

# **CARLISLE NORTHERN DEVELOPMENT ROUTE, CUMBRIA**

**Archaeological Excavations  
Within Parcel 5. Project  
Design 023 (rev 000)**

August 2008

NGR: NY 336529 554514



# 1 BACKGROUND

## 1.1 INTRODUCTION

1.1.1 This document is the project design (Further Archaeological Works Design (FAWD)) covering the open-area archaeological excavation required for Parcel 5, which forms part of the construction scheme for a new road, the Carlisle Northern Development Route (CNDR). It has been produced in response to a request from Cumbria County Council Historic Environment Service (CCCHES) for further archaeological works, following a review of the results of an archaeological evaluation (*Interim Report: Parcel 5*) undertaken in accordance with *Design 012*. The further archaeological works are designed to mitigate the impact of the road construction on buried archaeological remains that were identified during the evaluation.

1.1.2 Parcel 5 (NY 336529 554514) is located in the southern part of the proposed route in the angle formed by the junction of the C2051 Orton Road and the U1124 road to Little Orton (Fig 17). The proposed excavation is rectangular in shape and covers an area of *c* 0.24 ha in the south-western part of the parcel. The proposed work will be undertaken by Oxford Archaeology North (OA North) for Birse Civils Ltd, acting on behalf of Connect CNDR who have been employed by Cumbria County Council (CCC) to build the road.

## 1.2 CIRCUMSTANCES OF PROJECT

1.2.1 CCC propose to construct the CNDR around the western edge of Carlisle. The route extends for 8.5km around the western and northern sides of the city, from Greymoorhill North bridge (NY 3945 5990) on the north to Newby West (NY 3731 5365) in the south, and covers an area of approximately 30ha.

1.2.2 The proposed road runs in a west-south-westerly direction from Junction 44 of the M6 motorway, following the course of existing roads and passing close to Kingstown before turning south prior to crossing the main West Coast rail line. The line of the road, which from this point will comprise new build, continues south and then south-west, crossing the River Eden to the west of Stainton. On the south bank of the river the route intersects the line of Hadrian's Wall and an associated earthwork to the south, known as the Vallum, close to Knockupworth Cottage (NY 3710 5680). After crossing the Carlisle to Burgh-by-Sands road, the route then turns south near Cornhill, following a minor road for some of the distance to Bunkershill, where it turns south-east to join the existing A595.

1.2.3 CCC propose to let the construction of the road as a PFI Design and Build-type contract. As there are significant archaeological remains along the proposed route, including Hadrian's Wall, which has been designated a World Heritage site since 1987 (English Heritage 2002), and which is also a Scheduled

Ancient Monument (SAM no. 26110), a brief has been prepared by CCC's Historic Environment Service (CCCHES), acting in concert with English Heritage, setting out the archaeological requirements for the main contractor in advance and during construction works associated with building the road.

### **1.3 GEOLOGY AND TOPOGRAPHY**

- 1.3.1 The topography through which the road scheme passes, particularly to the south of the River Eden, consists of relatively uniform undulating terrain, predominantly in use as pasture and arable fields, which are bounded by tall and thick hedge-rows. The river bisects the route of the road; to the north of the river, the route crosses the Eden flood plain and river terraces, immediately west of Stainton, before rising steeply towards Kingsmoor House.
- 1.3.2 The underlying drift geology consists of Stanwix shales overlain by drift deposits of boulder clay and alluvium adjacent to the River Eden. The soils are attributed to the Wick Association, coarse well-drained brown earths, which extend westwards to Burgh-by-Sands and Kirkbampton.

### **1.4 ARCHAEOLOGICAL BACKGROUND**

- 1.4.1 A full Environmental Statement in support of the development was published in 2000. This clarified the significance of the sites along the development route.
- 1.4.2 The archaeological and historical background to the development, including a survey of previous archaeological work, is presented as part of the *Outline Archaeological Strategy* (Project Design 001; OA North 2008a). With specific reference to Parcel 5, the results of the OA North evaluation (*Design 012*), are presented in the *Interim Report: Parcel 5*. In summary, the archaeological features comprise two principal ditches, which may have later been recut. There is possibly an interrelationship existing between the ditches, but where this was investigated in the evaluation it had been removed by a later (?re-)cut, so they remain undated by artefacts or relative chronology. Both seem to be boundary features, although they bear no obvious relationship to the extant field boundaries. One of the ditches was depicted on the First Edition Ordnance Survey Map of 1868 but, being distinctly curvilinear, may be of greater antiquity than this.

### **1.5 OXFORD ARCHAEOLOGY**

- 1.5.1 Oxford Archaeology has over 30 years of experience in professional archaeology, and provides a professional and cost effective service. It is the largest employer of archaeologists in the country, with more than 200 members of staff, and can deploy considerable resources with extensive experience to deal with any archaeological obligations arising from the development. Our offices in Lancaster and Oxford, trading as Oxford Archaeology North (OA

North) and Oxford Archaeology (OA) respectively, enable us to provide a truly nationwide service. Watching briefs, evaluations and excavations have taken place within the planning process, to fulfil the requirements of clients and planning authorities, to very rigorous timetables. OA is an Institute of Field Archaeologists (IFA) Registered Organisation (No 17), is bound by the IFA's Code of Conduct and applies the IFA's quality standards.

- 1.5.2 Between our two offices our company has unrivalled experience of working on prehistoric, Roman, medieval and post-medieval sites, and is recognised as one of the leading archaeological units in the country.

## 2 AIMS AND OBJECTIVES

### 2.1 ACADEMIC AIMS

- 2.1.1 The main research aim of the archaeological work will be to excavate, record and interpret the extent, nature, quality and significance of any archaeological deposits that lie within the excavation area of Parcel 05 and which will be affected by construction of the road and its associated activities.

### 2.2 OBJECTIVES

- 2.2.1 The principal objectives of the archaeological work within Parcel 5 can be summarised as follows:

- to excavate, in accordance with the specifications set out in the brief, all significant archaeological features and deposits, of all periods and types, that are encountered within the area of excavation. This includes both features and deposits recorded by the field evaluation (*Design 012*) and any other significant remains not revealed by the earlier work;
- to fully record, by means of written descriptions, survey, scale drawings and photographs, all significant archaeological features and deposits within the area of excavation;
- to recover artefacts and ecofacts from all archaeological deposits located within the excavation area;
- to retrieve palaeoenvironmental samples, including bulk samples and column samples, as appropriate, from suitable archaeological deposits;
- to undertake all on-site archaeological works in accordance with current Health and Safety legislation and relevant guidelines;
- to produce a client report summarising the results of the archaeological works, and to prepare a project archive to professional standards.

### 2.3 POST-EXCAVATION ASSESSMENT AND ARCHIVE PRODUCTION

- 2.3.1 The site records and any finds and samples generated by the archaeological works will form a checked and ordered site archive as outlined in the English Heritage guideline document *Management of archaeological projects, 2nd edition* (English Heritage 1991; hereafter *MAP 2*). The results will form part of the archaeological post-excavation assessment undertaken for the CNDR project as a whole, which will be deposited with Cumbria County Council's Historic Environment Record (CCCHER) and English Heritage in due course.

### 3 METHOD STATEMENT

#### 3.1 GENERAL

- 3.1.1 The following work programme is based on information available at this time and is submitted in line with the aims and objectives summarised above.
- 3.1.2 Oxford Archaeology fully endorses the following codes of conduct issued by the IFA:
- *Code of conduct* (revised edition; IFA 2002);
  - *Standard and guidance for archaeological field excavation* (revised edition; IFA 2001);
  - *Code of approved practice for the regulation of contractual arrangements in field archaeology* (revised edition; IFA 2000).
- 3.1.3 Management of the project will be in accordance with the methods and practice described in *MAP 2* (English Heritage 1991).

#### 3.2 FIELDWORK

- 3.2.1 **Surveying:** co-ordinates will be obtained from Birse Civils recording the precise location of the area of Parcel 05 that requires archaeological excavation. Birse Civils or their subcontractor will be responsible for accurately locating the boundaries of the excavation area, and for clearly marking the boundaries. OA North will independently survey the boundaries of the excavation area with a Differentiated Global Positioning System (DGPS), and the boundaries will be tied-in to the Ordnance Survey National Grid.
- 3.2.2 A site grid / network of survey points will be established using a total station theodolite. It will be accurately tied-in to the Ordnance Survey National Grid, with levels related to Ordnance Datum, and located on a 1:2500 or 1:1250 map of the area.
- 3.2.3 **Excavation:** the evaluation undertaken within Parcel 05 (*Design 012*) demonstrated that significant archaeological remains survive within the proposed road corridor in the south-western part of the parcel, and that these remains are likely to be either totally destroyed or severely damaged by the construction works.
- 3.2.4 The site will be inspected by the supervising archaeologist prior to the commencement of machine excavation, including an examination of any available exposures. It is assumed that all issues relating to services within the area of excavation will be dealt with by the main contractor as part of their overall health and safety obligations; the main contractor will research the

location of services with statutory bodies prior to the commencement of any invasive archaeological works. This information will be made available to OA North prior to the commencement of the archaeological works through a permit to dig system.

- 3.2.5 The evaluation (*Design 012*) indicated that modern topsoil within Parcel 5 was, for the most part, c 0.36-0.60m deep. Topsoil and any other obviously recent deposits sealing archaeological levels will be removed in spits using a 360° excavator fitted with a wide, toothless ditching bucket and working under constant archaeological supervision, in order to reduce the area of overburden to the top of the first identifiable archaeological horizon or, where such an horizon is absent, to the top of the natural, non-redeposited subsoil. As machining progresses spoil will be stored within the road footprint at a safe distance from the edge of the excavation. No provision has been made for storage beyond this. If spoil is to be stored at specific locations in defined storage areas then sufficient dumpers will be required to enable the efficient use of machinery during the stripping process.
- 3.2.5 Great care will have to be exercised with regard to the movement of machines across the area during stripping. Where topsoil is soft, vehicles may begin to create ruts into the top of the horizon of archaeological preservation. This can cause considerable damage to archaeological remains. While haul routes can be spread across the site to avoid compression and rutting, weather will play an important part in the timing of stripping and in its successful completion, and constant monitoring will be required.
- 3.2.6 Following the machine removal of topsoil, subsoil, and unstratified modern material, a limited amount of cleaning will take place in order to define the features such that an accurate plan can be made of the archaeology. As the location and extent of the features has been determined by the evaluation, it is not proposed to hand clean the area in its entirety. A base plan of all identified features will be produced at an appropriate scale. Excavation of identified archaeological features will proceed by hand down, in stratigraphic sequence, to the level of the geologically natural material. All faces of trenches requiring examination will be hand cleaned.
- 3.2.7 Archaeological remains identified following the initial machine clearance and hand-cleaning will be immediately protected from damage and delineated in such a manner as to be clearly visible to persons carrying out the works.
- 3.2.8 The requirements for excavation, including definition of minimum levels of sample excavation related to feature or deposit type, are set out in the brief; any variations to these will be agreed in advance with the CCCHEs. All identified archaeological features and deposits within the area of investigation will be archaeologically excavated by hand. With the exception of linear features, all discrete negative features will be sampled at 100% by area and volume, as will any positive features that are likely to obscure earlier features.



Linear negative features will be sampled at 33% by area unless otherwise agreed with the CCCHES except at points of intersection between two or more linear features or at the terminals of linear features, which will be 100% sampled. Graves/cremations and 'structural' features, such as hearths, ovens and kilns, will always be fully excavated.

- 3.2.9 Significant discrete archaeological features that extend beyond the areas agreed for excavation may need to be investigated beyond these areas in order to fully characterise the archaeology, the decision to do so residing with the CCCHES.
- 3.2.10 **Excavation recording methodology:** a detailed record will be made of the stratigraphic sequence of the site, in accordance with IFA and English Heritage guidelines (*Section 3.1*). All on-site recording will be undertaken in accordance with the requirements of the OA Field Manual (Wilkinson 1992), a copy of which accompanies this Project Design (*Appendix 1*). An up-to-date copy of the OA Field Manual will be deposited with CCCHES before the archaeological work commences.
- 3.2.11 Context recording will operate a continuous unique numbering system. Written descriptions will be recorded on pro-forma sheets comprising factual data and interpretative elements. A unique alpha-numeric project code will appear on all records. A Harris matrix will be compiled during the course of the excavation.
- 3.2.12 All features and deposits will be recorded in plan and section, as appropriate. Planning will generally use digital technology (see below); plans will normally be drawn at 1:50 but some complex areas or features may benefit from planning by hand at larger scales (up to 1:10) as appropriate. Any such plans will be surveyed to the site grid and digitised to provide an overall CAD plan that can be imported to a Geographical Information System (GIS) for interpretation. A register of plans will be kept.
- 3.2.13 Long sections of trenches showing layers will be drawn at 1:50 or 1:20. Sections of features or short lengths of trenches will be drawn at 1:20 or 1:10. All sections will be tied in to Ordnance Datum and a register of sections will be kept.
- 3.2.14 A full black and white and colour (35mm transparency) photographic record, illustrating in both detail and general context the principal features and finds discovered will be maintained. The photographic record will also include working shots to illustrate more generally the nature of the archaeological work. Digital photographs will also supplement this record. Photographs will be recorded on OA Photographic Record Sheets.
- 3.2.15 **Artefactual sampling strategies:** all finds visible during the fieldwork programme will be collected, processed and stored in accordance with current best practice as set out in the relevant guidelines issued by the IFA, English



Heritage, UKIC and others (IFA nd; English Heritage 1991; UKIC 1983; 1990; Watkinson and Neal 1998). Copies of OA's Field Manual and Finds Manual are appended to this Project Design (*Appendices 1-2*). A register of small finds will be maintained.

- 3.2.16 Artefact assemblages will be recovered to assist in dating stratigraphic sequences and for obtaining ceramic assemblages for comparison with other sites. All artefacts will be retained from excavated contexts unless they are of recent origin. In these cases sufficient material will be retained to date and establish the function of the feature from which they came. Unstratified recent material will not be retained. Certain classes of building material or post medieval pottery may sometimes be discarded after recording if an appropriate sample is retained. However, any such decisions would not be taken until after the post-excavation assessment is completed.
- 3.2.17 OA employs artefact specialists with considerable expertise in the investigation, excavation and management of sites of all periods and types, who are readily available for consultation. In cases where in-house expertise is not available, external specialist advice will be sought, as appropriate.
- 3.2.18 A suitably qualified specialist will scan the finds assemblage to assess the date range, with particular reference to the pottery. All retained bulk finds will be washed and, with the exception of animal bones, marked in a manner that is indelible and irremovable by abrasion. Bulk finds will be appropriately bagged and boxed and box lists of material will be compiled. Small finds will be recorded individually (Individually Registered Finds, or IRFs), and appropriately packaged.
- 3.2.19 Deposition and disposal of artefacts will be agreed with the legal owner and the recipient museum prior to the commencement of the works. All retained artefacts will be cleaned and packaged in accordance with the requirements of the recipient museum.
- 3.2.20 In the event of the recovery of any intrinsically valuable artefacts, the terms of the Treasure Act 1996 will be followed with regard to any finds that might fall within its purview. Any such finds will be removed to a safe place and reported to the local coroner as required by the procedures as laid down in the *Code of practice* (DCMS 2002). Where removal of intrinsically valuable objects cannot be effected on the same working day as the discovery, suitable security measures will be taken to protect the finds from theft. It should be noted that *there is a presumption that objects of treasure found during the course of archaeological excavations will be kept with the rest of the archaeological archive.*
- 3.2.21 In certain circumstances where unusual or extremely fragile and delicate objects are found, their recovery may be undertaken by appropriate specialists. Provision will be made for on-site conservation measures to be undertaken by

specialists, as required. The objects will be exposed, lifted, cleaned, conserved, marked, bagged and boxed in accordance with the guidelines set out by the United Kingdom Institute of Conservation (UKIC 1983; 1990), and in *First aid for finds* (Watkinson and Neal 1998). They will be stored in a secure, controlled environment, and storage conditions will be subject to regular monitoring. OA maintains close relationships with Ancient Monuments Laboratory staff at the University of Durham and, in addition, employs in-house artefact specialists, with considerable expertise in the investigation, excavation, and finds management of sites of all periods and types, who are readily available for consultation. Finds storage during fieldwork and any site archive preparation will follow professional guidelines. Emergency access to conservation facilities is maintained by OA North with the Department of Archaeology, University of Durham.

3.2.22 Where required, preliminary conservation and stabilisation of objects will be undertaken as soon as practicable during, or upon completion of, the fieldwork. Particularly vulnerable materials requiring conservation will be transported to appropriate facilities without delay.

3.2.23 ***Palaeoenvironmental sampling strategies:*** it is envisaged that it will be possible to retrieve bulk samples from securely stratified archaeological deposits within Parcel 5. Adequate provision for environmental sampling will therefore be included in the programme of work. Samples will be taken in accordance with current best practice, using the methodologies outlined by English Heritage (English Heritage 2002). A copy of OA's Environmental Procedures Manual is appended to this Project Design (*Appendix 3*). A register of environmental samples will be maintained.

3.2.24 OA employs palaeoenvironmental specialists with considerable expertise in the investigation, excavation and management of sites of all periods and types, who are readily available for consultation. The advice of OA's environmental department will be sought for the recovery of the following sample types: bulk samples (charred plant remains, cremation burials, waterlogged remains, bones and artefacts); series samples (waterlogged plant remains, snails); monolith samples (palynology, soil micromorphology); or for analysis of diatoms (pedology, metalworking and chemicals). English Heritage's Regional Science Advisor will also be consulted where appropriate.

3.2.25 A suitably qualified specialist will assess the environmental potential of the site through the examination of suitable deposits, enabling the formulation of an approved overall sampling strategy, to be agreed with the English Heritage Regional Science Advisor. Some or all of the following analyses may form part of the excavation, as appropriate:

- soil pollen analysis and the retrieval of charred plant macrofossils and land molluscs from former dry-land palaeosols and cut features;
- the retrieval of plant macrofossils, insect, molluscs and pollen from

waterlogged deposits;

- advice will be sought from the English Heritage Regional Science Advisor, and OA faunal specialists on the potential of the site for producing bones of fish and small mammals. If there is potential, a sieving programme will be undertaken. Faunal remains, collected by hand and sieved, are to be assessed and analysed, if appropriate;
- advice will be sought from OA's geo-archaeology department on whether a soil micromorphological study or other analytical techniques will enhance understanding of site formation processes on the site. If so, analysis will be undertaken.

3.2.26 The environmental sampling strategies employed will vary according to the perceived importance of the strata under investigation. For bulk samples, a minimum of 10 litres, but up to 40 litres if possible, will be taken for flotation for charred plant remains. Bulk samples will be taken from any waterlogged or mineralised deposits in order to recover any preserved macroscopic plant remains or insect remains. Columns for pollen analysis will be taken if appropriate, and mollusc samples will be collected if present. Other bulk samples for small animal bones, metallurgical debris (micro-slugs and so on), and other small artefacts will be taken if suitable contexts are identified. All samples will be treated in a proper manner and to standards agreed in advance with the approved recipient museum.

3.2.27 Any waterlogged organic materials will be dealt with in accordance with the relevant English Heritage guidelines (English Heritage 1995; 1996).

3.2.28 **Scientific dating strategies:** it is anticipated that the site may yield material suitable for either high precision dating or AMS dating if systematically sampled for carbonised plant remains. Material will be collected specifically for this purpose and suitable stratigraphic sequences will be targeted, together with material in primary positions that is associated with other datable material, such as pottery. OA has procedures for sampling and processing samples for radiocarbon dating and has established relationships with reputable dating laboratories. Other absolute dating methods may include thermoluminescence dating of pottery and daub, archaeomagnetic dating of hearths, and dendrochronology. Samples will be taken as appropriate.

3.2.29 **Human remains:** these are not expected to be present, but if they are found during the archaeological works the client, English Heritage and the coroner will be informed immediately. Human remains will always be treated with respect. If removal is essential, it will only take place under appropriate Home Office and environmental health regulations. A Home Office licence will be obtained before human remains are disturbed. The CCCHES and the local Coroner will be informed immediately human remains are discovered. All burials requiring excavation will be adequately recorded prior to careful removal for further scientific study. Where human remains are encountered, the

post-excavation assessment will contain a statement concerning the future retention of the assemblage, including options for reburial.

### 3.3 HEALTH AND SAFETY

- 3.3.1 OA North provides a Health and Safety Statement for all projects and maintains a Safety Policy. All site procedures are in accordance with the guidance set out in the *Health and Safety manual* compiled by the Standing Conference of Archaeological Unit Managers (SCAUM 1997). OA North will liaise with Birse Civils, who will be the principal contractor under CDM regulations, to ensure all current and relevant health and safety regulations are met.
- 3.3.2 A risk assessment will be completed in advance of any on-site works. OA North staff will be equipped with the appropriate PPE; Birse Civils have agreed to provide welfare facilities on-site.
- 3.3.3 OA North has professional indemnity to a value of £2,000,000, employer's liability cover to a value of £10,000,000 and public liability to a value of £15,000,000. Written details of insurance cover can be provided if required.
- 3.3.4 OA North will not be responsible for the provision of Health and Safety logistical support; this will be provided by Birse Civils or their subcontractor, who will also be responsible for the provision of site security including secure offices.

### 3.4 OTHER MATTERS

- 3.4.1 OA North will provide an archaeological team to attend to all archaeological works associated with the CNDR project within the area of Parcel 5. The archaeologists will work the same hours as the road construction team. All overtime will be charged at the rates separately supplied.
- 3.4.2 Access to the site will be arranged *via* Birse Civils or their subcontractor.

### 3.5 POST-EXCAVATION ASSESSMENT AND ARCHIVE PRODUCTION

- 3.5.1 **Post-excavation:** immediately following completion of the fieldwork, a client report will be produced collating the results of the archaeological works within the area of Parcel 5. The results of the excavations will be included within the post-excavation assessment report for the project as a whole, which will be deposited with the CCCHER, and copies will be provided for English Heritage. The assessment report will provide an overview of the results of the archaeological works and will present an assessment of the potential of the data (stratigraphic, artefactual, and environmental) recovered during the CNDR project to advance archaeological knowledge and to address current research aims. It will also present, through an updated project design, a series of

research aims and objectives that can potentially be addressed by the data, and will provide fully costed proposals, accompanied by a method statement, task list and gantt chart, for a detailed programme of analysis and dissemination (publication).

- 3.5.2 **Archive:** the results of the archaeological works within Parcel 5 will form part of the project archive, produced to professional standards and in accordance with current best practice, as set out in *MAP 2, Appendix 3* (English Heritage 1991), in the guidelines produced by the United Kingdom Institute for Conservation (UKIC 1990), and the Archaeological Archives Forum's *Guide to Best Practice* (Brown 2007). The project archive represents the collation and indexing of all the data and material gathered during the course of the project. The IFA's Code of Conduct (IFA 2002) makes it clear that the deposition of a properly ordered and indexed project archive in an appropriate repository is an essential and integral element of all archaeological projects. A summary of the archive will be prepared and provided to all interested parties, following which the archive will be deposited with Tullie House Museum and Art Gallery, Carlisle.
- 3.5.3 **Confidentiality:** the final report is designed as a document for the specific use of the client, and should be treated as such; it is not suitable for publication as an academic report, or otherwise, without amendment or revision. Any requirement to revise or reorder the material for submission or presentation to third parties beyond the project brief and project design, or for any other explicit purpose, can be fulfilled, but will require separate discussion and funding.

## 4 WORK TIMETABLE

- 4.1 Following an initial week of machine stripping of the site, supervised by either a Project Officer (PO) or a Project Supervisor (PS), it is anticipated, given the previous evaluation results (*Design 012*), that a period of approximately two weeks will be required to finish the stripping process and then excavate and record the features that are expected to be revealed. This is based on the assumption that there will be no requirement to hand clean the site in its entirety.



## 5 STAFFING PROPOSALS

- 5.1 The project will be under the overall charge of **Fraser Brown, BA** (OA North Senior Project Manager) to whom all correspondence should be addressed.
- 5.2 An OA North Project Officer (PO), suitably qualified to direct and supervise the day-to-day archaeological works, will lead the archaeological team on site. In addition to the Project Officer, the team will comprise a Project Supervisor (PS) and five Project Assistants. The first week of machine stripping will be supervised by either the PO or the PS, with the team building up to full strength for the second week onwards till completion of the excavation process.
- 5.3 Assessment of finds from the excavation will be undertaken by OA North's in-house finds specialist **Christine Howard-Davis BA, MIFA** (OA North Finds Manager).
- 5.4 Assessment of palaeoenvironmental samples will be undertaken by **Elizabeth Huckerby, BA MSc** (OA North Environmental Manager), for the botanical remains, **Denise Druce, BA PhD** (OA North Environmental Project Officer), for the charcoal, and **David Smith, MA, PhD**, or **Emma Tetlow, PhD** (Institute of Archaeology and Antiquity, University of Birmingham) for the insect remains. Animal bones will be assessed by **Lena Strid** (OA Archaeozoologist).

## **6 MONITORING**

- 6.1 If practicable, written notice two weeks prior to the commencement of the works, will be given to CCCHES. A timetable will be provided to Mark Brennand, Cumbria County Archaeologist, in order that a CCCHES representative can have the opportunity to inspect and advise on the works. No work will take place until this Project Design has been submitted to and approved by the CCCHES.
- 6.2 OA North will ensure that any significant results are brought to the attention of Birse Civils and the CCCHES as soon as is practically possible.

## REFERENCES

Breeze, D J, 2006 *J Collingwood Bruce's Handbook to the Roman Wall*, 14th edn, Newcastle upon Tyne

British Geological Survey 1982 *Solid geology*, 1:250 000 map, sheet 54° N 04° W

Brown, D H, 2007 *Archaeological archives: a guide to best practice in creation, compilation, transfer and curation*, Archaeological Archives Forum  
[http://www.archaeologists.net/modules/icontent/inPages/docs/pubs/Archives\\_Best\\_Practice.pdf](http://www.archaeologists.net/modules/icontent/inPages/docs/pubs/Archives_Best_Practice.pdf)

[http://www.archaeologists.net/modules/icontent/inPages/docs/pubs/Archives\\_Best\\_Practice.pdf](http://www.archaeologists.net/modules/icontent/inPages/docs/pubs/Archives_Best_Practice.pdf)CFA,  
2003 *Carlisle Northern Development Route: archaeological evaluation*, unpubl rep

Countryside Commission, 1998 *Countryside character Volume 2: North West. The character of England's natural and man-made landscape*, Cheltenham

DCMS, 2002 *Treasure Act 1996, Code of practice*, revised edn  
[http://www.culture.gov.uk/NRrdonlyres/C1027393-6D96-4B2A-86EF-DC1021117190/0/Treasure\\_Act\\_P0164.pdf](http://www.culture.gov.uk/NRrdonlyres/C1027393-6D96-4B2A-86EF-DC1021117190/0/Treasure_Act_P0164.pdf)

English Heritage, 1991 *Management of archaeological projects*, 2nd edn, London

English Heritage, 1995 *Guidelines for the care of waterlogged archaeological leather*, London

English Heritage, 1996 *Waterlogged wood: guidelines on the recording, sampling, conservation and curation of waterlogged wood*, London

English Heritage, 2002 *Environmental archaeology: a guide to the theory and practice of methods, from sampling and recovery to post-excavation*  
(<http://194.164.61.131/Filestore/archaeology/pdf/enviroarcg.pdf>)

IFA, 2000 *Code of approved practice for the regulation of contractual arrangements in field archaeology*, revised edn, Reading

IFA, 2001 *Standard and guidance for archaeological excavation*, revised edn, Reading

IFA, 2002 *Code of Conduct*, revised edn, Reading

IFA, nd *IFA guidelines for finds work*, Reading

OA North 2008a *Carlisle Northern Development Route: Outline Archaeological Strategy (Project Design 001)*, unpubl rep

OA North 2008b *Carlisle Northern Development Route: Project Design for watching*

*briefs (Project Design 002), unpubl rep*

SCAUM, 1997 *Health and Safety manual*, Poole

UKIC, 1983 *Conservation guidelines No. 2: packaging and storage of freshly excavated artefacts from archaeological sites*, London

UKIC, 1990 *Guidelines for the preparation of archives for long term storage*, London

Watkinson, D, and Neal, V (eds), 1998 *First aid for finds: a practical guide for archaeologists*, 3rd edn, London

Wilkinson, D, 1992 *Oxford Archaeology Field Manual*, unpubl doc

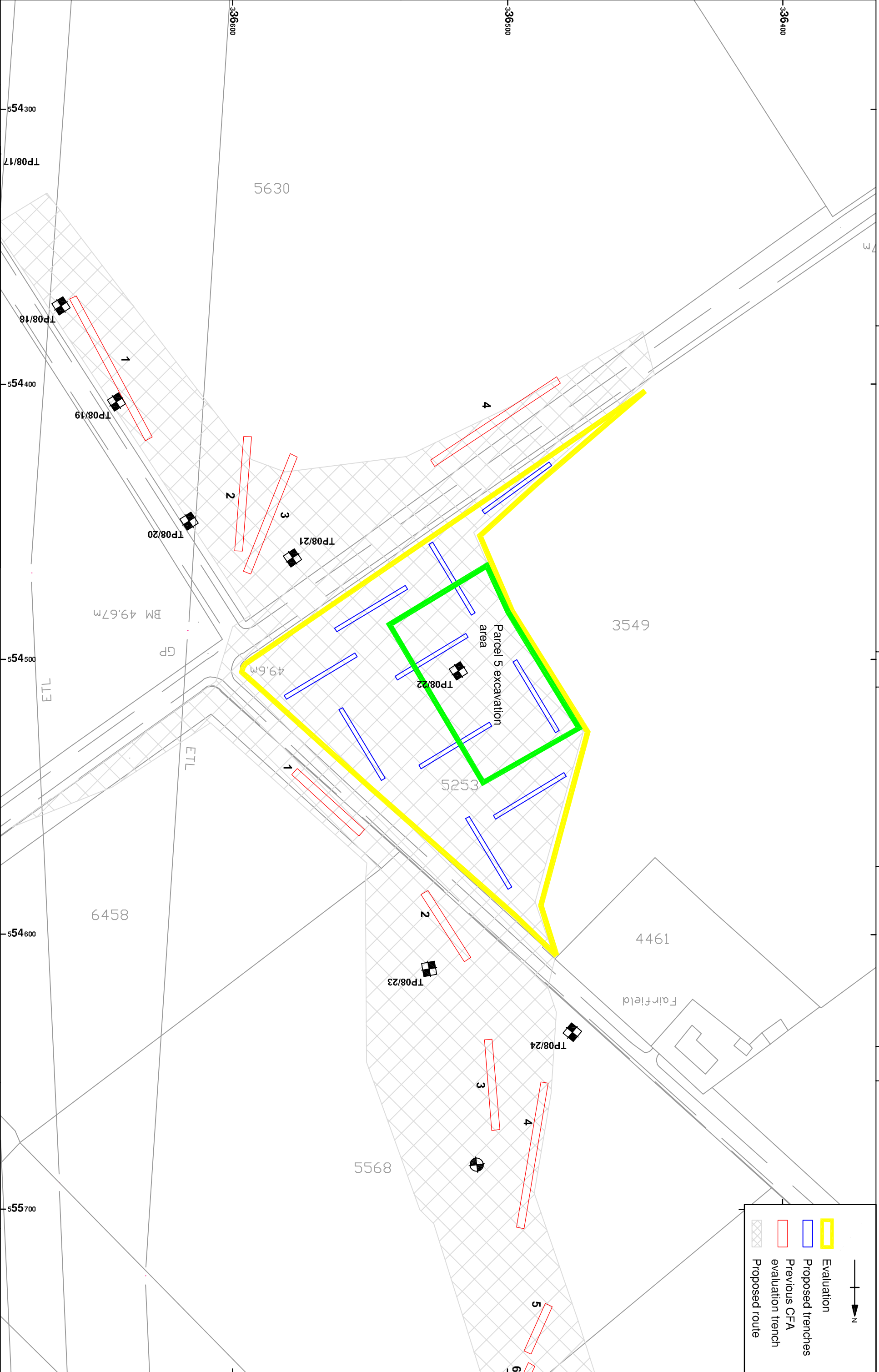
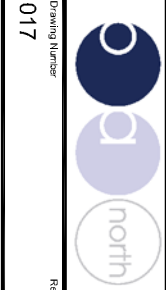
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Job Title  
CARLISLE NORTERN DEVELOPMENT ROUTE

Drawing Title  
Parcel 5 excavation area

Scale 1:1250 @ A3		Approved	
Drawn	QA/AMMS	Approved	APPROVED
Stage 1 check	STG1CHK	Original	DATE
Stage 2 check	STG2CHK	DATE	21-08-08
Drawing Status		Rev	



Evaluation

Proposed trenches

Previous CFA evaluation trench

Proposed route