

Nenthead (Caplecleugh) Mine Water Treatment

Written Scheme of Investigation

The Coal Authority

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Quality information

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1 Introduction

1.1 Project Background

AECOM (the 'Consultant') has been commissioned by The Coal Authority (the 'Client') to prepare a Written Scheme of Investigation (WSI) for an archaeological watching brief during geotechnical investigations in advance of the construction of a Mine Water Treatment Scheme for the Nenthead Mine (hereafter referred to as the "Site"). The geotechnical investigations are partially located within the boundaries of the scheduled monument of lead mines, ore works and smeltnill at Nenthead (NHLE 1015858) and therefore the work requires scheduled monument consent before proceeding.

This WSI and accompanying figures set out the methodology required for archaeological monitoring of works to be carried out within the Site. An Archaeological Contractor (the 'Archaeological Contractor') shall be appointed to undertake the archaeological monitoring (watching brief) and supervision of geotechnical Ground Investigation (GI) works by the Client's appointed contractor (the 'GI Contractor'). The Archaeological Contractor will complete and submit a report on any findings and results.

The WSI has been prepared by the Consultant on behalf of the Client in accordance with guidance provided by the Chartered Institute for Archaeologists (CIfA) Standard and Guidance for an Archaeological Watching Brief (2014b). The WSI will be approved by the County of Cumbria Archaeologist and will support the application for scheduled monument consent.

1.2 Site Details and the Proposed Development

The Site is located approximately 0.9 km to the south east of Nenthead.

The Caplecleugh adit is located at the Nent Mines car park adjacent to the Nenthead Mines Heritage Centre. The Site is located to the south-east of the adit, upstream of the current mine water discharge location and is bounded to the north by the A689 and to the south by a quarry track. The western edge of the treatment site steeply slopes down to the mine museum and to the east is open countryside. Part of the main treatment site is within the scheduled monument of the lead mines, ore works and smeltnill at Nenthead.

The wider area is rural in character and dominated by farmland / pasture. A number of farm properties, including residential buildings are located within 500 m of the site including Mill Cottage, Hilltop Cottages, Nenthead House, Eastern House, Thornleigh and Granary Cottage.

The current plans for the proposed development comprise three compost based treatment ponds (CBTPs), one balancing pond, one wetland, a single storey, pitched roof, stone clad building housing plant for chemical dosing and welfare facilities, access and maintenance tracks. The development would also include a mine water capture structure, pumping station, transfer pipelines to and from the main treatment site and a new outfall to the River Nent.

This document has been prepared to accompany an initial phase of GI works required on the site. The GI works will entail the excavation of 15 boreholes and 28 test pits, the latter measuring a maximum of 2m x 2m.

1.3 Aims and Objectives

The broad objective of the archaeological monitoring outlined in this WSI is to monitor the GI works and to record, insofar as is possible, the location, date, and extent of archaeological deposits that may be identified during works, and to inform on the possible presence of archaeological resources within the proposed development (CIfA 2015).

The investigation will result in a comprehensive and structured record that takes into account relevant research agendas and research themes, particularly research agenda for the north-west region (Brennand 2007), and a report that is commensurate with the significance of the remains.

Aims specific to the proposed development include:

- Where possible, to determine the presence and date of unknown surviving features associated with historic mining and smelting activities at Nenthead, particularly those that relate to the scheduled remains of 18th to 19th century lead mining. However, where possible archaeological assets are encountered on the surface, GI works will be micro-sited to avoid damage to remains.;
- Assess the degree to which deposits have been disturbed or truncated by the later mining operations and 20th century developments;
- Confirm the presence or absence of any other surviving archaeological remains within the Site; and
- Preserve by record the sequence, thickness and elevation of the stratigraphic units, archaeological horizons, which survive between the current ground surface and underlying bedrock.

2 Archaeological and Historical Background

A full baseline will be produced as part of the archaeology and cultural heritage chapter due to be prepared as part of the Environmental Impact Assessment.

There is one designated asset within the Site boundary, this being the lead mines, ore works and smelting at Nenthead (NHLE 1015858). This monument covers multiple areas of a large landscape around Nenthead, with parts of the Site falling within the eastern scheduled area.

There are 12 grade II listed buildings within 1km of the proposed development. No World Heritage sites, registered battlefields, registered parks and gardens, or conservation areas were identified within the 1km study area.

A full search of the Cumbria Historic Environment Record was not undertaken as part of the WSI preparation, however a review of online sources would suggest that a number of undesignated heritage assets have been recorded in the 1 km study area. The Alston area was investigated by Historic England's (then English Heritage) North Pennines National Mapping Programme project in 2009-2011. This project identified extensive prehistoric, Roman, medieval and later activity from aerial photography, LiDAR data analysis and field survey.

The majority of the visible remains in the landscape, and the remains that form the focus of the scheduled monument designation, are linked to the history of lead mining in the area. Although the exploitation of natural resources, including lead and silver, can be traced back to Roman times in the wider area, it was not until the 17th century that large-scale mining commenced at Nenthead (Turnbull 2006). The draw of work in the newly opened mines resulted in the development of settlements like Nenthead, with mining becoming the dominant form of employment and the structures linked with the industry leaving their mark on the landscape.

3 Scope of Work

3.1 General Works

All archaeological works will be carried out in accordance with this WSI and any further instructions from the Consultant. This design takes account of the guidance provided by the Chartered Institute for Archaeologists (CIfA) Code of Conduct (CIfA 2014a), the Standard and Guidance for Archaeological Watching briefs (CIfA 2014b), and other current and relevant good practice and standards and guidance (refer to Appendix A).

The locations of the GI test pits to be monitored are presented in Figure 2.

The Archaeological Contractor shall prepare and submit a Risk Assessment and Method Statement (RAMS) for the watching brief prior to the commencement of the fieldwork. The draft RAMS will be submitted to the Consultant and the GI Contractor for their review and approval. If appropriate, the Method Statement shall be prepared in association with the GI Contractor, taking account of their Environmental Management Procedures and Health and Safety Plan(s).

It is unlikely that the investigation will expose contaminated deposits, however, the basic approach to risk assessment for contaminated land shall be followed as set out in 'Land Contamination and Archaeology, Good Practice Guide' (Historic England, 2017). The GI Contractor will provide the Archaeological Contractor with any information with regard to contaminated land. The methodology for dealing with contaminated land should be outlined in the Archaeological Contractor's RAMS but should largely reflect, as appropriate, the approach set out by the GI Contractor.

The Archaeological Contractor shall liaise with the appointed GI Contractor to ensure that the targeted watching brief is undertaken in an organised, efficient and professional manner.

All parties shall have full regard for the safety of all personnel on site, including measures to ensure the safety of all.

The Archaeological Contractor will undertake the works according to this Specification and any subsequent written variations. No variation from or changes to the Specification will occur except by prior agreement with the Consultant and the Client.

3.2 Specific Works

An archaeological watching brief is required in all areas of stripping undertaken as part of the GI works. The main focus of this work will be the initial stripping of Trial Pits (TP), although hand excavated started pits for Bore Holes (BH) will also be monitored if they are located near known archaeological sites. No stripping is required for temporary compounds or access tracks.

All access to the site will be arranged through the GI Contractor. The Archaeological Contractor will adhere to the health and safety requirements of the GI contractor, undertaking any specific induction or risk assessment required.

The GI Contractor will be responsible for providing suitable plant for the topsoil/subsoil stripping for the duration of the archaeological targeted watching brief.

The GI Contractor shall provide a suitable and safe position from which the Archaeological Contractor can effectively monitor the topsoil/subsoil stripping, and allow the Archaeological Contractor sufficient time to investigate any archaeological remains that are exposed as a result of the soil stripping operation.

3.3 Methodology

The area designated for targeted archaeological watching brief will be stripped with the mechanical plant. This means the stripping of topsoil, subsoil or other overburden in level spits, using a back-acting mechanical plant fitted with a toothless bucket, in such a manner as to expose as cleanly as possible the archaeological surface. Where surface materials or foundations are exceptionally difficult to lift, they should be broken up first, and a toothed bucket may be used temporarily to do this.

The GI Contractor will allow the Archaeological Contractor access to the test pits, within the limits defined by their health and safety procedures and site rules, to carry out any necessary recording of archaeological remains. It is anticipated however that the majority of the watching brief will entail observation and recording from the top of the test pits.

If significant archaeological remains are identified during the test pit excavation, the GI works will cease. The Archaeological Contractor will record the date, time and duration of all visits required to complete the monitoring in the specified area. If requested by the Client, timesheets will be prepared and submitted on a weekly/daily basis to the Client and also to the GI Contractor and Consultant.

Any significant archaeological remains identified will be recorded and protected prior to the test pit being backfilled.

If for any reason it is not feasible for the Archaeological Contractor to carry out the targeted archaeological watching brief within the specified area, the Consultant will be notified immediately, who will then notify the Client.

3.4 Hand Excavation

Archaeological recording, where permissible in accordance with the GI Contractor's Health and Safety procedures and site rules, will entail:

- limited hand cleaning of archaeological sections and surfaces sufficient to establish the stratigraphic sequence exposed;
- the collection of dating evidence from in situ deposits and visual scanning of spoil heaps for dateable artefacts;
- a scaled drawn record of representative exposed sections and surfaces;
- photographs of exposed deposits within the trial pits, with an appropriate scale, and sufficient further photographs to establish the setting of the groundworks undertaken; and
- a record of the datum levels of the archaeological deposits.

Where no archaeological remains are encountered, a photographic record will be taken of the test pit and a written description with sketch section will be taken.

3.5 Recording

A full written, drawn and photographic record will be made of all archaeological remains, in accordance with standard archaeological methodologies (Appendix A).

The location and depth of each test pit monitored will be recorded. The stratigraphic sequence encountered will also be recorded, even where no archaeological deposits have been identified.

Where appropriate, i.e. where archaeological remains are encountered, detailed hand-drawn plans and sections of features will be produced at an appropriate scale (normally 1:50 or 1:20 for plans and 1:10 for sections). All plans and sections will include spot heights relative to Ordnance Datum in metres, correct to two decimal places.

Digital photography will be used to record the watching brief and will follow Archaeological Data Service advice for secure long term storage and migration of files. In addition to records of archaeological features, a number of general site photographs will also be taken to give an overview of the site. Particular attention should be paid to obtaining shots suitable for displays, exhibitions and other publicity. The photographer of the general shots taken for this purpose should ensure that all members of staff included in the photographs are wearing appropriate Personal Protective Equipment (PPE).

3.6 Artefact Recovery

All artefacts will be collected, stored and processed in accordance with standard methodologies and national guidelines (refer to Appendix A). Except for modern artefacts, all finds will be collected and retained.

The Archaeological Contractor will clarify the Collection Policy in the Method Statement, and will ensure that it is in line with relevant local authority guidelines. Each 'significant find' will be recorded three dimensionally. Similarly, if artefact scatters are encountered these should be also recorded three dimensionally. Bulk finds will be collected and recorded by context.

All recovered artefacts will be stabilised, conserved and stored in accordance with the current national conservation guidelines and standards (see Appendix A). If necessary, a conservator will visit the site to undertake 'first aid' conservation treatment.

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

3.7 Environmental Sampling

Any samples taken must come from appropriately cleaned surfaces, and will be collected with clean tools and will be placed in clean containers. They will be adequately recorded and labelled and a register of all samples will be kept. If samples have been obtained, they will be stored appropriately in a secure location prior to being sent to the appropriate specialist.

3.8 Human Remains

Should human remains be discovered during the course of the excavations, the remains will be covered and protected and left *in situ* in the first instance, in accordance with current best practice. The Archaeological Contractor will notify the Consultant who will arrange to contact H.M. Coroner

The removal of human remains will only take place in accordance with a licence from the Ministry of Justice and under the appropriate Environmental Health regulations and the Burial Act 1857.

3.9 Treasure

Any recovered artefacts that fall within the scope of the Treasure Act 1996 and Treasure (Designation) Order 2002 will be reported to the Consultant and to H. M. Coroner immediately.

Artefacts that are classified as 'treasure' will be removed to a safe place but where removal cannot be effected on the same working day as the discovery, suitable security measures must be taken to protect the finds from damage or unauthorised removal.

3.10 Finds Processing

Initial processing of finds (and if appropriate other samples) will be carried out concurrently with the fieldwork. The processing of finds will be finished shortly after completion of the investigations. The finds will be retained (according to the Artefact Recovery section), washed, marked, bagged and logged on a MS Access or GIS database (or equivalent), together with their locations (if applicable) according to the National Grid (eastings, northings) and Ordnance Datum (height), accurate to two decimal places.

The finds assemblage will be treated, labelled and stored in accordance with the appropriate Historic England guidance documents and the Institute of Conservation guidelines (refer to Appendix A). At all times the Consultant shall ensure that the processing of the assemblage is in accordance with the requirements of the receiving museum as set out by their relevant policies and procedures. Archives currently accepting archaeological material from Eden District include the Kendal Museum of Natural History and Archaeology and the Dales Countryside Museum.

If appropriate, each category of find or each material type will be examined by a suitably qualified archaeologist or specialist and the results incorporated into a fieldwork report.

The deposition of any finds collected during the watching brief and the related archive forms the final stage of this project. The Archaeological Contractor shall provide the Consultant with copies of communication with the receiving museum and written confirmation of the deposition of the archive. The Consultant will deal with the transfer of ownership and copyright issues.

3.11 Unexpectedly Significant or Complex Discoveries

Should there be unexpectedly significant or complex discoveries made that warrant, in the professional judgment of the archaeologist on site, more detailed recording than is appropriate within the terms of this specification, then the Archaeological Contractor will discuss the matter with the Consultant and the County of Cumbria Archaeologist before proceeding.

3.12 Completion of Fieldwork

The Archaeological Contractor shall prepare and submit a Completion Statement to the Consultant within one working day of completing the survey.

The site will be left in a tidy, professional, and safe condition, and the Archaeological Contractor will ensure that all materials brought onto site are removed.

An OASIS entry shall be completed at the end of the fieldwork, irrespective of whether a formal report is required. The Archaeological Contractor will complete the online form at <http://ads.ahds.ac.uk/project/oasis/> within one month following completion of the fieldwork. Archaeological contractors are advised to contact OASIS (oasis@ads.ahds.ac.uk) for technical advice.

3.13 Monitoring, Progress Report and Meetings

The archaeological investigations may be subject to monitoring visits by the Consultant who will have unrestricted access to the investigation, 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.

Verbal progress reports will be provided to the Consultant upon request. Weekly written progress reports (via email each Monday morning) will be sent to the Consultant by the Archaeological Contractor whilst the fieldwork is on-going. In addition, progress meetings between the Consultant, the County of Cumbria Archaeologist and the Client may be held on site during the course of the investigations and will be arranged by the Consultant.

4 Reporting

A Fieldwork Report will be submitted in draft to the Consultant for review, who will then forward it to the Client within four weeks of the completion of the archaeological watching brief. The preparation of the site archive will be undertaken in accordance with this WSI and will follow relevant archaeological standards and national policy and guidance.

The finds and samples will be processed (cleaned and marked) as appropriate. Each category of find or environmental/ industrial material will be examined by a suitably qualified archaeologist or specialist and the results incorporated into a fieldwork assessment report.

The content and scope of the report shall be dependent upon the findings, but it shall be undertaken in accordance with this specification and current good practice and guidance (Appendix A). Typically, the assessment report shall contain the following:

- Title page or cover sheet giving key project details;
- A signed QA sheet detailing as a minimum - title, author, version, date, checked by, approved by;
- A non-technical summary;
- Acknowledgements;
- Site details, including location, OASIS reference, grid reference geology and soils, place of deposition of the archive, museum accession number, full dates of work and any relevant details of the project's history;
- A site location drawing;
- The archaeological and historical background;
- The methodology employed;
- The aims and objectives of the investigations;
- The results of the monitoring, including a full description, assessment of condition, quality and significance of the remains
- A stratigraphic matrix (if appropriate);
- If human remains are encountered the report will include a statement that addresses the future retention of the material, including, if appropriate, options for reburial;
- If appropriate, an assessment of and conclusions on the significance of the results in their local, regional and national context, cross-referenced to the Regional Research Framework and research agenda;

- The current and proposed arrangements for long-term conservation and archive storage (including details of the accredited repository details);
- General and detailed plans showing the location of the watching brief accurately positioned on an Ordnance Survey base map (at an appropriate and recognised scale);
- Detailed plans and sections illustrating archaeological features and relationships between features (at an appropriate and recognised scale);
- Colour photographic plates illustrating work in progress and archaeological discoveries;
- A list of all finds that fall within the scope of the Treasure Act and associated legislation;
- A statement of potential with recommendations for further work and analysis;
- A copy of the OASIS data collection form;
- Bibliography;
- An appendix illustrating specific finds and general working shots or portraits of specific features or structures, as appropriate;
- An appendix listing all the recorded features & contexts with detailed descriptions, locations and final spot dates or phasing;
- An appendix containing separate finds catalogue by context and find types. Specialist artefact assessment reports, palaeoenvironmental reports, or their equivalent; and
- A cross-referenced index of the project archive.

If in the opinion of the Archaeological Contractor and the Consultant the results warrant a publication the Archaeological Contractor will include in their assessment report a section that describes what additional analysis is required to prepare the publication, alongside a full justification. All work that is required (analysis and publication) shall be fully costed, and the assessment report will include a timetable for undertaking this work.

One bound hard copy and a digital pdf copy (complete with illustrations and plates) of the completed draft report will be submitted to the Consultant. The Consultant will submit a copy of the draft report to the County of Cumbria Archaeologist for comment. In finalising the report, the comments of the Consultant and the County of Cumbria Archaeologist will be taken into account.

Two bound copies and a digital version (PDF) will be submitted to the Consultant within two weeks of the receipt of comments on the draft report.

Digital files containing image files in JPEG or TIFF format, digital text files shall be submitted in Microsoft Word format, illustrations in AutoCAD format or ArcView shapefile format. A fully collated version of the report shall be included in PDF format.

The Consultant (on behalf of the Client) shall submit copies of the finalised fieldwork assessment report to the County of Cumbria Archaeologist (two bound paper copies and a pdf). The report will become a public document after an appropriate period of time.

5 Resources and Timetable

An experienced and qualified archaeologist shall monitor the GI works. All staff will be suitably qualified and experienced professionals and hold valid Construction Skills Certification Scheme (CSCS) cards to be provided to the GI Contractor upon request. The GI Contractor will confirm the type of card required prior to works commencing.

All staff will be fully briefed and aware of the work required under this specification and will understand the objectives of the investigation and methodologies to be employed.

The watching brief will be undertaken in accordance with the GI Contractor's programme. The works could be subject to clearance from other environmental disciplines, such as ecological constraints prior to works beginning on site.

The Consultant will notify the County of Cumbria Archaeologist of the commencement of the fieldwork at the earliest opportunity.

It is anticipated that the watching brief shall be carried out by a single archaeological operative. Additional resources may be deployed during the watching brief but only with the approval of the Consultant and with the agreement of the Client.

The Archaeological Contractor shall provide early warnings for any delays to the works' timetable or programme issues. The early warnings will be sent to the Consultant.

6 Confidentiality and Publicity

Archaeological works may attract the interest of the public and the press. All communication regarding this project is in the first instance to be directed to the Consultant who will refer all inquiries to the Client without making any unauthorised statements or comments.

The Consultant will not disseminate information or images associated with the project for publicity or information purposes without the prior written consent of the Client.

7 Copyright

The Archaeological Contractor shall assign copyright in all reports, documentation and images produced as part of this project to Client. The Archaeological Contractor shall retain the right to be identified as the author or originator of the material. This applies to all aspects of the project. It is the responsibility of the Archaeological Contractor to obtain such rights from sub-contracted specialists.

The Archaeological Contractor may apply in writing to use or disseminate any of the project archive or documentation (including images). Such permission will not be unreasonably withheld.

The results of the archaeological works shall be submitted to the Client and the County of Cumbria Archaeologist, and will ultimately be made available for public access.

8 General Project Requirements

8.1 Access Arrangements and Site Information

Access to the proposed development Site in order carry-out the archaeological watching brief will be arranged and organised with the GI Contractor. Designated routes into and out of the area(s) will be identified and will be adhered to at all times.

The schedule for the archaeological watching brief will be agreed in advance with the GI Contractor.

The archaeological works shall not extend beyond the specified Trial Pits, and works will be relocated/micro-sited should obvious archaeological remains be encountered on the surface.

8.2 Insurances, Health and Safety

The Archaeological Contractor will provide the Consultant with details of their public and professional indemnity insurance cover.

The Archaeological Contractor will have their own Health and Safety policies compiled using national guidelines, which conform to all relevant Health and Safety legislation and best practice. A copy of the Archaeological Contractor's Health and Safety policy will be submitted to the Consultant prior to the start of the archaeological investigations.

The Archaeological Contractor shall prepare Risk Assessment(s) and Method Statement (RAMS), and a project specific Health and Safety Plan and submit these to the Consultant for approval prior to starting on site (refer to Section 3). The Archaeological Contractor will not be permitted to start on site until the Client has received confirmation that the Plan is acceptable for the proposed works. If amendments are required to these reports during the works, the Consultant and any other relevant party must be provided with the revised document at the earliest opportunity.

All staff involved in the fieldwork should be Construction Skills Certification Scheme (CSCS) qualified to a minimum standard as an 'Archaeologist Technician' and hold a valid CSCS card.

All site personnel will familiarise themselves with the following:

- Site emergency and evacuation procedures;
- The site's health and safety coordinator;
- The first aider; and
- The location of the nearest hospital and doctor's surgery.

The Archaeological Contractor's supervisor will maintain a record of site attendance and complete a daily briefing at the start of work for each day that there is a team in the field.

All site personnel will wear personal protective equipment (PPE) as defined by the Archaeological Contractor's risk assessment undertaken in accordance with mandatory requirements. All personnel will complete a site induction as set out by the GI Contractor and adhere to site specific safety rules and regulations outlined therein. All equipment that is used in the course of the fieldwork must be 'fit for purpose' and be maintained in a sound working condition that complies with all relevant Health and Safety regulations and recommendations.

The GI Contractor will assure the provision and maintenance of adequate, suitable and sufficient welfare and sanitary facilities at appropriate locations for the duration of the works.

8.3 Adherence to Project Design

The Archaeological Contractor will undertake the works according to this Specification and any subsequent written variations. No variation from or changes to the Specification will occur except by prior agreement with the Consultant.

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Appendix A Heritage Standards and Guidelines

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Appendix B Figures

Figure 1: Site Location

Figure 2: Proposed development plans

