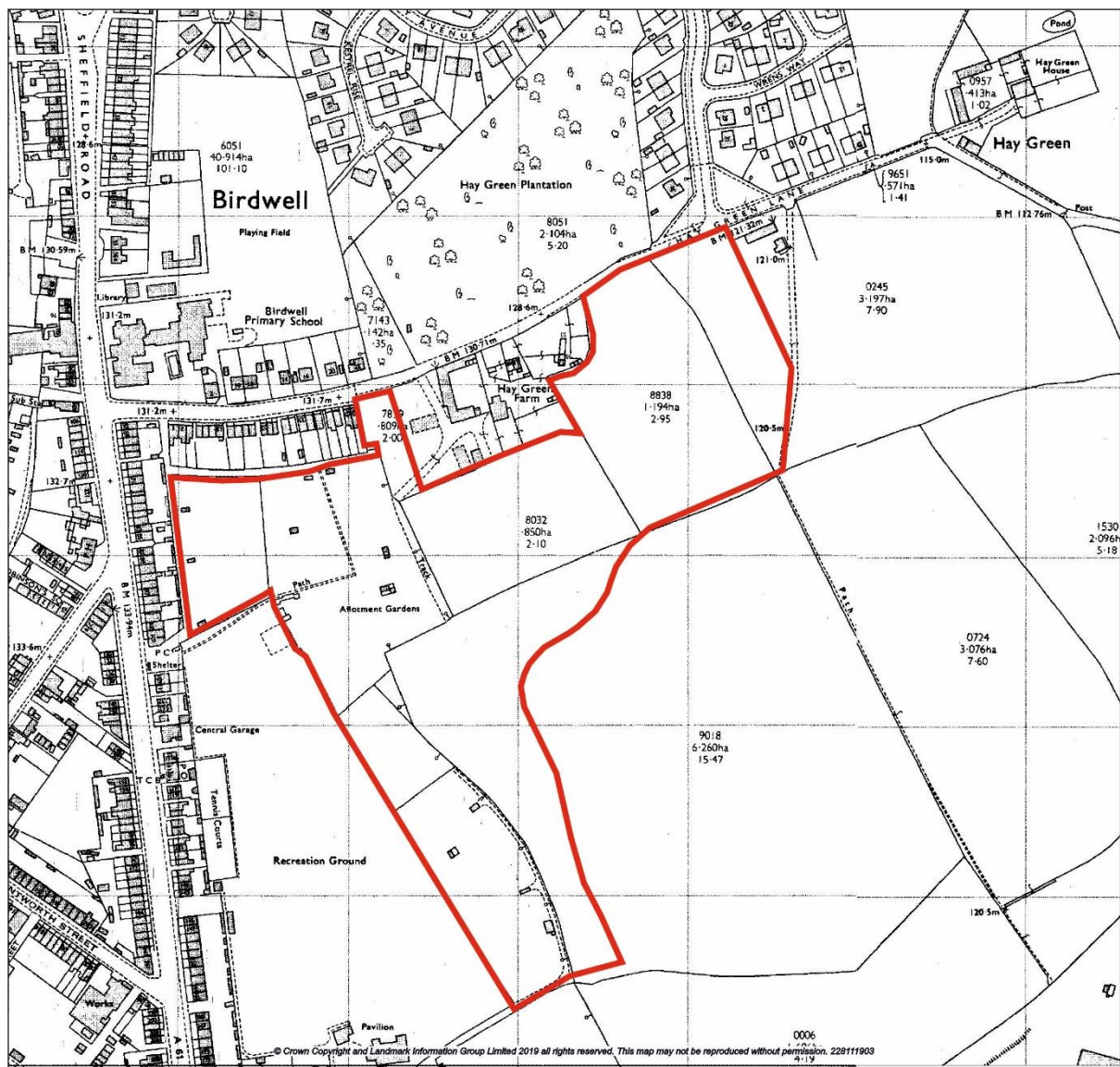


Figure 8: Ordnance Survey 1931 1:2500

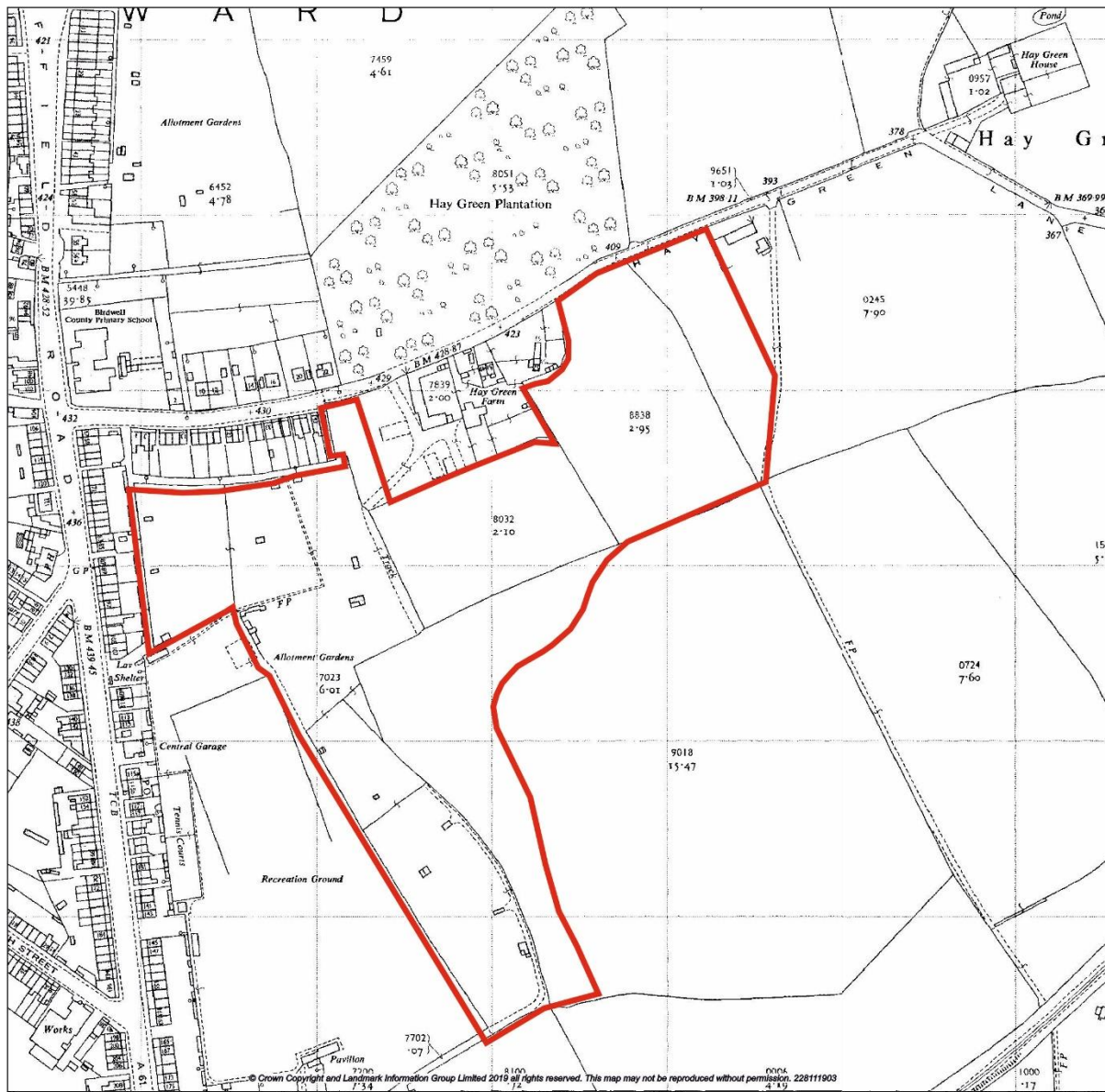


Figure 9: Ordnance Survey 1962 1:2500

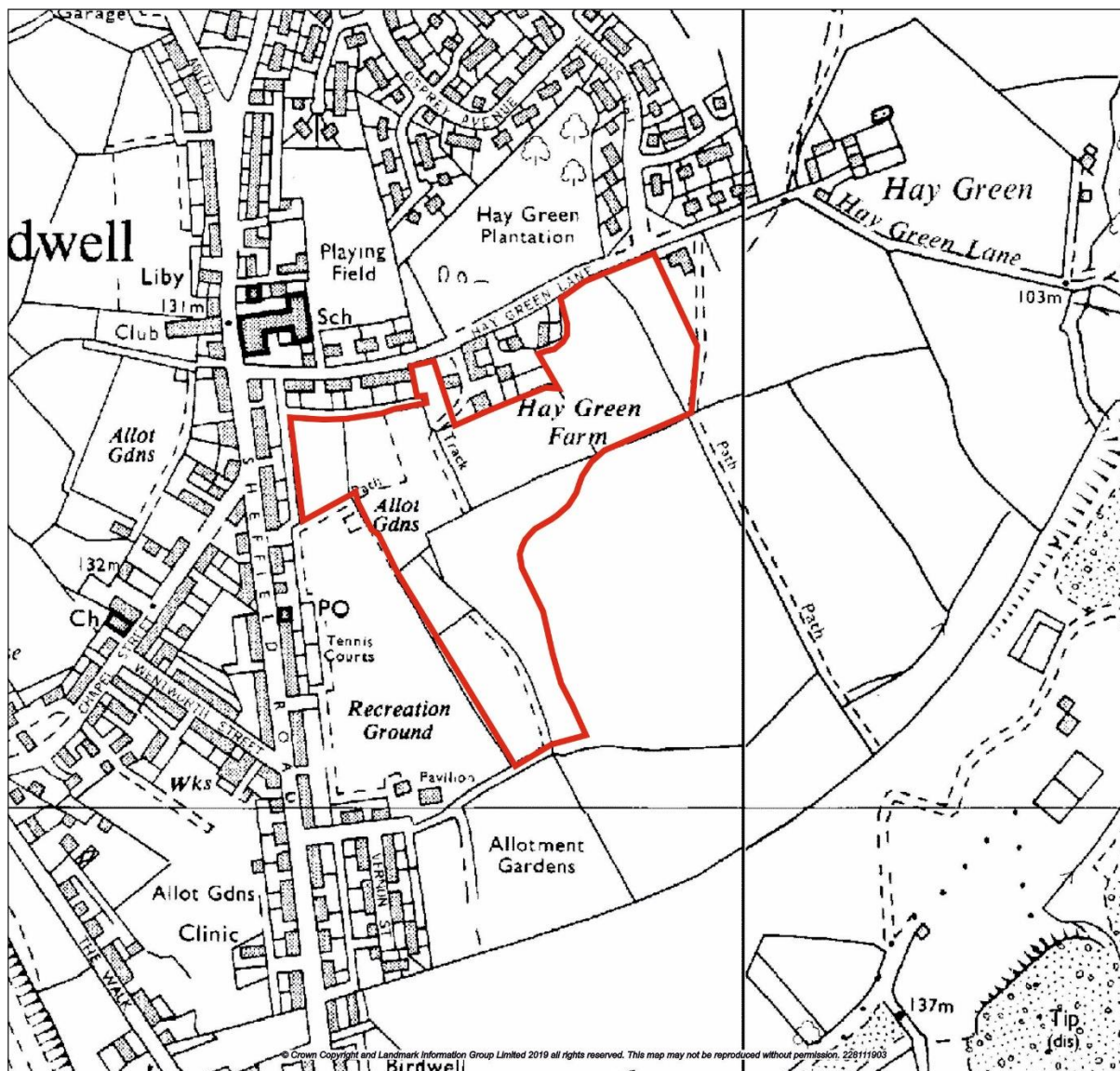
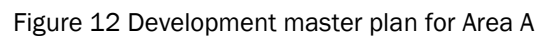


Figure 10: Ordnance Survey 1978-89, 1:2500



Figure 11: LiDAR hill shaded image using Environment Agency 1m opendata



10.0 Plates



Plate 1: Listed barn NHL1315079, looking east along Hay Green Lane



Plate 2: Earthworks in the field adjacent to listed barn NHL1315079



Plate 3: Fields south of Hay Green Lane, looking northwest



Plate 4: Looking north to where the site meets Hay Green Lane at the end of the terrace.



Plate 5: Looking southeast across the south-eastern fields



Plate 6 Looking north from beneath electricity cables on the south-eastern boundary



Plate 7 Looking north from the southern boundary of the site across the eastern fields



Plate 8: Looking north from the southern limit of the site over the former allotments



Plate 9: Looking east from the Recreation Ground across the former allotments



Plate 10: Looking northwest across paddock to the rear of terraces along Sheffield Road



Plate 11 Looking northeast across paddock and allotments south of the terrace on Hay Green Lane



Plate 12 Looking south from Hay Green Lane

Appendix 1: Legislation and Planning Policy Context

Ancient Monuments and Archaeological Areas Act 1979 (AMAAA)

The Act is the primary legislation protecting archaeological remains within the United Kingdom. It identifies as a duty of the Secretary of State the need to compile and maintain a schedule of ancient monuments of national importance, to allow for their preservation, so far as possible, in their current (at the time of scheduling) state.

A statement setting out current Government policy on the identification, protection, conservation and investigation of nationally important (both scheduled and nationally important non-scheduled) ancient monuments was published in October 2013 (DCMS 2013).

Where works to scheduled monuments are proposed for development-related purposes, the Secretary of State has particular regard to the following principles:

Only in wholly exceptional cases will consent be granted for works could result in substantial harm to, or loss of, the significance of a Scheduled Monument; and

In cases that would lead to less than substantial harm to the significance of a Scheduled Monument the harm will be weighed against the public benefits of the proposal (DCMS 2013, para 20).

This legislative position is directly reflected in the National Planning Policy Framework (NPPF) which states that “Where a proposed development will lead to substantial harm to (or total loss of significance of) a designated heritage asset, local planning authorities should refuse consent, unless it can be demonstrated that the substantial harm or total loss is necessary to achieve substantial public benefits that outweigh that harm or loss...” (NPPF, para 195), and “Where a development proposal will lead to less than substantial harm to the significance of a designated heritage asset, this harm should be weighed against the public benefits of the proposal including, where appropriate, securing its optimum viable use” (NPPF, para 196).

Where consent is granted for works that could result in harm to, or loss of, the significance of a Scheduled Monument, conditions are expected to be imposed that provide for recording of information that adds to our understanding of the significance of that monument. Those conditions are likely to be designed to ensure that:

- the project design seeks to further the objectives of relevant international or national research frameworks;
- use is made of appropriately skilled teams with the resources to fully implement the project design to relevant professional standards (such as those published by the Institute for Archaeologists);
- the project design provides for the full analysis, publication and dissemination of the results, including the deposition of reports in the relevant Historic Environment Record (HER), to a set timetable; and
- provision is made in the project design for the conservation and deposition of the site archive with a local museum or other public depository willing to receive it (DCMS 2013, para 21).

Planning (Listed Buildings and Conservation Areas) Act 1990

Section 66 of the Planning (Listed Buildings and Conservation Areas) Act (1990) highlights the importance of built heritage and Listed Buildings within the planning system. With regard to the Local Planning Authority's (LPA) duty regarding listed buildings in the planning process, it states that:

“In considering whether to grant planning permission for development which affects a listed building or its setting, the local planning authority or, as the case may be, the Secretary of State shall have special regard to the desirability of preserving the building or its setting or any features of special architectural or historic interest which it possesses”.

In addition, Section 72 of the Act emphasises the value of Conservation Areas in built heritage planning. In relation to the duties and powers of the LPA, it provides that:

“With respect to any buildings or other land in a conservation area, special attention shall be paid to the desirability of preserving or enhancing the character or appearance of that area”.

The National Planning Policy Framework (NPPF) 2018

This replaces all previous Planning Policy Guidance notes (PPGs) and Planning Policy Statements (PPSs) and revises the NPPF 2012.

Section 16 provides policy on ‘Conserving and enhancing the historic environment’. Planning decisions have to be made from a position of knowledge and understanding with respect to the historic environment. Paragraph 189 states:

“In determining applications, local planning authorities should require an applicant to describe the significance of any heritage assets affected, including any contribution made by their setting. The level of detail should be proportionate to the assets’ importance and no more than is sufficient to understand the potential impacts of the proposal on their significance. As a minimum the relevant historic environment record should have been consulted and the heritage assets assessed using appropriate expertise where necessary. Where a site on which development is proposed includes or has the potential to include heritage assets with archaeological interest, local planning authorities should require developers to submit an appropriate desk-based assessment and, where necessary, a field evaluation”.

In paragraph 192, it is made clear that a balance must be sought, on the one hand sustaining and enhancing the significance of heritage assets and the positive contribution that they can make to communities, and on the other in considering the positive contribution that a new development could make to local character and distinctiveness.

The impact on a heritage asset should be assessed in terms of the significance of that asset; the greater the significance, the greater weight should be given in that assessment. Any harm to, or loss of, the significance of a designated asset should require clear and convincing justification. Where substantial harm or loss is predicted, approval should be given only in exceptional circumstances for Grade II listed buildings, parks or gardens. For heritage assets of higher importance (Grade II* & I listed buildings and parks & gardens, scheduled monuments, protected wreck sites, battlefields and World Heritage Sites) approval for proposed developments that cause substantial harm should be ‘wholly exceptional’ (para 194). In all cases the harm must be weighed against the public benefit (para 195).

As a footnote to para 194 the NPPF states that:

“Non-designated heritage assets of archaeological interest, which are demonstrably of equivalent significance to scheduled monuments, should be considered subject to the policies for designated heritage assets.”

As is reflected in the DCMS 2013 statement on Government policy, it is made clear that undesignated heritage assets of national importance should be afforded the same consideration as designated assets of equivalent significance:

“The effect of an application on the significance of a non-designated heritage asset should be taken into account in determining the application. In weighing applications that affect directly or indirectly non-

designated heritage assets, a balanced judgement will be required having regard to the scale of any harm or loss and the significance of the heritage asset” (para 197);”

In addition, para 187 states that:

“Local planning authorities should maintain or have access to a historic environment record. This should contain up-to-date evidence about the historic environment in their area and be used to:

- a) assess the significance of heritage assets and the contribution they make to their environment; and
- b) predict the likelihood that currently unidentified heritage assets, particularly sites of historic and archaeological interest, will be discovered in the future. This replaces all previous Planning Policy Guidance notes (PPGs) and Planning Policy Statements (PPSs).”

Among the core planning principles, provision is made to “conserve heritage assets in a manner appropriate to their significance, so that they can enjoyed for their contribution to the quality of life of this and future generations” (CLG 2012, para 17).

Section 12 provides policy on ‘Conserving and enhancing the historic environment’. Planning decisions have to be made from a position of knowledge and understanding with respect to the historic environment. Paragraph 128 states: “In determining applications, local planning authorities should require an applicant to describe the significance of any heritage assets affected, including any contribution made by their setting. The level of detail should be proportionate to the assets’ importance and no more than is sufficient to understand the potential impacts of the proposal on their significance. As a minimum the relevant historic environment record should have been consulted and the heritage assets assessed using appropriate expertise where necessary. Where a site on which development is proposed includes or has the potential to include heritage assets with archaeological interest, local planning authorities should require developers to submit an appropriate desk-based assessment and, where necessary, a field evaluation”.

In paragraph 131, it is made clear that a balance must be sought, on the one hand sustaining and enhancing the significance of heritage assets and the positive contribution that they can make to communities, and on the other in considering the positive contribution that a new development could make to local character and distinctiveness.

The impact on a heritage asset should be assessed in terms of the significance of that asset; the greater the significance, the greater weight should be given in that assessment. A distinction is made between ‘substantial’ and ‘less than substantial’ harm. Where substantial harm or loss to is predicted, approval should be given only in exceptional circumstances for Grade II listed buildings, parks or gardens. For heritage assets of higher importance (Grade II* & I listed buildings and parks & gardens, scheduled monuments, protected wreck sites, battlefields and World Heritage Sites) approval for proposed developments that cause substantial harm should be ‘wholly exceptional’ (para 132). In all cases the harm must be weighed against the public benefit (paras 133 & 134).

As is reflected in the DCMS 2013 statement on Government policy, it is made clear that undesignated heritage assets of national importance should be afforded the same consideration as designated assets of equivalent significance:

“The effect of an application on the significance of a non-designated heritage asset should be taken into account in determining the application. In weighing applications that affect directly or indirectly non-designated heritage assets, a balanced judgement will be required having regard to the scale of any harm or loss and the significance of the heritage asset” (para 135);

“Non-designated heritage assets of archaeological interest that are demonstrably of equivalent significance to scheduled monuments, should be considered subject to the policies for designated heritage assets” (para 139).

National Planning Practice Guidance (2014)

The National Planning Practice Guidance (NPPG) was published by the Department for Communities and Local Government in March 2014 and provides guidance for planners and communities which will help deliver high quality development and sustainable growth in England. In terms of heritage, guidance entitled ‘Conserving and enhancing the historic environment’ sets out information with respect to the following:

- the recognition of the appropriate conservation of heritage assets forming one of the ‘Core Planning Principles’ that underpin the planning system;
- what the main legislative framework for planning and the historic environment is (Planning (Listed Buildings and Conservation Areas) Act 1990; Ancient Monuments and Archaeological Areas Act 1979; and Protection of Wrecks Act 1973);
- a definition of ‘significance’;
- why significance is important in decision-taking;
- the considerations of designated and non-designated assets;
- the identification of non-designated heritage assets; and
- the considerations for when applications for planning permission are required to consult or notify English Heritage.

Non-Statutory Guidance

English Heritage Conservation Principles Policies and Guidance (EH 2008) defines the setting of historic assets as:-

“...the surroundings in which a place is experienced, its local context, embracing present and past relationships to the adjacent landscape...”

EH draws a distinction between ‘setting’ and ‘context’ (paragraphs 76 and 77) and the document makes it clear that whereas ‘setting’ involves a localised area, ‘context’ is a wider concept involving “any relationship between a place and other places, relevant to the values of that place”.

- Heritage values are considered under four main headings
- Evidential Value derives from the potential for a place to yield evidence about past human activity
- Historical Value derives from the ways in which past, people and events can be connected through a place to the present
- Aesthetic value derives from the ways in which people draw sensory and intellectual stimulation from a place.
- Communal value derives from the meanings of a place for the people who relate to it.

Local Policy Guidance

Barnsley Metropolitan Borough Council has an emerging Local Plan: Local Plan Publication Draft 2016. It contains a number of policies relevant to the historic environment:

Policy HE1 The Historic Environment

We will positively encourage developments which will help in the management, conservation, understanding and enjoyment of Barnsley's historic environment, especially for those assets which are at risk.

This will be achieved by:-

Supporting proposals which conserve and enhance the significance and setting of the borough's heritage assets, paying particular attention to those elements which contribute most to the borough's distinctive character and sense of place.

These elements and assets include:-

- The nationally significant industrial landscapes of the Don Valley which includes Wortley Top Forge and its associated water management system.
- Elsecar Conservation Village, its former ironworks and its workshops which were once part of the Fitzwilliam Estate.
- A number of important 18th and 19th century designed landscapes and parks including Wentworth Castle parkland (the only grade I Registered Park and Garden in South Yorkshire), and Cannon Hall Park.
- The well preserved upstanding remains of the Cluniac and Benedictine monastery at Monk Bretton.
- 18 designated conservation areas of special and architectural interest including three town centre conservation areas, as well as large areas incorporating Stainborough Park, Cawthorne, Penistone and Thurlstone.
- The 17th century Rockley Blast Furnace and its later engine house
- Gunthwaite Hall Barn, a large 16th century timber framed barn
- Barnsley Main Colliery Engine House and Pithead structures
- The 17th century Worsbrough Mill (the only historic working water mill in South Yorkshire).
- Relatively widespread evidence of pre-historic settlements, and occupation which are often archaeological and below ground but sometimes expressed as physical or topographic features.

The boroughs more rural western and Pennine fringe characterised by upland and (often) isolated settlements or farmsteads surrounded by agricultural land and dominated by historic and vernacular buildings built from local gritstone.

By ensuring that proposals affecting a designated heritage asset (or an archaeological site of national importance such as a Scheduled Ancient Monument) conserve those elements which contribute to its significance. Harm to such elements will be permitted only where this is outweighed by the public benefits of the proposal. Substantial harm or total loss to the significance of a designated heritage asset (or an archaeological site of national importance) will be permitted only in exceptional circumstances where there is a clearly defined public benefit.

By supporting proposals that would preserve or enhance the character or appearance of a conservation area. There are 18 conservation areas in the borough and each is designated for its particular built and historic significance. This significance is derived from the group value of its constituent buildings, locally prevalent styles of architecture, historic street layouts and its individual setting which frequently includes views and vistas both into and out of the area. Particular attention will be given to those elements which have been identified in a Conservation Area Appraisal as making a positive contribution to its significance.

By ensuring that proposals affecting an archaeological site of less than national importance or sites with no statutory protection conserve those elements which contribute to its significance in line with the importance of the remains. In those cases where development affecting such sites is acceptable in principle, mitigation of damage will be ensured through preservation of the remains in situ as a preferred solution. When in situ preservation is not justified, an understanding of the evidence to be lost must be gained in line with the provisions of Policy HE6.

By supporting proposals which conserve Barnsley's non-designated heritage assets. We will ensure that developments which would harm or undermine the significance of such assets, or their contribution to the character of a place will only be permitted where the benefits of the development would outweigh the harm.

By supporting proposals which will help to secure a sustainable future for Barnsley's heritage assets, especially those identified as being at greatest risk of loss or decay.

Policy HE2 Heritage Statements and general application procedures

Proposals that are likely to affect known heritage assets or sites where it comes to light there is potential for the discovery of unrecorded heritage assets will be expected to include a description of the heritage significance of the site and its setting.

This description will need to include an appropriate but proportionate level of detail that allows an understanding of the significance of the asset but no more than is necessary to understand the impact of the proposal.

For sites with significant archaeological potential, a desk based assessment may be required in line with the provisions of Policy HE6.

Applications made in outline form will not be accepted for proposals which will which affect a conservation area, a listed building or any other designated heritage asset. In such cases, sufficiently detailed plans and drawings to enable an assessment to be made of the likely impact of the development upon the significance of any heritage assets affected will be required.

Policy HE3 Developments affecting Historic Buildings

Proposals involving additions or alterations to listed buildings or buildings of evident historic significance such as locally listed buildings (or their setting) should seek to conserve and where appropriate enhance that building's significance. In such circumstances proposals will be expected to:

- Respect historic precedents of scale, form, massing, architectural detail and the use of appropriate materials that contribute to the special interest of a building.
- Capitalise on opportunities to better reveal the significance of a building where elements exist that detract from its special interest.

Policy HE4 Developments affecting Historic Areas or Landscapes

Proposals that are within or likely to affect the setting and the heritage significance of a Registered Park and Garden will be expected to:

- Respect historic precedents of layout, density, scale, forms, massing, architectural detail and

materials that contribute to the special interest of an area.

- Respect important views either within the area or views that contribute to the setting of the area.
- Take account of and respect important landscape elements including topographic features or trees that contribute to the significance of the area where harm might prejudice future restoration.

Policy HE5 the Demolition of Historic Buildings

The demolition of listed buildings, buildings that make a positive contribution to a in conservation area, buildings in registered parks and gardens, or other buildings (including locally listed buildings) with evident historic significance will not be approved unless:

- The building is structurally unsound and dangerous and cannot be viably repaired, where it is shown that every effort has been made to secure, repair, or re-use the building, and where no opportunities for grant funding, charitable ownership, sale or lease are available.
- It can be demonstrated that the retention of the building is not justifiable in terms of the overarching public benefit that would outweigh the historic value of the asset.
- Demolition involves partial demolition where that element can be shown not to contribute positively to the area or the heritage significance of the asset.

Where permission is granted for the demolition of a building within a conservation area or a registered park and garden, a condition will be attached to ensure that the demolition only goes ahead when full planning permission has been granted for redeveloping the site and the developer can demonstrate that the redevelopment will go-ahead within a specific timescale.

Policy HE6 Archaeology

Applications for development on sites where archaeological remains may be present must be accompanied by an appropriate archaeological assessment (including a field evaluation if necessary) that must include the following:

- Information identifying the likely location and extent of the remains, and the nature of the remains
- An assessment of the significance of the remains
- Consideration of how the remains would be affected by the proposed development.
- Where preservations of the remains are not justified, permission will be conditional upon:-
- Archaeological recording of the evidence (including evidence that might be destroyed), whether buried remains or part of a standing structure or building
- Analysis of the information gathered.
- Interpretation of the results gained
- Public dissemination of the results; and
- Deposition of the resulting archive with an appropriate museum or archive service

APPENDIX 3
Geophysical Survey



WYAS
**Archaeological
Services**

Hay Green Lane

Birdwell

South Yorkshire

Geophysical Survey

Report no. 3414
April 2020

Client: Harworth Estates Investments Ltd.



Hay Green Lane, Birdwell, South Yorkshire

Geophysical Survey

Summary

A geophysical (magnetometer) survey was undertaken on approximately 5.5 hectares of land located to the south of Hay Green Lane, Birdwell, South Yorkshire. Possible post-medieval ridge and furrow cultivation has been detected along with former field boundaries which correlate to old mapping and geological responses can be seen throughout. Magnetic disturbance has also been recorded around the periphery of the survey areas. Based on the results and interpretation of the geophysical survey the archaeological potential of the site is deemed low.

Report Information

Client: Harworth Estates Investments Ltd.
Address: Advantage House, Poplar Way, Catcliffe
Report Type: Geophysical Survey
Location: Birdwell
County: South Yorkshire
Grid Reference: SE 3485 0126
Period(s) of activity: ?Post-medieval - modern
Report Number: 3414
Project Number: X188
Site Code: BDW20
OASIS ID: archaeol1-392219
Date of fieldwork: April 2020
Date of report: April 2020
Project Management: Emma Brunning BSc MCIfA
Fieldwork: Chris Sykes BA MSc MCIfA
Alastair Trace BSc MSc
Illustrations: Chris Sykes
Photography: Chris Sykes
Research: Emma Brunning
Report: Emma Brunning

Authorisation for
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1 Introduction

Archaeological Services ASWYAS has been commissioned by Prospect Archaeology on behalf of Harworth Estates Investments Limited to undertake a geophysical survey at land to the south of Hay Green Lane, Birdwell, South Yorkshire. This was undertaken in line with current best practice (CIfA 2014; Schmidt *et al.* 2015). The survey was carried out between 2nd and 3rd April 2020 to provide additional information on the archaeological resource of the site.

Site location, topography and land-use

The survey area is located at SE 3485 0126 (approximate centre), comprising approximately 5.5ha to the south of Birdwell (see Fig. 1).

The site is situated on land consisting of pasture and horse paddocks to the south of Hay Green Lane. It is bounded to the west by Birdwell Recreation Ground and to the east and south by agricultural and pasture fields. The site lies at 121m (above Ordnance Datum) aOD in the northeast, rising to approximately 129m aOD in the southwest.

Soils and geology

The recorded bedrock geology comprises Pennine Middle Coal Measures Formation – sandstone, a sedimentary bedrock that formed approximately 310 to 318 million years ago in the Carboniferous Period. No superficial deposits have been recorded (BGS 2020). Soils are described as slowly permeable seasonally wet acid loamy and clayey soils of the Soilscape 17 classification (CSAI 2020).

2 Archaeological Background

The archaeological background below is taken from a 1km search on Heritage Gateway (HG 2020) and information from ASWYAS site works in the vicinity.

Documentary evidence for settlement at Birdwell is sparse but it is recorded in Yorkshire Diaries of 1642 as ‘the Birdwell’ (Smith 1961). The place-name is traditionally believed to have originated from a large bird seen drinking at a well, thus the Bird Well (Hudson 1965).

Approximately 200m to the southwest of site trial trenching was undertaken on land off Sheffield Road, which is now housing. A number of features relating to modern field drainage were identified but no features or deposits of archaeological significance were observed (McNaught 2000).

550m to the southwest lies Tankersley Rescue Station which is believed to be the first purpose-built mines rescue station away from the colliery. It is Grade II listed (entry number 469990).

Roughly 800m to the south of the survey area a geophysical survey was carried out in 2014 by ASWYAS in advance of road improvements. No anomalies of an archaeological origin were recorded and the results were dominated by geological variances (Harrison 2014).

3 Aims, Methodology and Presentation

The aims and objectives of the programme of geophysical survey were to gather sufficient information to establish the presence/absence, character and extent, of any archaeological remains within the specific area and to inform an assessment of the archaeological potential of the site. To achieve this aim, a magnetometer survey covering all amenable parts of the Site was undertaken (see Fig. 2).

The general objectives of the geophysical survey were:

- 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; and
- to prepare a report summarising the results of the survey.

Magnetometer survey

The site grid was laid out using a Trimble VRS differential Global Positioning System (Trimble R6 model). The survey was undertaken using Bartington Grad601 magnetic gradiometers. These were employed taking readings at 0.25m intervals on zig-zag traverses 1.0m 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. Bespoke in-house 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 (OS) mapping, is shown in Figure 1. Figure 2 displays processed magnetometer data at a scale of 1:2500. Processed and minimally processed data, together with interpretation of the survey results are

presented in Figures 3 to 5 inclusive at a scale of 1:1250. Figure 6 shows the processed data overlain the first edition Ordnance Survey map at a scale of 1:2500.

Technical information on the equipment used, data processing and survey methodologies are given in Appendix 1. Technical information on locating the survey area is provided in Appendix 2. Appendix 3 describes the composition and location of the archive. A copy of the completed OASIS form is included in Appendix 4.

The survey methodology, report and any recommendations comply with guidelines outlined by the European Archaeological Council (Schmidt *et al.* 2015) and by the Chartered Institute for Archaeologists (CIfA 2014). 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 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 and Discussion (see Figures 3 to 5)

Ferrous anomalies and magnetic disturbance

Ferrous anomalies, as individual 'spikes', or as large discrete areas are typically caused by ferrous (magnetic) material, either on the ground surface or in the plough-soil. Little importance is normally given to such anomalies, unless there is any supporting evidence for an archaeological interpretation, as modern ferrous debris or material is common on rural sites, often being present as a consequence of manuring or tipping/infilling. There is no obvious pattern or clustering to their distribution in this survey to suggest anything other than a random background scatter of ferrous debris in the plough-soil.

Magnetic disturbance along the limits of the survey areas are due to be linked to metal fencing within the field boundaries. Service pipes have been located to the east of Area 3 and in the southern section of Area 4. A band of ferrous responses in the south of Area 1 relates to a temporary fence within the horse paddock.

Geological anomalies

The survey has detected a number of anomalies that have been interpreted as geological in origin. It is thought that the responses have been detected because of the variation in the composition and depth of the deposits of superficial material in which they derive. It is possible that any archaeological remains, if present, may have been masked by the geological anomalies.

Agricultural anomalies

Former field boundaries have been detected throughout the survey areas and correspond with the first edition Ordnance Survey mapping dating from 1855 (OM 2020) and as shown in Figure 6, by the 1893 map most of the boundaries have been removed.

Parallel linear trends can be seen within Area 4 on differing alignments and are likely to relate to post-medieval ridge and furrow cultivation. There is quite a significant amount of ploughing within this area which has also enhanced the magnetic background levels.

Ploughing trends in the remaining areas are thought to be more of a modern date.

5 Conclusions

The geophysical survey has worked well having detected a number of magnetic anomalies associated with post-medieval ridge and furrow and former field boundaries. Geological anomalies have been recorded throughout due to variations within the soil whilst magnetic disturbance around the periphery of the fields are due to metal fencing within the boundaries. It is possible that if any archaeological anomalies were present then the geological and agricultural responses will have masked these. Based on the interpretation of the geophysical survey the archaeological potential of the site is deemed low.

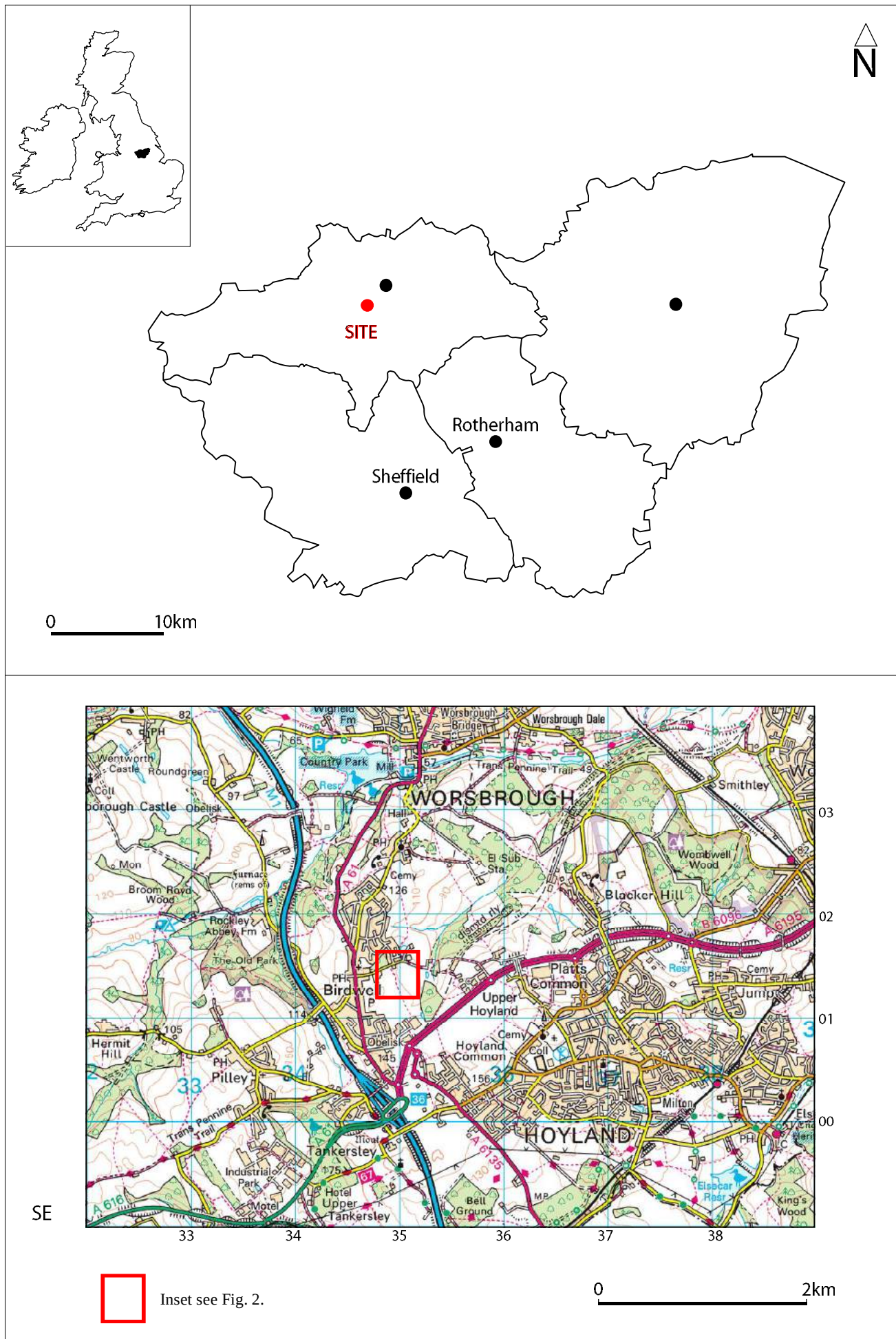


Fig. 1. Site location