



# **CARROCK FELL MINE**

**CALDBECK AND  
ULDALE COMMON**

**LAKE DISTRICT**

**Survey and Conservation  
Plan Project Design**



**Oxford Archaeology North**

December 2011

**Lake District National Park  
Authority**

NGR: NY 32227 32953 (centred)

## 1. INTRODUCTION

### 1.1 PROJECT BACKGROUND

- 1.1.1 Carrock Fell Mine is within Caldbeck and Uldale Common, which will be part of a Higher Level Stewardship (HLS) plan and as part of the agreement a survey and management plan is required which will be funded through an existing Environmentally Sensitive Area (ESA) agreement. The purpose of the survey is to provide detailed information, sufficient to inform the development of the conservation plan. The Carrock Fell Mine is a Scheduled Monument (34957). It is intended that the plan provides the basis for a future programme of conservation works and site management, which will be undertaken with further agri-environment funding.
- 1.1.2 The Lake District National Park Authority have issued a brief for a survey and Conservation Management Plan for Carrock Fell Mine. These are required to:
- provide the basis for developing proposals for improved management and conservation under an agri-environment scheme.
  - to inform a programme of repair and conservation to the archaeological remains.
  - to assess the possibility for interpretation of the archaeology and other features on the site.

### 1.2 ARCHAEOLOGICAL BACKGROUND

- 1.2.1 **Carrock Fell Mine:** the origin of mining in the area dates back to the 16<sup>th</sup>/ 17<sup>th</sup> centuries centred on Brandy Gill. Lead and Copper was briefly worked in 1852 by FW Emerson and from then there were sporadic working of lead during the late nineteenth and early twentieth centuries. From 1906 tungsten started to be worked but the first major period of activity followed the formation of the Carrock Mining Syndicate in 1913. The work was partly government financed and almost 14,000 tons of ore were mined. With the end of the First World War government support was withdrawn, while at the same time the market was swamped with stocks of tungsten concentrates as governments off-loaded their stock piles. By late 1918 the underground workings were closed down.
- 1.2.2 Interest in the mine returned again during both World War Two and the Korean War when supplies of tungsten were threatened, but despite exploratory work no ore was produced. After a number of changes of ownership the mine reopened in April 1977 and produced around 16,000 tonnes per annum until closure in October 1981.
- 1.2.3 On the south side of Grainsgill Beck are the remains of Harding Vein and adjacent to it are the remains of spoil heaps and the tungsten mill. Processing of the ore was undertaken on site and some of the remains of the mill survive intact, and includes water powered pelton wheels, kiln like structures, concrete engine beds, and the concrete bases of hoppers constructed in 1913 by the Carrock Mining Syndicate. Services for the mill include a trackway, leat and pond.
- 1.2.4 On the north side of Grainsgill Beck are open adits, prospect trenches, spoil heaps and access tracks that relate to the earlier workings. There is also a three

celled building and two bridges across Grainsgill Beck. Higher up Brandy Gill are the remains of a dam.

### 1.3 OXFORD ARCHAEOLOGY NORTH

- 1.3.1 OA North has considerable experience of survey and analysis of industrial landscapes in the Lake District and elsewhere in Northern England. Examples include the Grassington Lead Mines, Gunnerside Gill Lead Mines, the Nenthead lead smelt mill, the Thirlmere lead mines and smelt mill (LUAU 1998), the Greenside lead mines and smelt mill, Backbarrow iron works, Langcliffe lime works (North Yorkshire), Snailbeach lead mines and smelt mill (Shropshire), the Keekle coal mining landscape, and the Coniston Copper Mines, including a survey of Paddy End in 2007 (OA North 2007).
- 1.3.2 ***Development of Interpretation Potential:*** OA North has considerable experience of the design and implementation of interpretation schemes. We are typically involved in the process from the feasibility study of interpretations schemes to the production of signage panels. Select examples include those for a Iron Age / Roman settlement at Lancaster University, a coke oven and blast furnace at Maryport, a ropewalk at Ulverston, Knowsley Street station in Bury, and Hadrian's Wall in Carlisle.
- 1.3.3 We have completed an exhibition facility for the presentation of a large section of the Old Dock wall (Old Dock Experience), Liverpool, where we were involved in the excavation of the archaeology, the design of the visitor centre building, and the fitting out of the building, and also included the design and production of all the exhibition material, which includes computerised reconstructions and video shorts.
- 1.3.4 ***Management Planning and Implementation for Archaeological Sites:*** OA North is actively involved in the design of management strategies for upland landscapes. Most of the upland surveys undertaken are management surveys, and a major aspect of them is to provide recommendations for the management of the identified archaeological resource. There are a number of projects, however, that have incorporated a greater level of management design and implementation:
- ***Upland Peats Project:*** this project was initiated to propose management guidelines for the long-term preservation of the archaeological resource within the upland peats.
  - ***Upland Conservation:*** this was a project, on behalf of Natural England, to develop a management strategy for ecologists and land managers to enable the conservation of archaeology within the moorland zone.
  - ***Hadrian's Wall National Trail:*** OA North is the archaeological consultant for the National Trail, and entails the preparation of numerous management plans for each section of the route and the supervision of their implementation.
  - ***Cawthorn Camp, North York Moors:*** OA North, with Capita Symonds, put together a management and interpretation proposals for the Roman Camps at Cawthorn on behalf of the NYMNP.

- **Meal Bank Quarry:** OA North, with Capita Symonds, put together management and interpretation proposals for the Hoffman limekiln and quarry at Meal Bank, Ingleton, North Yorkshire.
- 1.3.5 **Conservation Plans:** OA North has considerable experience of undertaking conservation management plans, and these include those for Newlands Furnace (South Lakeland), Kendal Castle, The Three Towers (South Lakeland), Murrays Mill (Manchester) and Chester Cathedral. OA has also recently worked on Conservation Management Plans for the National Trust at Tyntesfield (Somerset), Tattershall Castle (Lincolnshire), and Knole (Kent); for Worcester City Walls, the Tower of London (World Heritage Site), the Royal Arsenal at Woolwich; for the Heritage Council of Ireland on Kilkenny City Walls and Newtown Jerpoint, Carlingford and Fethard Towns Walls, and for English Heritage on the Dover Castle Secret Wartime Tunnels. OA has long experience of environmental assessment, conservation and planning advice on a number of major and minor projects across England involving the protection, management and presentation of major national monuments, and World Heritage Sites.
- 1.3.6 OA North has the appropriate expertise and experience to be able to undertake the management plan for this important Lake District industrial landscape.

## 2. AIMS AND OBJECTIVES

- 2.1 Due to the nature of the monument and its setting, it is anticipated that the Conservation Plan will have to deal with the following issues:
- (i) the preservation and promotion of the sites as an archaeological resource;
  - (ii) inform a programme of repair and conservation for the site;
  - (iii) assess the possibilities for interpretation of the archaeological and other features of the site;
  - (iv) the management of the conservation of the mines and tungsten works;

### 2.2 PRIMARY OBJECTIVES

- 2.2.1 The primary objectives of the Conservation Plan are to:
- i) Understand the site by drawing together information about it, including documents and physical evidence, in order to present an overall description of the site through time, as well as a description of each of its components.
  - ii) Assess the significance of the site both generally and in detail for each of the main components, making specific value judgements about the historical, geological, archaeological, and ecological types of significance.
  - iii) Define those issues which are affecting the significance of the site or have the potential to do so in the future, including physical condition, ownership objectives, uses, areas and boundaries, siting, available

- resources, external factors, existing information and gaps in our knowledge, access, statutory controls, and potential conflicts.
- iv) Develop conservation policies that will ensure that the significance of the site is retained in any future management, use or alteration. These policies will be in accordance with all relevant legislation, government guidance, local/structure plan policies, European Community directives, and other forms of policy, and will make use of guidance from non-statutory organisations.
  - v) Inform a programme of repair and conservation to the archaeological remains on the site;
  - vi) Assess opportunities for interpretation of the remains.

### 3. METHOD STATEMENT

#### 3.1 THE PROJECT TEAM

- 3.1.1 The project will be under the management of **Jamie Quartermaine** (OA North senior project manager) to whom all correspondence should be addressed. Jamie has been recording industrial landscapes across the north-west since 1986 both as project officer and as project manager.
- 3.1.2 Research and analysis will be undertaken by **Chris Wild** (OA North Project Officer) and **Ian Miller** (OA North Project Manager). Chris has a great deal of experience in undertaking survey, documentary research and landscape analysis for industrial projects such as that proposed. Both have considerable experience of researching the industrial past of Greater Manchester and compiled the Conservation Plans for Murrays' Mills (Manchester) and Newlands Furnace (South Lakeland).
- 3.1.3 Historic fabric assessment, recording and analysis will be undertaken by **Peter Schofield** (OA North Historic Landscape project officer), who has considerable experience of recording landscapes, which includes the survey of Paddy End, Coniston. **Alastair Vannan** (OA North Landscape Project Officer) will undertake the documentary study and will prepare the historical assessment.
- 3.1.4 Ecological advice will be provided by **Sam Griffin** of Capita Symonds, who has considerable experience working on conservation plans, and advice on access, recreation, and conservation issues will be undertaken by **Jane Jackson** of Capita Symonds.

#### 3.2 DESK-BASED ASSESSMENT

- 3.2.2 There is both secondary and primary information available for Carrock Fell Mines, and in particular for the later Tungsten Mines. **Warren Allison**, of CATHMS, has considerable knowledge of the site and following discussions has agreed to take an active involvement in the project. He has valuable documentary information and will be involved in the abstraction of further records and the compilation of the report. The intention is to draw upon existing knowledge and expertise, rather than reinventing the wheel, and will have the effect of ensuring the production of a pertinent management plan and

will also reduce the costs. In particular CATHMS has undertaken research into the underground workings and the results of this work will be incorporated into the present study.

- 3.2.3 Pertinent secondary sources that will be drawn upon includes Ian Tylers (2003) publication on the Carrock mines. The outstanding archaeological archive material and secondary sources will be collated, and the study will also include investigation of primary sources to obtain cartographic and illustrative material that will be invaluable in reconstructing the development of the site. The
- 3.2.4 An examination will be undertaken of the archives held at the Cumbria County Record Offices (Carlisle), the Lake District National Park Authority HER, Cumbria Amenity Trust Mining History Society (CATHMS) archives, Natural England, British Geological Survey, OA North library, the National Monuments Record (for air photography). The latter is particularly important as a chronological progression of vertical aerial photography since 1948 will show the development of the tungsten mine in the second half of the twentieth century.
- 3.2.5 The study will examine historic cartographic sources, place and field name evidence, other photographic material held in the record office, published and unpublished sources, museum catalogues, oral evidence (as available), geological surveys.
- 3.2.6 An inclusive map regression, which would include georeferenced vertical air photographs, will be compiled for the sites to demonstrate the changing character of the site. Historic mapping will be geo-referenced / rubber sheeted into a GIS system, then superimposed with modern mapping (OS Mastermap) and the aerial photographs.
- 3.2.7 Research will be undertaken of secondary sources relating to other lead, copper and tungsten extraction and processing sites in the country to provide a body of comparative material for the assessment of the sites significance. This will draw upon the MPP Step 2 reports for the Minor Metals Industry.

### **3.3 TOPOGRAPHIC SURVEY**

- 3.3.1 It is proposed that a detailed topographic survey be undertaken of the mine complex at English Heritage Level 2 and 3 (Ainsworth *et al* 2007). This will provide for a general topographic survey at 1:500 of the study area, and a more detailed survey of significant features at 1:100. It is proposed that the wider topographic survey be undertaken using survey grade GPS, and the more detailed survey be undertaken by photogrammetry using aerial photographs taken from a UAV (Unmanned Aerial Vehicle).
- 3.3.2 **GPS Survey:** the wider area will be surveyed at 1:500, and will include all archaeological features which will be recorded by means of survey grade GPS. This will represent the outline of all features, and will not be at the same level of detail as the main mine workings and processing works which will be recorded at 1:100. The GPS that will be used is a Leica 1200 differential system and uses Ordnance Survey base stations in conjunction with a roving station to correct the raw data with corrections transmitted by mobile phone.

The OA North GPS system is capable of accuracies of +/- 0.03m and provides for an effective means of recording the detail of the features. It is proposed that this technique be used to record the spoil heaps, earthwork features and topography which have a lower accuracy requirement.

- 3.3.3 **Detail Survey:** it is proposed to map the core processing areas of the site, particularly those on the south side of Grainsgill Beck by photogrammetry. This is a long established technique which has been updated and refined such that it is now an extremely simple and cost effective means of recording features and landscapes in three dimensions. It uses aerial photographs taken from a small electrically powered model helicopter (UAV) which has the ability to carry a light weight camera up to altitudes of 250 feet. The advantage of the UAV is that it can take photographs from much lower altitudes than can legally be achieved with a light aircraft, but it is not easily targetable, so it typically provides blanket photographic coverage across the area. Survey control is introduced to the photographs by the placement of survey control targets across the site which are located by means of survey grade GPS.
- 3.3.4 The photogrammetric processing is undertaken using Agisoft software which provides detailed modelling using the overlap of up to 30 photographs, and creates a very detailed DTM (Digital Terrain Model) across the site. The photographs are then digitally draped over the model to create an accurate three dimensional model of the ground surface. The primary output, however, is an accurate two dimensional image which can be used to generate accurate plans or profiles, which are digitised in CAD.
- 3.3.5 **Elevation Recording:** it is required that the elevations of the Coomb Height Mill be recorded and it is proposed to undertake this again by photogrammetry. A series of ground oblique photographs of each elevation will be undertaken using a 10 megapixel digital SLR. Survey control will be established on each elevation by means of a reflectorless total station or manual survey techniques as appropriate. Models of each elevation will be created by photogrammetry using the Agisoft package and this will provide elevations surfaces draped with corrected photographic images. These will then be digitised in outline to create the final elevation drawings. The drawings will depict key features, such as quoins, and ashlar, but not all stones.
- 3.3.6 **Drawing-up in the Field:** the base survey drawings created by the photogrammetry will be combined with those created by GPS survey and the Ordnance Survey topography to produce a combined plan of the whole complex. Following the creation of this base drawing they will be taken back to the field to enable the detailed drawing up of the sites and to ensure that all critical features are incorporated. The survey will record all pertinent archaeological detail, which will include any exposed wood or metal features, the internal detail of the hoppers, the changes between different grades of spoil, and any detail pertinent to the operation of the processing site. On completion of the field survey the drawings will be enhanced within the CAD environment to produce the final drawings.
- 3.3.7 **Photography:** in conjunction with the archaeological survey a photographic archive will be generated, which will record significant features as well as aspects of the general landscapes. It will record all principal vistas. This

photographic archive will be maintained using a digital camera with 10 mega pixel resolution.

3.3.8 **Gazetteer:** a descriptive record of all features will be compiled using a standard proforma, which will incorporate a provisional interpretation of the function of the site / feature, where possible, and similarly will provide a provisional interpretation of the site's chronology where possible. Once the digital gazetteer has been collated and edited, it will be output as an Access Report and input directly into a Microsoft Word format. The gazetteer output will be compatible with the LDNPA HER. This data will be formatted and topped and tailed within word to produce the gazetteer volume for the survey project. The English Heritage Thesaurus will be used and the description will include the following fields:

- LDNP HER number
- Site Number
- Form
- Site Name
- NGR
- Site Description
- Monument Type
- Period
- Interpretation
- Dimensions
- Threats
- Management
- Photo reference
- Condition
- Surveyor
- Date of survey

### 3.4 UNDERSTANDING THE SITE

3.4.1 The following steps will be undertaken to ensure that a thorough understanding of the site is achieved:

3.4.2 **Historical/Archaeological background:** the aim of the documentary work (*Section 3.3*) is to establish the history of the site and to fully embrace all secondary material available for the site. This includes the publications of Ian Tyler (2003), and the results of work undertaken by CATMHS, and the HER which can also be drawn upon. The project will be aided and supported by **Warren Allison**, Chairman of CATHMS, who has considerable knowledge of the site and its history. At the outset of the project OA North will have a walk-



over talk with him to take advantage of his expertise and knowledge which will be drawn into the wider study.

- 3.4.3 The archaeological archive material will be collated, and will include an investigation of primary sources to obtain cartographic and illustrative material that will be invaluable in reconstructing the development of the site. It will also have drawn upon historic air and ground photographs to establish the sequence of construction and working of the latest phase of working. The project will follow on from the site survey, which will have assessed the functionality of all components. The survey drawings will serve as the basis for the assessment and condition survey.
- 3.4.4 **Site Assessment and Phasing:** an inclusive map regression will be compiled for the site to demonstrate the changing its character. Historic mapping will be geo-referenced / rubber sheeted into a GIS system, then superimposed with modern mapping (OS Mastermap and OA North) and a series of vertical aerial photographs. The field survey (*Section 3.3*) will examine the extent to which individual features are depicted on the historic mapping, and it will examine evidence of internal phasing within each primary component. The site will be phased on the basis of the documentary evidence, and historic cartographic evidence. Individual elements will have a degree of time depth to them and will be evident from the field assessment. Where small features are not depicted on any mapping, and are not referred to in documentary sources, they will be phased with respect to other nearby features. The dating of all features will be incorporated into the GIS, enabling different graphic depiction options for the site phasing.
- 3.4.5 **Other Values:** the current use of the site, in addition to its social values including education, will be discussed. The combination of a study of the above will allow a concise picture of the monument to be presented. Following this, it should be possible to identify and review gaps in the knowledge of the site. The assessment will consider other pertinent issues that relate to the conservation and management of the site. In particular it will consider the geology and ecology of the site, the social and community values and recreational values. It is proposed to work with Capita Symonds to take specialist advice on these aspects.
- 3.4.6 It will examine the potential for bats roosting within the adits and other elements of ecological environment that are susceptible to change or disturbance. The study will examine the values of the site to the local community, and it will examine the potential that the site has for recreation, taking into account existing visitor numbers and the recreational potential for the site by comparison with other mine complexes in the Lake District. The assessment will examine the health and safety of the site, and will assess those issues that would affect the improvement of access to the wider public.
- 3.4.7 **Gaps:** an assessment will be made of any gaps of our knowledge with regard either site. Where this can be rectified as part of the present study it will be, but if not, then guidance on what level of work will be necessary to fill the gaps as part of a further phase of investigation.
- 3.4.8 **Consultation:** the consultation stage of any Conservation Plan is always important, especially where there are existing local and national expectations,

and a variety of stakeholders involved. Those individuals and organisations identified will be consulted at appropriate levels, within the structure established for the project as a whole. The Conservation Plan process can be expected to identify issues of concern to curators and stakeholders, and will explore the means by which the conservation policies can be effected. This would be achieved by a combination of individual approaches to significant parties in the process and a wider consultation phase over the draft proposals. The stake holders will be:

- Landowners
- Graziers / tenants
- English Heritage
- Natural England
- LDNPA
- CATHMS

### **3.5 ASSESSMENT OF SIGNIFICANCE**

3.5.1 A statement of the significance of the overall sites will be produced, and will examine how the individual components contribute to the wider significance of the site. The historical and archaeological significance of each site will be assessed against PPS 15, PPG 16 and PPG 15 criteria. This will include the significance of each phase of development of each site and also the individual component parts of each site. The significance will be made upon the basis of archaeological, historical, visual and landscape significance. This significance will be made with respect to other examples from within the region and nationally. Although the comparison will primarily be made with respect to other tungsten, copper and lead extraction and processing sites, and will include comparable industries, such as the Coniston copper mines. The assessment of significance will draw upon the comparable assessment made as part of the MPP programme and will look at reports for Steps 2-4 for the Minor Metals Industry (Cranstone 1993), which highlights that selected parts of the site are of national importance. The statement will highlight the key values for the site and its components that provide the basis for the significance rating. Features of the landscape, which detract from the wider significance, will be highlighted.

3.5.2 The wider sites will be assessed in both habitat and geological terms and allows for the possibility that a habitat survey will be commissioned. An assessment of the significance of each sites as a recreational resource will be made, and will also examine the potential of each sites as an educational resource.

### **3.6 ISSUES AND VULNERABILITY**

3.6.1 The Conservation Plan will investigate those issues, which are affecting, or have the potential to affect, the significance of the monument, and which will have been identified by Sections 3.4 and 3.5 above. Among the issues to be

investigated will be the physical condition, lack of knowledge, erosion, public access, interpretation and display, vandalism and health and safety.

3.6.2 In particular the study will examine the following:

- Factors that affect the survival and condition of all archaeological features and includes both surface and buried features.
- Points of public access, the means of access, by foot and vehicle, and the parts of the sites that receive most visitor pressure. It will examine how the site will be used for recreation, be that to visit and appreciate the heritage, or other recreational activities that are independent of the archaeological site, such as by climbers and cyclists.
- Health and safety issues for the general public, and in particular any requirements for restricting access to the adits and shafts. This will examine the underground access requirements of mining amenity groups and others.
- The nature of usage of the site by Natural England, landowners, graziers; it will assess the impact of their activities and those parts of the wider site that are affected by the site stake holders.

### 3.7 CONSERVATION POLICIES

3.7.1 A series of conservation policies will be developed for the site that will aim to provide long term management guidance, and will be based on the above elements of the programme (*Sections 3.2-3.4*). The conservation policies will address the following aspects of site management:

- provide an overall vision of the site, its importance, its wider context and its user potential
- the conservation policies will reflect the heritage significance of the wider site and will be tailored to prioritise against elements of greatest significance.
- the plan will identify existing uses of the sites, and further potential uses of the site that will compliment their heritage significance.
- the policies will define an approach to conservation, and repair works and will highlight the areas and components of the site that are in greatest need of stabilisation works. The works and policies will be defined so as to satisfy statutory requirements.
- The policies and specifically conservation works will be prioritised and broadly costed to ensure that appropriate decisions can be made to ensure that proposed works fit within available resources.
- policies will be developed to enhance the interpretation of the sites and to encourage a wider engagement by the general public with the lead/tungsten industrial heritage. The opportunities for interpretation will be closely examined, and means of allowing a better understanding of the processes and the physical remains will be explored. The plan will address

the health and safety implications of encouraging open access to a site with adits.

- the policies will seek to limit further damage and erosion to the components of the site by means of changing user practise rather than expensive stabilisation works. It will seek to put mechanisms in place to control or discourage future damaging interventions to the wider site.

### 3.8 CONDITION SURVEY

3.8.1 **Condition Survey:** a condition survey will be undertaken in conjunction with Charles Blackett-Ord, a conservation engineer with considerable experience in the consolidation and restoration of historic buildings. The conservation plan is required to inform a programme of repair and conservation. OA North staff (Chris Wild and Jamie Quartermaine) will implement the condition survey drawing upon their many years of building survey experience. Charles Blackett-Ord will develop a repair and consolidation strategy, in conjunction with the condition survey.

3.8.2 An assessment of each feature / component will be made, the condition will be determined according to the English Heritage Scheduled Monuments at Risk methodology (Darvill and Fulton 1998, 265), and is undertaken at two levels. The most general level of recording is quantifying the level of risk to archaeological monuments, as opposed to survival, and is concerned with current and future risk of damage or loss. At its simplest, this will entail applying the concept of low, medium and high risk of potential adverse impacts to each of the main structures (*op cit*, 218), The survey will also assess objectively the extant condition, the fragility of the extant structural fabric, and the potential for risk. The results of the condition survey will be presented as part of the site gazetteer. In conjunction with Charles Blackett-Ord the requirements for repair will be defined and prioritised.

### 3.9 INTERPRETATION

3.9.1 The site will be assessed for its potential for the development of interpretation schemes. This will examine the potential of the site to allow increased access by the general public, and the limitations posed by health and safety and other environmental and access (such as the crossing of Grainsgill Beck) constraints. The site will be assessed for its potential to inform the public about industrial extraction in the region and will be compared with other comparable Lakeland industrial sites that have more developed interpretation. The assessment will examine which elements of the site warrant interpretation and will also examine the level of interpretation. A proposal for interpretation for the site will be compiled that will take in all aspects pertinent to helping the visiting public better appreciate the site and its development.

### 3.10 REPORT

3.10.1 **Digital Presentation:** the survey data will be collated within a GIS environment (ArcMAP) and will include all historical mapping, a contour

map of the general terrain (created by photogrammetry), the modelled / corrected aerial photography. A digital copy of the archive will be passed to LDNPA on completion of the survey alongside the final report.

3.10.2 **Reporting:** the report will include the results of the survey, along with a historical development of the study area. Monuments and areas deemed likely to be under threat will be highlighted, and the project research aims will be addressed where possible. The report will present, summarise, and interpret the results of the programme, and will include a full index of archaeological features identified in the course of the project. The reports will consist of an acknowledgements statement, lists of contents, summary, introduction summarising the brief and project design and any agreed departures from them. The conservation plan will also include sections on the following:

- Historical Background
- Survey Results
- Understanding the Site
- Historical Overview
- Site Description
- Phasing of Site
- Gaps in our knowledge
- Assessment of Significance
- Issues and vulnerability
- Conservation Policies
- Management Issues
- Gazetteer
- Bibliography

3.10.3 The report will incorporate appropriate illustrations, including copies of the site plans, landscape survey mapping, all reduced to an appropriate scale. The site mapping will be based upon the GIS and CAD base. The report will be accompanied by photographs and historic illustrations illustrating the principal elements of the landscape.

3.10.4 **Editing and submission:** the report will be subject to the OA North's stringent editing procedure and then a draft will be submitted to English Heritage for consultation. Following acceptance of the report ten bound copies of the report will and a PDF copy will be submitted.

3.10.5 **Output:** three hard and one digital copies and of the full report will be submitted to the Lake District National Park Authority. Each report will be illustrated by a selection of prints and maps.

### **3.11 MANAGEMENT AND CONSULTATION**

- 3.11.1 **Timing:** it is intended that the conservation plan should be initiated as soon as practical following formal confirmation. The date for completion is defined as the end of February 2012. Stages for completion of works will be identified as relevant with LDNPA.
- 3.11.2 **Project management:** once adopted, the management plan will be managed by LDNPA in consultation with Natural England. The day-to-day contact for the project will be John Hodgson, LDNPA Senior Archaeology and Heritage Advisor.

## **4. OTHER MATTERS**

### **4.1 ACCESS**

- 4.1.1 It is assumed that LDNPA will obtain access to undertake the survey from land owners and tenants.

### **4.2 HEALTH AND SAFETY**

- 4.2.1 Full regard will, of course, be given to all constraints (services) during the excavation, as well as to all Health and Safety considerations. The OA North Health and Safety Statement conforms to all the provisions of the SCAUM (Standing Conference of Unit Managers) Health and Safety manual, as well as the OA Health and Safety Statement. Risk assessments are undertaken as a matter of course for all projects, and will anticipate the potential hazards arising from the project.

### **4.3 INSURANCE**

- 4.3.1 The insurance in respect of claims for personal injury to or the death of any person under a contract of service with the Unit and arising in the course of such person's employment shall comply with the employers' liability (Compulsory Insurance) Act 1969 and any statutory orders made there under. OA carries an appropriate level of insurance for covering liabilities on major projects. These are currently Employers Liability Insurance (£10,000,000 any one occurrence), Public Liability Insurance (£10,000,000 any one occurrence), Professional Indemnity Insurance (£5,000,000 any one claim and in all) and Contractors All Risks Insurance (£1,500,000).

## 5. RESOURCES

### CARROCK FELL MINE CONSERVATION PLAN

<b>Task</b>	<b>Resources</b>
<b>Desk Based Assessment</b>	5 PO
<b>Topographic Survey</b>	3 PO, 2 PS, 7 illust
<b>Understanding the Site</b>	
Archaeological background / Phasing	4 PO, 1 illust
Other Values	1.5 PO, 6 Consultant
Gaps	0.5 PO
Consultation	3 PO
<b>Assessment of the Significance</b>	4 PO
<b>Issues and Vulnerability</b>	3 PO, 1 Consultant
<b>Conservation Policies</b>	4 PO
<b>Condition Survey</b>	3.5 PO
<b>Interpretation</b>	1 PO
<b>Report</b>	
Report Draft	1 PM, 4 PO, 3 illust
Report Final	1 PM, 2 PO

PM = Project Manager

PO = Project Officer

PS = Project Supervisor

Illust = Illustrator

## COSTING

### Project: Carrock Fell Mines, Lake District, Conservation Plan

#### Date 21st December 2011

The cost quoted is a fixed price. All prices quoted are inclusive of management, overheads, and other disbursement costs (travel and expenses), to undertake the programme of work as defined in this project design. Any other variations from this programme of work at the clients' direction will require recosting.

The costs exclude provision for the involvement of Charles Blakett-Ord in the condition survey.

#### Costs

Desk Based Assessment	£ 1271.00
Topographic Survey	£ 2150.00
Understanding the Site	£ 3637.00
Historical background	£ 483.00
Phasing	£ 473.00
Other Values	£ 1592.00
Gaps	£ 152.00
Consultation	£ 937.00
Assessment of Significance	£ 930.00
Issues and Vulnerability	£ 852.00
Conservation Policies	£ 926.00
Condition Survey	£ 1134.00
Interpretation	£ 324.00
Reporting	£ 1944.00
<b>Total</b>	<b>£ 13168.00</b>

#### Day Rates

Meeting with OA North manager (includes travel)	£ 230.00 / day
Additional consultancy days	£ 215.00 / day
Ecologist (Capita Symonds)	£ 198.00 / day



Normal OA North working hours are between 9am and 5pm, Monday to Friday

Notes:

1. Salaries and wages inclusive of NI, Superannuation and overheads
2. Total costs exclusive of VAT
3. All costs at 2011/2012 prices

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## APPENDIX ONE

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### COMPANY INFORMATION

**Oxford Archaeology Background:** with five main offices in England and France, OA is now the largest archaeological contractor in Britain, employing over 340 staff, and provides a comprehensive professional archaeological service to anyone requiring assistance and advice in the study of the past and heritage resource management in both Britain and overseas. OA is a registered organisation with the Institute of Field Archaeologists (RAO No 17), and the VAT Registration Number is GB 630847930.

**OA South:** OA was constituted in July 1973 as the Oxfordshire Archaeological Unit, supported by a single county grant from the Department of Environment and by Oxfordshire County Council. The Unit set itself the task to work in a coherent and problem-orientated research framework, unlike much of the small-scale rescue archaeology of the 1960s.

In March 1980, Oxfordshire County Council withdrew its financial services and support, and the Oxfordshire Archaeological Unit undertook a modest name change to Oxford Archaeological Unit (OAU), became a Limited Liability Company, and undertook to administer itself and its cash flow. Throughout the 1980s OAU responded rapidly to the changing face of archaeology and continued to thrive and expand its range of services.

In the 1990s OAU continued to expand and established itself as one of the leading archaeological organisations in Britain, undertaking major strategic studies and infrastructure projects across most of Southern England and abroad.

**OA North:** in November 2001, OAU merged with one of the largest and most highly respected archaeological businesses in the North of England, the Lancaster University Archaeological Unit. This had been formed in 1979 as the Cumbria and Lancashire Archaeological Unit, to provide an archaeological service for these counties. In 1988, it changed its name to the Lancaster University Archaeological Unit, to reflect the widening scope of many of its activities, and became a regional leader in archaeological practice of all kinds, though with a growing specialism in buildings and industrial archaeology, as well as landscape survey, to complement its traditional excavation skills. This northern office, based in Lancaster, now trades as OA North.

**OA East:** in 2008, OA acquired a new team in the East of England by taking over Cambridgeshire County Council's Archaeology Unit 'CAM ARC', rebranded OA East. They are based at Bar Hill, just outside Cambridge. OA East has an excellent pedigree stretching back to the early 1990s, when it worked principally in Cambridgeshire, but over the last ten years its work has branched out across many of the eastern counties.

### OA SPECIALIST EXPERIENCE

OA has considerable experience of upland archaeology and major landscape GIS projects. OA has undertaken numerous analytical landscape projects that date back to 1982, and we have staff who have over 25 years of experience in landscape archaeology. OA North was the first organisation to start using GPS for the survey of archaeological landscapes back in 1993 on a project undertaken behalf of the then RCHM(E). Since then our ability to record and analyse these landscapes has

continued to develop with the introduction of new recording techniques, such as survey grade GPS, LiDAR, and analytical GIS techniques..

**Heritage Management:** OA has specialist departments dedicated to heritage management whose work consists of desk-based assessments, environmental impacts assessments, conservation plans, historic landscape character assessments, strategic studies, large-scale management and condition surveys and landscape Surveys. OA has recently worked on many projects where funding has been provided by outside agencies such as EH or the Heritage Lottery Fund and are familiar with the requirements and opportunities associated with such projects.

**Landscape Recording:** OA has considerable experience in the survey and reporting of historic landscape and the issues associated with them, including conservation/management plans, both for standing structures and for areas of historic landscape value. We also undertake many detailed, integrated historic landscape/archaeological assessments, often locating new sites. Many of these projects involve looking at the vulnerability of the historical element of the landscape and offering management solutions. Much of this work has been done under Heritage Lottery funding for historic parks or for National Trust estates, and is often carried out in conjunction with ecological and other land management studies.

Since 1982 OA North has undertaken 38 major landscape field surveys (the larger ones extending across 100sqkm) and overall has recorded 1053 sqkm of uplands across England and Wales; this has comprised the recording of over 22,800 sites and monuments. Few archaeological organisations have a comparable track record and OA North can justifiably claim to be one of the foremost specialists in the field of upland / moorland landscape recording. Since 1984 all the surveys have been directed or managed by the OA North survey manager (Jamie Quartermaine, BA, DipSurv, MIFA) who has ensured consistently high quality and expert approach to the surveys undertaken.

The surveys range from basic identification management surveys intended to identify the character and location of the archaeological resource, to the increasingly detailed landscape analysis surveys which enable an understanding of the development of the landscape. Notable examples of the latter are the surveys of large-scale cairnfield and field-system complexes in western Lake District, the prehistoric coaxial field-systems of Asby Common (Eden Valley), and the wholesale surveys of the Lake District radial valleys undertaken on behalf of the National Trust. The surveys of Wasdale, Buttermere, Borrowdale, Ennerdale and Haweswater have examined the valleys, from their watershed down; and have included boundary surveys, detailed documentary studies, together with palaeoenvironmental evidence. This has enabled the reconstruction of the development of settlement and land use in the respective valleys since their earliest exploitation.



Site of Medieval vaccary recorded during Buttermere Survey

OA North has also developed an expertise in the recording and analysis of designed landscapes, particularly parks, gardens and other pleasure grounds. Notable examples include the surveys of Lyme Park (Cheshire), Lowther Park (Cumbria), Lathom Park (Lancashire), and Chatsworth House (Derbyshire).

Recently OA North has undertaken a major programme of identification survey across the uplands of North Wales, on behalf of the Royal Commission of the Ancient and Historical Monuments of Wales (RCAHMW). This has entailed the survey of 290 sqkm of unenclosed upland, and has recorded over 3,000 sites.

OA North employs two staff who are permanently engaged in landscape recording. From the outset OA North has invested in developing its recording techniques. It



pioneered the use of data logging total stations in 1985, and was the first organisation to use differential GPS on an archaeological survey in 1993. Now we use the latest differential GPS survey equipment which can achieve accuracies of 20mm, as well as six total stations for general survey work.

Additionally, OA North is involved in remote sensing techniques for the recording of landscapes. This has traditionally entailed the use of aerial photography and we have considerable experience in plotting from vertical and oblique aerial photographs. We also regularly undertake aerial photographic flights, operating from such sites as Sutton Bank (North York Moors) where one of our staff is a flying instructor. In recent years, we have undertaken major landscape surveys using LiDAR, which provides accurate 3D data of land surfaces scanned from a plane. It is very effective at the identification of archaeological landscapes, and can also provide accurate 3D mapping of earthworks. To date, this has been undertaken principally on lowland terrains, but the same technique is also applicable to uplands.



Two views of LiDAR data compared with an aerial photograph (left) of a medieval field system in the upper Ribble

**OA Geomatics:** OA has a long tradition of utilising spatial data using innovative techniques, and has a commitment to promoting the use of GIS within archaeology. It has extensive experience and skills in the creation of Geographic Information Systems for use by HERs, Urban Archaeological Databases (UADs), cultural-preservation organisations and academic institutions. For this project, the Geomatics team would bring professional archaeological knowledge of historic landscape and seascape character assessments, ensuring that the data are incorporated into a GIS in a manner that reflects the nature of the environment and the archaeological record. The work will be conducted by experienced archaeologists who are not only familiar with GIS and digital data management, but also understand the concepts behind historic character assessment and archaeology. As well as designing and implementing solutions, OA advises on systems and data integration for many of our clients.

GIS is an integral part of all projects undertaken by OA, from field excavations to Environmental Impact Assessments (EIAs). The Geomatics team provides unparalleled service in the creation of GIS data for the purpose of heritage management, predictive modelling, and research-oriented goals.

**Geomatics Resources:** OA is dedicated to the development of archaeological GIS and has invested heavily in skilled staff and software in order to achieve this. Our geomatics teams are familiar with, and can undertake projects based on, all the major GIS packages, both proprietary and open source. Furthermore our commitment to standards compliance ensures that our data are fully interoperable, can be shared easily amongst colleagues, clients and different software platforms, and will remain accessible into the future.

## APPENDIX TWO

### PERSONNEL CVS

#### CURRICULUM VITAE

*Jamie Quartermaine MIFA*

*Senior Project Manager*

#### ACADEMIC QUALIFICATIONS

BA (Hons) Archaeology and Ancient History, Nottingham University, 1982

Topographic Sciences (Land Survey) Diploma, Glasgow University, 1984

#### Professional Qualifications

Member of The Institute of Field Archaeologists

#### Employment History

1981-1982	Survey Officer and Roman Finds Specialist for the Glamorgan and Gwent Archaeological Trust
1983-1984	Assistant Director for Braintree Roman Town Excavations for Braintree District Council
1984-	Project Officer and Project Manager for Lancaster University Archaeological Unit (now Oxford Archaeology North)

#### PRESENT POST - SENIOR PROJECT MANAGER FOR OA NORTH

**Project Officer:** Jamie's experience and training in land survey techniques led to his appointment at the Lancaster University Archaeological Unit as a Project Officer with overall responsibility for all landscape and building survey work. He has endeavoured to develop the Unit's survey capability, and has sought to introduce new techniques as available and appropriate. He was involved in the development of total station digital recording, surface modelling, GPS (Global Positioning System) survey and CAD draughting; the first use of GPS techniques within archaeology in the UK was by LUAU (on the Arnside Silverdale AONB survey in 1993). He has innovated with and published on the use of LiDAR for landscape recording. Within building recording he has been able to develop innovative techniques that have improved the quality and cost-effectiveness of surveys, particularly the use of semi-oblique rectified photography, reflectorless total stations (REDM) and laser scanning techniques to provide detailed 3D mapping of buildings.

**Senior Project Manager:** since 1995 Jamie has been a project manager which has enabled him to develop the recording of archaeological landscapes. He has been involved in the management of over 400 projects, and has been able to develop research topics into the development of the upland landscapes of Northern England and North Wales. He has considerable experience in training unit personnel in the varied aspects of digital recording and was involved in the training of a Nepalese

survey team to undertake a comprehensive recording programme of a large seventeenth century palace on the outskirts of Kathmandu. He has recently trained an Iraqi survey team in building survey techniques at Erbil, Northern Iraq.

**Research Interests:** his particular expertise is in landscape archaeology, and particularly into the development of the upland landscapes of northern Britain, as well as designed landscapes. This was initiated with the surveys of the Lake District National Park Survey and the surveys of the Langdale Axe Factories in 1984, he has continued to undertake extensive surveys and publish the results over the subsequent period. All landscape surveys undertaken by OA North have been either directed or managed by Jamie and to date OA North has recorded by field survey over 900sqkm of uplands across Northern England and North Wales.

**Industrial Archaeology:** Jamie also has particular experience of the recording of industrial sites from around the region, which include the Maryport Ironworks, Backbarrow Ironworks, Hotties glassworks (St Helens), the Lead mines and smelt mills of Greenside, Nenthead (both in Cumbria), Grassington (North Yorkshire) and Snailbeach (Shropshire) and the lime industry of Craven (North Yorkshire). With the latter he has produced detailed surveys of the Langcliffe and Mealbank Hoffman lime kilns, and associated quarry complexes. He has produced a book on the archaeology of Thomas Telford's Holyhead road through North Wales (Quartermaine *et al* 2003).

Jamie has managed a programme of investigation into the docklands of Liverpool, which has involved extensive excavations of the Old Dock, the Dry Dock, Canning Dock, Manchester Dock, Chester Basin, Trafalgar Dock and Georges Dock. This has culminated in the construction of a visitor centre to celebrate Liverpool's maritime history.

**Building Survey:** Jamie has had considerable involvement with the recording, interpretation and analysis of buildings from around the region, in some instances this has been limited to the design, and setting up of recording systems for major building projects, in others it has entailed the directing of surveys and more recently the management of building survey projects.

Projects that entailed the development of recording systems include Kendal Castle, Castle Bolton, Piel Castle, and Furness Abbey. In others he was directing the surveys such as at Pendragon Castle, Lancaster Castle, Maryport Iron Works, Rufford Old Hall, and the Hotties, and others he managed such as Wigmore Castle, Samlesbury Hall, Calder Abbey, Jervaulx Abbey, Clitheroe Castle, Backbarrow Iron Works, Liverpool Docks, and Lyme Park.

**GIS Landscape Projects:** recently Jamie has managed a series of major GIS landscape projects principally for English Heritage. These include an important study into the Upland Peats of North West England as a pilot study for developing a strategy for the management of high altitude peatlands across the country. A further study examined the impact of potential aggregate extraction across the extent of the Ribble Valley, Lancashire. This project entailed the development of the use of LiDAR techniques for the detailed recording of landscape surfaces which was able to precisely map even the most subtle earthworks. At present we are in the final stages of completing the Lancaster Urban Archaeological Database, which is a GIS compilation of all archaeological investigations within the historic city of Carlisle.

**Outreach:** Jamie is heavily involved in the dissemination of all aspects of archaeology to the wider public. This takes many forms, from talking to local



societies to the submission of press releases and corresponding broadcasts on television and radio. More specifically Jamie has initiated a number of Local Heritage Initiative projects with local groups, which have entailed the recording of Lathom Park, the excavation of a complex enclosure settlement near Ingleton (North Yorkshire), the mapping of nineteenth century parkland near Windermere, and the mapping of a deserted medieval settlement at Muncaster (West Cumbria). These projects have required considerable interaction with the community groups, entailing training of archaeological techniques and site identification, and the wider dissemination of the results. In the case of the Lathom Park, Jamie was invited to be a trustee for the Lathom Park Trust which was set up to record and manage the nationally important fourteenth century park and palace.

**Exhibition Design:** Jamie has considerable involvement in the design and implementation of exhibition panels to provide an appropriate outreach to the wider public. Examples include coke ovens at Maryport, a ropewalk in Ulverston and a round house settlement at Lancaster University. Recently he has completed the production of a permanent exhibition around a preserved section of the Old Dock, Liverpool. Jamie was involved, not only in the excavation and conservation of the dock wall, but also in the design of the exhibition fit out and he managed the design and production of the exhibition materials. This included a large animated, computerised reconstruction of the Old Dock extending across one wall of the visitor chamber.

#### **SELECTIVE PROJECTS MANAGED OR DIRECTED**

- **Backbarrow Ironworks, Cumbria** - the detailed fabric survey and evaluation of a major blast furnace and ironwork complex. Recent work includes a detailed study of the Pug Mill. Key elements of the complex including the engine house and extant steam engine were recorded by laser scanning techniques.
- **Pendragon Castle Cumbria** - this was a structural survey of the Norman keep (EH funded) which entailed the production of detailed photogrammetric elevations and accurate plans in advance of a major consolidation programme. This was one of the first structures to be entirely draughted within a CAD format.
- **Victoria Cave, North Yorkshire** - this was a full computer modelled survey of an early cave site using a reflectorless total station, and entailed a programme of analysis re-examining the stratigraphy of nineteenth century excavations. Following on from this was a programme of excavation of Neolithic and Roman deposits.
- **Liverpool Docks:** a major programme of excavation and recording of the historic Liverpool docks. This included the Old Dock, which was the worlds first commercial wet dock. All the dock structures were recorded in considerable detail using laser scanning techniques. A section of the Old Dock has now been preserved within a visitor centre.
- **Old Dock, Liverpool** - an extensive evaluation and excavation into the worlds first wet dock. Jamie was involved in the successful submission for World Heritage Status for Liverpool. This has culminated with the excavation for the establishment of a major visitor centre celebrating the Old Dock and Jamie undertook the design of the exhibition. In addition he has been involved in the recording of a number of Liverpool's other docks (Canning, Dry, Manchester, Chester, George's, Trafalgar).

- **Hotties Glass Furnace Merseyside** - this was a major structural survey and excavation of a standing 19th century glass furnace (EH funded). Jamie was responsible for the initial surveys of the building and its regenerators.
- **Lancaster Castle, Lancashire** - the generation of a comprehensive 3-dimensional, stone by stone record of the Witches Tower of the castle. It entailed a detailed instrument survey of the internal elevations, building plans, and cross sections, and integrated these with a photogrammetric survey of the external elevations
- **Lyme Park, Cheshire** - an extensive survey, and management study of the park, gardens and buildings of this historic park. This entailed a survey of all park buildings (with the exception of the Mansion House), and was linked in to a landscape survey of the park.
- **Vale Royal Abbey, Cheshire** - an extensive fabric survey of the Great House that was built from the post-Dissolution fabric of the former abbey.
- **Samlesbury Hall, Lancashire** - a survey of the medieval timber hall and associated garden by means of instrument techniques.
- **Rufford Old Hall:** a detailed reflectorless instrument survey of the medieval timber framed hall on behalf of the National Trust, resulting in the production of very detailed elevations and drawings of the trusses and timberwork.
- **Calder Abbey:** a detailed photogrammetric survey of the abbey, linked into a programme of conservation on behalf of English Heritage.
- **Greenside, Cumbria** – the survey, and excavation of the largest lead mining, refining and smelting complex in the Lake District.
- **Lowther Park, Cumbria** - a major documentary and landscape survey of Lowther Park, dealing with the very rich pre-park landscape, and the development of the parklands landscape from its earlier deer park origins through to the present. It is one of the richest, and most complex parkland landscapes in the region, and an area of considerable archaeological importance.
- **Langcliffe and Mealbank Hoffman limekilns, North Yorkshire** - surveys of two nineteenth century Hoffman limekilns and associated quarries. These used what was at the time revolutionary technology to create commercial quantities of lime. The surveys have served as the basis for subsequent conservation management plans.
- **Patan Durbar Temple complex, Nepal** - a detailed fabric survey of the very large world heritage palace complex site in Patan, near Kathmandu. This entailed teaching a Nepali survey team instrument and photogrammetric survey techniques to enable a very detailed record of the palace complex.
- **Erbil, Iraq:** a recent training programme on the 8000 year old Erbil tel, to train an Iraqi survey team in the use of building recording techniques for a complex of vernacular buildings that cover the top of the tel.
- **Maryport, West Cumbria:** the survey and excavation of the blast furnace and the adjacent coke ovens at Maryport. This has culminated in the conservation and presentation of the coke ovens.

- **Thomas Telford's Holyhead Road** - a major innovative survey of the Welsh section of Telford's Holyhead Road.
- **Upland Peats, North-West** – a major innovative, and exploratory programme to investigate survey techniques for the investigation of the archaeological resource beneath upland peatlands. This is a major GIS landscape project for English Heritage to develop strategies for managing the upland peats.
- **Carlisle UAD** - a GIS based project to compile all archaeological information and explorations across the extent of historic Carlisle. This is extremely important as it provided the opportunity to compile into a usable form the results of 20 years of exploration by the former Carlisle Archaeological Unit.

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<p>IAN MILLER BA FSA SENIOR PROJECT MANAGER</p>
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(OA North Senior Project Manager) has over 20 years experience of commercial archaeology, and has a particular interest in the archaeology of the Industrial Period, and in particular that of the North West. Ian is a member of the CBA North West Industrial Archaeology Panel, and the Cumberland and Westmorland Archaeological Society Industrial Archaeology Panel.

Ian has been managing industrial archaeology projects since 1993, when he directed the excavation and survey of the Netherhall Iron Works in Maryport, and undertook the subsequent analysis and publication of the results. He has also edited a monograph dedicated to the alum industry of north-east Yorkshire, which arose from the results of the survey excavation of Carlton Alum Works. More recently, Ian managed the excavation of the Percival, Vickers & Co flint glass works in Manchester, and the excavation of the River Street Iron Works in Rochdale. He was also responsible for managing the archaeological elements of the Murrays' Mills Major Repairs Project in Manchester, which culminated in the production of a conservation management plan, and an academic monograph of the steam-powered mills in the Ancoats area of Manchester. He is presently managing a large programme of excavation in the Bradford area of Manchester, which is focused on a nineteenth-century colliery, an associated brickworks, an ironworks, and a steam-powered cotton mill.

<b>CHRIS WILD</b> <b>PROJECT OFFICER</b>
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**Project Officer OA North**

Date of birth 19/4/1971

Year joined firm 1993

## Education

BSc (Hons) Archaeological Sciences, Bradford

**Relevant experience/key qualifications**

My work with LUAU/OA North has been varied and wide-ranging. My major role is involved in buildings recording and excavation, most especially relating to vernacular and industrial usage. Since 1998 I have been the senior fieldwork buildings archaeologist and surveyor within LUAU/OA North. This role has including a variety of levels of recording and instrument survey work, with extensive experience of Total Station survey, Reflectorless Total Station survey using the TheoLT AutoCAD interface, and GPS survey, and the manipulation of this data to produce report quality drawings via three-dimensional CAD packages. I have a working knowledge of many computer packages, including AutoCAD 2004 and R14, TheoLT, Leica GPS, and Microsoft Office products, and have recently become involved in creating 3-dimensional models of historic structures using both data recorded during fieldwork and historical sources. I am competent with many types of photographic recording and regularly implement in-house training on rectified photography and the use of medium format cameras, as well as training in instrument survey and building recording techniques. As a Project Officer I am heavily involved in both the tendering process and establishing project methodologies, and with the projects of all sizes.

During the 2001 Foot and Mouth Crisis I worked as a Building Conservation Officer in Cumbria under secondment to DEFRA, monitoring cleaning of traditional buildings. Following this work, I helped to produce a proposal for a region-wide project, in conjunction with English Heritage, Lancashire County Council and Cumbria County Council, attempting to address the expanding decline of farmstead buildings. This led to the undertaking of a comprehensive survey of clay-built structures on the Solway Plain, Cumbria. I was also actively involved in the development of Historic Scotland's publication '*Guide for Practitioners 4: Measured Survey and Building Recording For Historic Buildings and Structures(2004)*', and was consulted about recording methodologies during the production of English Heritage's '*RecorDIM: Guidance note for Measured Drawing for Built Heritage Documentation (forthcoming)*'. I have directed projects on a wide range of building types and periods, including medieval castles and farm complexes, early-post medieval housing, and vernacular, industrial, domestic and military structures from the eighteenth century to the present date.

Within the last few years, the vast majority of my work has been in the field of Industrial archaeology, and most recently in that of low-status domestic dwellings. The latter is a relatively new area of fieldwork archaeology, particularly with regard

to excavation. I have been heavily involved with excavations within the industrial suburbs of Manchester of back-to-back terraces and courts at Syer's Court Piccadilly, Bradley Street, Ancoats, and Bengal Street/Shilling Court, Ancoats, and am currently preparing publication texts for all, and a further paper analysing the different forms of such housing within these districts. I have also undertaken extensive and detailed recording of extant rural low-status dwellings, most notably the survey of clay-built structures for English Heritage (above), and a two year project at Auchindrain Township, Argyll, undertaken on behalf of Historic Scotland. This, providing a 3-d survey and fabric analysis of 18 vernacular structures at the township museum, and was influential in the drafting of the Historic Scotland methodology publication (above).

I have undertaken excavations and extant structure recording of structures relating to several industries, most extensively the textile industries, but also the iron, lead, coal, glass, lime, and gunpowder industries. Most notable of these is the long-term, detailed recording of Murrays' Cotton Spinning Mills in Manchester, undertaken on behalf of the North West Development Agency, where recording at the nationally significant mills complex, which includes the oldest surviving, purpose-built steam-powered textile mill, comprised detailed fabric recording, 3-dimensional instrument survey, excavation, documentary research and in-depth analysis of both the mill complex and the early development of the factory system and the textile industry.

### **Employment**

**1998-present: Project Officer, Oxford Archaeology North (formerly Lancaster University Archaeological Unit)**

**1995-1998: Project Supervisor, Lancaster University Archaeological Unit**

1991-1992, 1993-1995: Project Assistant, Lancaster University Archaeological Unit

**1992: Project Assistant, Birmingham University Field Archaeology Unit**

As an integral part of my undergraduate course I completed two vocational training placements of six months within commercial archaeology.

### **Main areas of interest**

Interested in all archaeological periods, but especially industrial and vernacular archaeology. A current area of particular interest is urban workers' housing and textile mills.

### **Major projects**

Undertaken major building surveys at Auchindrain Historic Township, Argyll; Abbey Farmstead Faversham; Old Abbey Farm, Cheshire; St Conan's Kirk, Argyll; Lyme Park, Cheshire; Axwell Hall, Gateshead; Two Lions Public House, Penrith; Lancaster Castle; Kendal Castle, Cumbria; Bewcastle, Cumbria; Wigmore Castle, Herefordshire; Nenthead Lead Mines, Cumbria; Saltom Pit Engine House, Whitehaven; Frickley Colliery, West Yorkshire; Craven Lime Works, North Yorkshire; MOD West Freugh, Wigtonshire; and of over 50 clay-built structures on the Solway Plain, Cumbria.

Directed excavation of Bronze Age cremation site at Allithwaite, Cumbria; involved in Roman excavations at Kirkham, Lancashire; St Nicholas' Yard, Carlisle; Zeugma, Turkey; and along the Northwest Ethylene Pipeline, Cumbria; directed medieval excavations at Cartmel Priory, Cumbria and Seathwaite, Cumbria; undertaken many large-scale evaluation trenching programmes, most notably on the A1 widening, North Yorkshire, and the Stainburn Bypass, Whitehaven, Cumbria; directed industrial period excavations at Syer's Court Dwellings, Manchester; Piccadilly Mill, Manchester; Trencherfield Mill, Wigan; and Oakenrod Mill, Rochdale; undertaken concurrent building recording and excavation projects at Murrays' Mills, Manchester; Bengal Mill, Manchester; Pilkington's Glass Works, St Helens; Calprina Textile Mill, Greater Manchester; Flint Glass Works, Manchester; Bew Castle, Cumbria; Wycoller Hall, Lancashire; Gin Pit Colliery, Wigan;

### **Main strengths**

Sixteen years fieldwork experience on a complete range of site types from prehistoric excavation to twentieth century industrial building recording. Wide ranging survey and photographic skills, with relevant CAD and other computer skills. Publication, Assessment Report and Conservation Plan writing.

### **Publications**

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ALASTAIR VANNAN

PROJECT OFFICER

Date of birth            1976

Year joined firm        2004

Education background:

Sept 2001 – July 2004: First Class Honours BA in Archaeology from the University of Liverpool

Sept 2003: Performance-based undergraduate scholarship

Sept 2002 Performance-based undergraduate scholarship

### **Summary of Main Skills and Professional Attributes**

Experience and competence in many facets of archaeological work, including fieldwork, post-excavation analyses, desk-based research, landscape survey and analysis, and heritage management services.

Production of the written word to an extremely high standard.

Experience of sites from many diverse periods.

Degree studies focused upon British and Irish prehistoric and early historic periods.

Experience of computing in archaeology, including GIS.

Ability to communicate and interact effectively with colleagues and business associates, including considerable experience as a team leader.

Good organisational and analytical skills.

Knowledge and understanding of the importance of effective team working.

### **Recent Employment**

**May 2010 – present:** Oxford Archaeology North, acting project officer

**March 2005– May 2010:** Oxford Archaeology North, fieldwork supervisor

### **Relevant Experience**

Archaeological Excavation, Research, and Survey:

My main field of interest is the prehistory of Britain and Ireland, with a broader interest in the history and archaeology of all periods. I have directed excavations and evaluations, and undertaken watching briefs, post-excavation analyses, and desk-based research, as well as formulating project designs, in relation to numerous sites of prehistoric and historic date. Such investigations include the excavation of a Bronze Age ring cairn in the Duddon Valley in Cumbria, an Iron Age settlement near Atherton, in Greater Manchester, and medieval church walls and associated burials in Penwortham, Lancashire. In addition to following the fieldwork projects that I have directed through the post-excavation stages to the completion of reports, I have also been responsible for the analysis and reporting of results of many projects that consisted of data sets that had been produced as a result of fieldwork directed by colleagues.

I undertook a major desk-based study into the hillforts of Cheshire, which was used as the research base to inform the extensive Habitats and Hillforts project undertaken by Cheshire County Council. I have undertaken numerous other desk-based assessments, to a diverse range of specifications, including the contribution of chapters to environmental impact assessments. Through this work I have developed familiarity



with current planning frameworks and statutory legislation relating to the historic environment.

I have also led extensive landscape surveys, and subsequent landscape analyses, such as the survey of the National Trust holdings in Buttermere and Nether Wasdale, Cumbria.

I have considerable experience of communicating and liaising with colleagues and clients of varied professional backgrounds. This ranges from training students, volunteers, and colleagues in the methods and practices of archaeological fieldwork to discussions with colleagues, clients, statutory consultees, and advisory bodies relating to the complexities of legislative and contractual requirements.

In addition to being experienced in the compilation of numerous types of report, I also have considerable experience of presenting the results of projects through public speaking. This has ranged from visiting numerous local societies as the sole guest speaker to speaking at larger archaeological conferences with audiences of several hundred attendees.

JANE JACKSON  
CAPITA SYMONDS

**Business Role:**

Project Manager and Conservation Advisor

**Qualifications**

BA Geography (Hons)

Master of Philosophy, Urban and Regional Planning

MRTPI, IHBC

With twenty years experience as a conservation planner in the historic environment field, Jane has a detailed knowledge of historic built structures and their repair and reuse, and enjoys the challenge that regeneration initiatives bring.

**Key Experience:**

Conservation planning and advice

Historic building reuse, adaptation and regeneration

Conservation Management Plans and Statements of Significance

Project management for heritage and conservation schemes

Feasibility studies and options appraisals for historic buildings and scheduled ancient monuments, including funding advice

Condition assessments and programme compliance for historic landscapes and buildings

**Relevant Project Experience**

*2008 to date Capita Symonds*

**Tyne Pedestrian and Cycle Tunnels**

**2010-12**

**Client: Tyne and Wear Integrated Transport Authority**

Member of the Design Team for the modernisation and adaptation of 1951 Grade II listed system and partial replacement of original wooden stepped escalators, at the time the longest such escalators in the world.

Lead for consultation with English Heritage and submission of listed building consent to two local planning authorities, providing full Access and Design Statement, and separate Heritage Statement.

## **Heritage Asset Management Plan**

**2011 – 12**

### **Client: Yorkshire Water**

Jane Jackson is co-ordinating a project team to deliver a Heritage Asset Management Plan for Yorkshire Waters Northern Estate. The largely tenanted land includes a number of derelict sites and underused buildings, and the study will develop a number of key projects for repair and reuse, following an initial assessment of the constraints and opportunities of all the Yorkshire Water owned property.

## **Liverpool Crossrail Station 2011**

### **Client: Bam Nuttall**

Provided Heritage Management Plan and input to Environmental Management Plan for works associated with new Crossrail station below Moorgate. Provided on site advice to construction team and advice on protection of listed buildings affected by the proposed works

## **Mealbank Quarry Options Appraisal**

**April-July 2010**

### **Client: Yorkshire Dales Millennium Trust**

Jane assembled and project managed a multidisciplinary team, providing conservation, structural and business advice to on the options and feasibility for future use and management of the scheduled Hoffman lime kiln and Mealbank Quarry SSSI.

The project involved the organisation and delivery of a public consultation event with the local community of Ingleton.

## **Southport Cultural Centre**

**2009-10**

### **Client: Sefton Council**

Historic environment consultant within Levitt-Bernstein/Capita Symonds multidisciplinary Design Team taking forward the Sea Change funded project to develop the new Southport Cultural Centre from design to implementation. Led consultation meetings with English Heritage and produced Heritage Support Statement for the listed building consent application to secure essential alterations and modern interventions within the Grade II listed buildings to ensure the project delivery targets could be realised.

## **Roman Maryport Project**

**2009-11**

### **Client: Hadrian's Wall Heritage**

### Lead historic environment adviser

working with CSL project team The project: is the design and development of a new visitor centre within historic buildings at Camp Farm to promote and enhance the scheduled Roman fort and town at Senhouse, Maryport

Jane's role has included the successful submission of an application for Scheduled Monument Consent for investigative works and provision of a heritage statement justifying key physical interventions in the building fabric

### **Employment History/ Other Experience**

**2005 – November 2008 Edinburgh World Heritage, Co-ordinator and Deputy Director** responsible for:

- Preparation of the Action Plan to implement the Old and New Towns of Edinburgh World Heritage Site Management Plan, and setting annual priorities for the Trust's conservation work.
- Made formal representations on the City of Edinburgh Development Plan and drafted the new policy for the World Heritage Site following the informal hearing.
- A member of the Client Design Group for the design, specification and future management strategies developed for St Andrews Square and Grassmarket public spaces.
- Partner/co-ordinator in a rolling programme of community based workshops to draw up strategies for the development of key sites within Old and New Towns of Edinburgh World Heritage Site.
- Advice to the City Council - based on an understanding of the evolution of the city and its buildings and the role of conservation to influence planning and development proposals and decision making in central Edinburgh.

### **2000-2005 English Heritage**

#### **Inspector of Historic Buildings, Yorkshire Region**

- Specialist conservation advice to 15 local authorities, including alterations, extensions and access improvements.
- Regeneration initiatives with Yorkshire Forward, the Regional Development Agency, in Scarborough, Grimsby, Hull and Whitby.
- Provided historic environment input to community planning initiatives as part of a wider built environment/heritage approach to regeneration.
- Assessment of HLF grant applications
- Specialist advice, mentoring and monitoring of projects on behalf of the Heritage Lottery Fund, including the Grade 1 Abbey House on the Whitby Headland, which opened as an exemplar building restoration and youth hostel in May 2007.
- Participated in peer review groups for new guidance, including building recording and building regulations. Lead heritage adviser to regional and national agencies

including Government Office, transport authorities, Highways Agency, Network Rail etc

- Advice to University of York on upgrade and management of listed buildings on the main campus.
- Key member of the management team for the Studley Royal/Fountains Abbey World Heritage Site. Developing management approaches to the preservation of the historic landscape and taking on key liaison role with Harrogate Borough Council. Jane had particular responsibility for William Burgess' St Mary's Church and environmental monitoring of the condition of the interior.

### **1995-2000 Telford and Wrekin Council Conservation Officer**

- Key role to coordinate the production of the Conservation Management Plan for the Ironbridge Gorge WHS including a user friendly consultation document to promote understanding among local residents and businesses of the issues and options for the future
- Lead provider of conservation advice across the District with particular responsibility for the Ironbridge Gorge World Heritage Site
- Reviewed and managed grant scheme for the Ironbridge Gorge
- Advised on new build and design in context in conservation areas, both in relation to projects from the Ironbridge Gorge Museum Trust and private developments

SAM GRIFFIN

CAPITA SYMONDS - ECOLOGIST

### **Qualifications**

BSc Wildlife Conservation 2004

Natural England bat survey licence since 2005

Natural England great crested newt survey licence since 2010

Natural England natterjack toad survey licence since 2010

### **Synopsis**

Sam is a Graduate student of Liverpool John Moores University. On completing his under graduate degree in 2004, Sam spent four years working in a zoo as lower

vertebrate and invertebrate keeper. Sam moved to a private ecological consultancy in 2008 before establishing his own successful ecological consultancy business and gaining temporary employment with Natural England as a planning and specialist protected species advisor. He joined Capita Symonds in 2010 and has been involved in a wide range of schemes including Navvies Bridge and Northside Bridge in Workington. He is now working with the A556 Environmental Improvement project team in planning species protection and undertaking detailed ecological design. Sam is a Voluntary Bat Warden with Natural England, the elected Chairman of Cumbria Amphibian and Reptile Group (CARG) and a Director of Watchtree Nature Reserve Ltd.

### **Skills**

Domestic and international protected species legislation.

Protected species surveys including bats, great crested newts, natterjack toads, reptiles, breeding birds.

Preparation of European Protected Species licence applications.

Ecological Impact Assessments.

Mitigation planning and ecological site supervision.

Detailed report writing to support planning applications.

User of GPS for spatial data capture

### **Knowledge**

Sam is highly experienced in all aspects of ecology from undertaking full ecological impact assessments to small scale work such as Phase I Habitat Surveys and protected species surveys.

He has an experienced track record in all stages of development including planning, detailed design and construction. He has undertaken both site preparation and post development monitoring including large scale translocation works of reptiles and slow worms. Sam also successfully carried out translocation of kidney vetch, the main food source for the small blue butterfly. This had never been attempted before in Britain and recent evidence suggests that the small blue butterfly is now using the area. The project gained attention from local media (print and radio) and national butterfly conservation organisations.

Sam provides a wide range of ecological advice to local authorities, developers and stakeholders including Natural England. He has also carried out protected species surveys and provided specialist planning advice for Higher Level Stewardship capital works funded schemes for Natural England. He an innovative approach to designing ecological mitigation and is always mindful of time and budget constraints while

ensuring legal compliance at all times. He has significant experience of consulting with a wide range of stakeholders including Natural England and Cumbria Wildlife Trust.

The Solway Coast is home to Sam who lives close by in Aspatria. Site visits for surveys and monitoring would be completed efficiently and he would have easy access to the project team in Carlisle and the County Ecologist in Kendal. His local knowledge of the area is vast having worked in creating and maintaining suitable habitat for natterjack toads on the Solway Coast and subsequent population monitoring.