CARLISLE ARCHIVES PROJECT STAGE 2

Volume 1: Stage 2 Report

Oxford Archaeology North

December 2009

English Heritage

Issue No: 2009-371
OAN Job No: L9352
NGR: NY 400 560

Document Title:	**CARLISLE ARCHIVES PROJECT STAGE 2: VOLUME 1 REPORT**
Document Type:	**Stage Two Report**
Derivation:	**Preceded by CARLISLE ARCHIVES PROJECT STAGE 1**
Client Name:	**English Heritage**
Circulation:	**Carlisle City Council and English Heritage**
Comments by:	**11/01/10**
File name/location:	**X:\Carol\Carlisle Archives Stage 2\2009-10 submission\draft report 2009**

Issue Number: 2009-371125
OA Job Number: L9352
National Grid Reference: NY 400 560

Prepared by: John Zant
Position: Project Officer
Date: October 2005

Checked by: Murray Cook
Signed 
Position: Post-excavation Programme Manager
Date:

Approved by: Rachel Newman
Signed… 
Position: Senior Executive Officer, Research and Publications
Date: December 2009

Oxford Archaeology North
Mill 3
Moor Lane Mill
Moor Lane
Lancaster
LA1 1GF
t: (0044) 01524 541000
f: (0044) 01524 848606

w: www.oxfordarch.co.uk
e: info@oxfordarch.co.uk

© Oxford Archaeological Unit Ltd (2009)
Janus House
Osney Mead
Oxford
OX2 0EA

t: (0044) 01865 263800
f: (0044) 01865 793496

CONTENTS

CONTENTS **1**

LIST OF TABLES **6**

ACKNOWLEDGEMENTS **10**

SUMMARY **11**

1. BACKGROUND **13**

1.1 Introduction 13
1.2 Specification and Proposal (Interfaces) 13
1.3 Stage 1 14

2. RESEARCH AIMS AND OBJECTIVES **16**

2.1 Aim 1 16
2.2 Aim 2 16
2.3 Aim 3 16
2.4 Aim 4 16
2.5 Aim 5 17
2.6 Aim 6 18
2.7 Aim 7 18
2.8 Aim 8 18
2.9 Aim 9 19
2.10 Aim 10 19
2.11 Aim 11 19
2.12 Aim 12 20

3. METHODOLOGICAL RESULTS **21**

3.1 Introduction 21
3.2 Database Adaption 21
3.3 Re-location and Re-ordering of Documentary Archives 23
3.4 Training 26
3.5 Liaison with Receiving Museums 26

3.6 Location of Archival Materials not in Shaddon Mill....27
3.7 Documentary Archives: Data Collection and Data Entry 27
3.8 Artefactual and Environmental Archives: Data Collection and Data Entry..31
3.9 Other Materials Currently Stored in Shaddon Mill 35
3.10 Database Transmission 36
3.11 Stage 2 Analysis and Reporting....36
3.12 Recommendations for Stage 3 36

4. DATA QUANTIFICATION AND ANALYSIS 37

4.1 Introduction 37
4.2 Additional CAU/CAL Events....37
4.3 CAU/CAL Archival Materials Stored Outside Shaddon Mill....37
4.4 Quantification of CAU/CAL Documentary Archives 38
4.5 Quantification of CAU/CAL Artefactual and Environmental Archives 42
4.6 Quantification of Non-CAU/CAL Event Archives 45
4.7 Condition Assessment of CAU/CAL Documentary Archives 50
4.8 Condition Assessment of CAU/CAL Artefactual Archives 56
4.9 Condition Assessment of CAU/CAL Environmental Archives 71
4.10 Condition Assessment of Non-CAU/CAL Event Archives....75
4.11 Non-Event Specific Material 75
4.12 Extraction of Trench Location Data for Carlisle UAD....76
4.13 Missing Information 77
4.14 Archive Deposition....81
4.15 Estimation of Digital Information....85
4.16 Gazetteer of CAU/CAL Events 86
4.17 Dissemination of Information....86

5. CONCLUSIONS....87

5.1 Introduction 87
5.2 Results of Stage 2 87
5.3 Post-Excavation and Publication Status 99

6. RECOMMENDATIONS....108

6.1 Introduction 108
6.2 Database and GIS Adaptation....109

6.3 Training....109
6.4 Liaison with Receiving Museums and Organisations....109
6.5 CAU/CAL Archival Materials Stored Away From Shaddon Mill....110
6.6 Timing of Stage 3 Remedial Works....110
6.7 Remedial Works on Documentary Archives....111
6.8 Remedial Works on Artefactual Archives....118
6.9 Remedial Works on Environmental Archives....124
6.10 Unprovenanced Materials....129
6.11 Miscellaneous and Non-Event Specific Materials....129
6.12 Quantification of Digital Information....129
6.13 Gazetteer of CAU/CAL Events....129
6.14 Publication Strategies....130
6.15 Archive Deposition....130
6.16 Database Transmission and Dissemination of Information....131
6.17 Stage 3 Analysis and Reporting....132

7. UPDATED AIMS AND OBJECTIVES....133

7.1 Introduction....133
7.2 Aim 1....133
7.3 Aim 2....133
7.4 Aim 3....133
7.5 Aim 4....133
7.6 Aim 5....134
7.7 Aim 6....134
7.8 Aim 7....135
7.9 Aim 8....136
7.10 Aim 9....137
7.11 Aim 10....138
7.12 Aim 11....138
7.13 Aim 12....138
7.14 Aim 13....139
7.15 Aim 14....139
7.16 Aim 15....140

8. METHOD STATEMENT 141

8.1 Introduction 141
8.2 Database and GIS Adaptation 141
8.3 Training 142
8.4 Laison with Tullie House Museum and Art Gallery and Other Receiving Bodies 143
8.5 Return of Archival Materials to Shaddon Mill 143
8.6 Timing of Stage 3 Remedial Works 143
8.7 Remedial Works on Documentary Archives 143
8.8 Remedial Works on Artefactual Archives 148
8.9 Remedial Works on Environmental Archives 151
8.10 Unprovenanced Materials 154
8.11 Miscellaneous and Non-Event Specific Materials 154
8.12 Estimation of Digital Information 154
8.13 Gazetteer of CAU/CAL Events 155
8.14 Archive Deposition 155
8.15 Dissemination of Information 156
8.16 Stage 3 Reporting 156

9. RESOURCES, MANAGEMENT AND PROGRAMMING 157

9.1 Programming 157
9.2 Management (Communications and Project Review) 157
9.3 Project Team 157
9.4 Equipment and Software 159
9.5 Consumables 159
9.6 Accommodation and Facilities 163
9.7 Health and Safety Statement 164
9.8 Task List 165

10. BIBLIOGRAPHY 176

11. COSTS 179

12. MORPHE AND SHAPE 187

12.1 Introduction 187

12.2 Business Case 187
12.3 SHAPE.....188
12.4 Product Description.....188
12.5 Ownership.....189
12.6 Risk Log.....190

LIST OF TABLES

Table 1 Updated table for the quantification of individual archival objects for each event.....22

Table 2 Updated table for the quantification of the total archival holding for each event.....23

Table 3 Contents of numbered shelving racks at Shaddon Mill holding documentary archives.....25

Table 4 Details of additional CAU/CAL events identified during Stage 2.....37

Table 5 Summary of status CAU/CAL documentary archives.....39

Table 6 List of CAU/CAL events where a documentary archive was not located.....39

Table 7 Summary of status CAU/CAL artefactual archives.....43

Table 8 Summary of field events for which an environmental archive was located.....43

Table 9 Events where environmental records exist but no environmental archive was located.....44

Table 10 Non-CAU/CAL events with complete or near-complete archives in Shaddon Mill 46

Table 11 Summary of contents of complete or near-complete non-CAU/CAL archives in Shaddon Mill.....47

Table 12 Artefactual and environmental materials in Shaddon Mill from sites/events of unknown status, from Tullie House Museum and Art Gallery collections, and material of unknown provenance.....48

Table 13 List of CAU/CAL events for which digital (Terramodel) location/survey data was located.....55

Table 14 Summary of external packaging in the assessed CAU/CAL coin assemblage.....59

Table 15 Summary of internal packaging in the assessed CAU/CAL coin assemblage.....60

Table 16 Summary of condition of the assessed CAU/CAL coin assemblage in Shaddon Mill.....60

Table 17 Summary of external packaging in the assessed CAU/CAL gold and silver assemblage.....61

Table 18 Summary of internal packaging in the assessed CAU/CAL gold and silver assemblage.....61

Table 19 Summary of condition of the assessed CAU/CAL gold and silver assemblage in Shaddon Mill.....62

Table 20 Summary of external packaging in the assessed CAU/CAL copper-alloy assemblage.....63

Table 21 Summary of internal packaging in the assessed CAU/CAL copper-alloy assemblage.....63

Table 22 Summary of condition of the assessed CAU/CAL copper-alloy assemblage in Shaddon Mill.....63

Table 23 Summary of external packaging in the assessed CAU/CAL iron assemblage.....65

Table 24 Summary of internal packaging in the assessed CAU/CAL iron assemblage.....65

Table 25 Summary of condition of the assessed CAU/CAL iron assemblage in Shaddon Mill.....66

Table 26 Summary of external packaging in the assessed CAU/CAL lead assemblage.....67

Table 27 Summary of internal packaging in the assessed CAU/CAL lead assemblage.....67

Table 28 Summary of condition of the assessed CAU/CAL lead assemblage in Shaddon Mill.....68

Table 29 Summary of external packaging in the assessed CAU/CAL leather assemblage.....69

Table 30 Summary of condition of the assessed CAU/CAL leather assemblage in Shaddon Mill.....69

Table 31 Approximate quantifications of assessed environmental soil samples.....72

Table 32 Summary of the assessed CAU/CAL wood assemblage by object type 73

Table 33 Summary of external packaging in the assessed CAU/CAL wood assemblage.....74

Table 34 Summary of condition of the assessed CAU/CAL wood assemblage in Shaddon Mill.....74

Table 35 Summary of trench location data available for field events within the City and District of Carlisle.....77

Table 36 Summary of basic information relating to CAU/CAL events that could not be located during the Carlisle Archives Project.....78

Table 37 Events involving service providers where landowner details remain unresolved.....79

Table 38 Events with limited artefactual archives where landowner details remain unresolved.....80

Table 39 Events for which landowner details were traced during Stage 2.....80

Table 40 Summary of key archival elements missing from the CAU/CAL documentary archives.....80

Table 41 Distribution of parent projects and events by administrative district.....81

Table 42 Approximate quantities of archival materials to be deposited with receiving museums, and materials where deposition remains uncertain 82

Table 43 List of CAU/CAL parent projects and events located outside the City and District of Carlisle.....83

Table 44 Possible receiving bodies for non-CAU/CAL archival materials currently stored in Shaddon Mill.....85

Table 45 Approximate size of the entire Carlisle archival holding.....89

Table 46 Approximate storage space requirements for the entire Carlisle archive……..……..90

Table 47 Approximate quantification of files/folders in the Carlisle archive.....91

Table 48 Approximate quantifications of oversize illustrations in the Carlisle archive.....92

Table 49 Approximate numbers of boxes in the Carlisle archive.....93

Table 50 Summary of the condition of sensitive artefacts in the Carlisle archive (quantifications extrapolated from a 10% sample).....95

Table 51 Summary of estimated number of x-rays undertaken by material category.....96

Table 52 Summary of estimated numbers of conserved objects by material category.....96

Table 53 Summary of status of post-excavation work for 275 unpublished CAU/CAL events where the final report is in progress or partly complete.....100

Table 54 Summary of status of post-excavation work for 141 unpublished CAU/CAL events with archaeological potential.....102

Table 55 Summary of principal recommendations for upgrading the Carlisle documentary archive to optimum standards (Proposal 1).....114

Table 56 Summary of principal recommendations for upgrading the Carlisle documentary archive to minimum acceptable standards (Proposal 2)…….…….....117

Table 57 Summary of principal recommendations for upgrading the Carlisle artefactual archive to optimum standards (Proposal 1).....121

Table 58 Summary of principal recommendations for upgrading the Carlisle artefactual archive to minimum acceptable standards (Proposal 2)..123

Table 59 Summary of principal recommendations for upgrading the Carlisle environmental archive to optimum standards (Proposal 1).....126

Table 60 Summary of principal recommendations for upgrading the Carlisle environmental archive to minimum acceptable standard. (Proposal 2).....128

Table 61 Estimate of consumables required for Proposal 1.....160

Table 62 Estimate of consumables required for Proposal 2.....161

Table 63 Estimate of consumables required for Proposal 3…….163

ACKNOWLEDGEMENTS

OA North is grateful to Adrian Brown, Andrew Davison, Brian Kerr, Roger Thomas and Tony Wilmott of English Heritage, for their assistance and advice on the Carlisle Archives Project.

Tim Padley and David Clarke of Tullie House Museum and Art Gallery and Richard Newman of Cumbria County Council's Historic Environment Service provided a great deal of advice and information throughout the project. Tim and David also facilitated access to the archives currently stored in Shaddon Mill. Irene Maleney of Carlisle City Council kindly undertook another search of the Council's planning records and Stuart Hall was prompt in his response to enquiries concerning planning records held by Eden District Council. Canon David Weston kindly facilitated access to archival materials currently stored in Carlisle Cathedral Library. Information on specific events located outside the City and District of Carlisle was provided by Tim Grubb of Gloucestershire County Council's Archaeology Service and Quinton Carroll of Cambridgeshire County Council's Historic Environment Record. Advice concerning guidelines for the deposition of archaeological archives was kindly provided by Sidney Chapman of Penrith Museum, Philip Crouch, then of the Helena Thompson Museum, Workington, Carol Davies of Kendal Museum, Jo Dawson, then of OA North, Richard Hall of the Cumbria Archive Service, Louise Hampson of York Minster Library, Christopher Morris and David Rice of Gloucester City Museums, Tim Padley of Tullie House Museum and Art Gallery, and Sue Palmer of the Beacon Heritage Centre, Whitehaven. Advice and information concerning remedial works for the environmental archives was provided by Elizabeth Huckerby of OA North.

OA North is particularly grateful to the following specialists for taking the time to respond to enquiries about Carlisle archival materials located away from Shaddon Mill and, where appropriate, for providing information on items currently in their care: Cathy and Ian Tyers, then of the University of Sheffield, Mike Bishop, Hilary Cool, Brenda Dickinson, Carl Heron of the University of Bradford, Louise Hird, Claire Jones of the Centre for Archaeology, English Heritage, Jenny Jones, Jenny Price, then of the University of Durham, Ray McBride and Alex Croom of Tyne and Wear Museums Service, Tim Padley of Tullie House Museum and Art Gallery, Penny Walton-Rogers of the Anglo-Saxon Laboratory at York, David Shotter, Canon David Weston of Carlisle Cathedral, and Sue Winterbottom.

Stage 2 of the Carlisle Archives Project was managed by Rachel Newman and Carol Allen. The report was written by John Zant, Christine Howard-Davis and Jo Cook, and edited and checked by Rachel Newman. Much of the work of data collection and data input was undertaken by Louise Ford and Dave McNicol.

The Stage 2 work was funded by English Heritage through Carlisle City Council.

SUMMARY

This report was produced at the request of English Heritage. It was originally written in 2005 prior to publication of *Management of Research Projects in the Historic Environment* (*MoRPHE*) (English Heritage 2006) and *Strategic Framework for Historical Environment Activities and Programmes in English Heritage* (*SHAPE*) (English Heritage 2008), but submission was delayed as a result of issues concerning the Carlisle City Council lease on Shaddon Mill, which made timetabling impossible. These have now been resolved. The report has therefore been redrafted in the spirit of both *MoRPHE* and *SHAPE*, and a Business Case, SHAPE Number, outline Product Description, details of Ownership and Risk Log have been placed with *Section 12*. In addition, where items in the report are attributable to elements of *MoRPHE*, the *MoRPHE* title has been added. This report, in effect, relates to Review Point R3 (English Heritage 2006, 14).

From 1977 to 2001, Carlisle Archaeological Unit (CAU), later Carlisle Archaeology Ltd, University of Bradford (CAL), carried out a great deal of work within the City and District of Carlisle and more widely in Cumbria. When the company ceased trading in August 2001, basic information for most of its projects had not been placed in the public domain, nor was there a coherent overview of the unit's archive. With the demise of CAL, the need for a detailed assessment of the archive became apparent, and English Heritage therefore proposed a three-stage Archives Project, beginning with the compilation of a definitive gazetteer of all CAU/CAL projects. OA North was commissioned to undertake Stage 1 in 2003. The work resulted in the creation of a database containing basic information for all archaeological events, together with a digital location map and a report (OA North 2003), which provided an overview and analysis of the data. The report also contained recommendations and a project design for a detailed Stage 2 assessment of the individual event archives, which OA North was subsequently commissioned to undertake in 2004. The results of Stage 2 are presented in the present report, together with recommendations and an updated project design for a programme of remedial works to be undertaken during Stage 3, prior to final archive deposition.

The principal aim of Stage 2 was to provide a detailed assessment of the archives, in order to determine levels of completeness and to identify omissions. This necessitated the interrogation of each individual event archive in Shaddon Mill and the location of archival materials that had been removed from the Mill in the past. The outcome was the creation of as full a listing as possible of all CAU/CAL's archival holdings and the identification of missing material. An assessment of the current condition of the archives currently stored in Shaddon Mill was also undertaken. The data generated by this work were added to an adapted and expanded version of the project database.

As a result of Stage 2, the amount of archival material generated by CAU/CAL has been established and a detailed inventory of each event archive has been compiled. The documentary archives have been re-ordered and stray material re-integrated. Missing documentary archival elements have been identified for all events and basic information that remains unaccounted for has been quantified. The present location of archival materials stored away from Shaddon Mill has also been ascertained and the condition of all archival elements within the Mill has been assessed and recorded. The

resulting information has been logged on the adapted database. At the request of English Heritage, Tullie House Museum and Art Gallery, Carlisle City Council, and Cumbria County Council, two sets of recommendations and costings for the proposed Stage 3 remedial works have been produced. The first is for a programme to upgrade the archive to the highest modern standards, as recommended by the Society for Museum Archaeologists, whilst the second proposes a more limited refurbishment to meet minimum standards acceptable to all the recipient bodies. These proposals should not, however, be regarded as necessarily mutually exclusive, and, indeed, it is clear that optimum results and cost-efficiency could be achieved by selecting and combining elements from each, defined in Proposal 3. In addition, information on the current status of post-excavation work for unpublished events that produced data worthy of dissemination is provided. Trench location and site boundary data have also been digitised and geo-referenced for the great majority of field events within the study area of the Carlisle Urban Archaeological Database (UAD).

1. BACKGROUND

1.1 INTRODUCTION

1.1.1 The project is called the *Carlsile Archives Project Stage 2*. The English Heritage Number is 3683, and this report is Number 3683 ARCV.

1.1.2 From 1977 to 1999, Carlisle Archaeological Unit (CAU), part of Carlisle City Council's Department of Leisure and Community Development, carried out a large number of archaeological projects within the City and District of Carlisle and more widely in Cumbria. Following this, from August 1999 to August 2001, the unit became Carlisle Archaeology Ltd (CAL), University of Bradford, and continued to undertake archaeological work in Carlisle and the surrounding area.

1.1.3 The results of a few of the larger urban excavations carried out by CAU have been published in recent years and details of others undertaken both by CAU and CAL are available in the form of articles in local and national journals, interim statements, and client reports. However, when the company ceased trading, in August 2001, basic archaeological information for most projects had not been placed in the public domain, nor was there a coherent overview of the unit's work or the archive that it generated.

1.1.4 ***Summary Description***: when CAU/CAL ceased trading, in August 2001, basic archaeological information for most projects had not been placed in the public domain, nor was there a coherent overview of the unit's work or the archive that it generated. This project seeks to remedy this situation.

1.1.5 ***Project Scope***: the scope of the project is to categorise, stabilise and disseminate the contents of the former CAU/CAL archive and explicitly not to bring the archive to assessment, analysis or publication.

1.2 SPECIFICATION AND PROPOSAL (INTERFACES)

1.2.1 With the demise of CAL, the urgent need for a detailed assessment of the Carlisle archive, the bulk of which was at the company's former premises on Level 5 of Shaddon Mill, Carlisle, became apparent. Consequently, an *Outline Brief and Specification* for such an assessment was produced by English Heritage, Fort Cumberland in August 2001 (Kerr and Perrin 2001). This report proposed a three-stage work programme, beginning with the compilation of a definitive list or gazetteer of all archaeological events undertaken by CAU/CAL.

1.2.2 A proposal for the Carlisle Archives Project was drawn up by Oxford Archaeology North (OA North) in December 2001 (OA North 2001). Stage 1 was to comprise the completion of a database to provide a definitive and consistent list of projects undertaken, together with a digital map of the events. In Stage 2 of the project, a current listing of the full archive holdings, including indices, finds and environmental information, was to be made. In

Stage 3, any remedial work deemed to be necessary would be undertaken as the final stage of the project, prior to the deposition of the archives with the relevant museums and other receiving bodies.

1.2.3 1.2.3 On the basis of the proposal, OA North was commissioned to produce a project design for Stage 1 of the work, which was submitted in September 2002 (OA North 2002a).

1.3 STAGE 1

1.3.1 Following a number of minor revisions to the project design, OA North was commissioned to undertake Stage 1 of the Archives Project in January 2003, the work being undertaken between February and June of that year. This initial assessment resulted in the creation of a database containing basic information for 585 CAU/CAL events, together with a digital map showing the location of those events situated within the City and District of Carlisle. A report submitted in July 2003 (OA North 2003) presented an overview and analysis of the Stage 1 data. The report contained recommendations for a detailed assessment and quantification of the individual event archives generated by CAU/CAL, which was to be undertaken during Stage 2 of the project. An updated project design setting out the principal aims and objectives for Stage 2, and providing detailed information on proposed methodologies, resourcing, programming, and staffing, was also included. The project was designed to conform to the guidelines set out by English Heritage in *Management of Archaeological Projects* (*MAP2*) (English Heritage 1991).

1.3.2 On the basis of a revised project design and costings submitted in August 2003, OA North was commissioned to undertake Stage 2 of the Archives Project in April 2004. The bulk of the work required was completed between May and November 2004.

1.3.3 The principal aim of Stage 2 was to provide a considerably more detailed assessment of the documentary, artefactual, and environmental materials generated by CAU/CAL than was required for Stage 1, in order to determine levels of completeness and internal consistency and to identify any omissions. This necessitated the interrogation of each individual event archive stored in Shaddon Mill and the location of archival materials that had been removed from the Mill for various reasons in the past. The outcome was the creation of a full listing of all CAU/CAL's archival holdings and the identification of missing material (*Appendix 1*). An assessment of the current condition of all the archival elements currently stored in Shaddon Mill was also undertaken. The data generated by this work were added to an adapted and expanded version of the Stage 1 database.

1.3.4 During the course of Stage 2, trench location plans and site boundaries for all field events within the City and District of Carlisle were extracted from published and unpublished sources or from the primary event archives. The plans were then digitised in accordance with the requirements of the Carlisle Urban Archaeological Database (UAD) (Cumbria County Council 2004). The results of Stage 2 are presented in this report, together with recommendations

and an updated project design for a programme of remedial works to be undertaken during Stage 3 of the Archives Project, prior to final archive deposition.

1.3.5 The bulk of the work for this project was completed in 2005, but the report has not been submitted until now, due to uncertainties regarding the Tullie House Museum and Art Gallery lease at Shaddon Mill. These have now been resolved and Tullie House Museum and Art Gallery are keen to see this work progress.

2. RESEARCH AIMS AND OBJECTIVES

2.1 AIM 1

2.1.1 ***To adapt the database to enable input of the detailed archival information suitable for all end users and to provide essential information on the state of the Carlisle archive.***

2.1.2 ***Objective 1.1***: to adapt the database in accordance with nationally recognised standards for archaeological archives and to ensure compatibility with Tullie House Museum and Art Gallery and other potential end-users.

2.1.3 ***Objective 1.2***: to adapt the structure and content of the database incorporating new tables and fields to inform the recommendations to be made at the conclusion of Stage 2, including the presence and absence of archive elements and the condition of the archival material.

2.2 AIM 2

2.2.1 ***To re-order the documentary archive material in Shaddon Mill to enable access to the archive record.***

2.2.2 ***Objective 2.1***: to clear a suitable room at Shaddon Mill to act as a central repository for post-1990 documentary archives and to receive the re-ordered material.

2.2.3 ***Objective 2.2***: to move files, drawings, indices, and other documentary material in post-1990 archives from their present locations to a central repository in Shaddon Mill in order to facilitate access for all users.

2.2.4 ***Objective 2.3***: to re-order the documentary archives for pre-1990 events, stored in the present archives storage room, to a more logical order to facilitate access for all users.

2.3 AIM 3

2.3.1 ***To receive training in archive preparation and storage requirements***.

2.3.2 ***Objective 3.1***: to receive training and advice from the OA Archives Manager at Oxford in the recording, preparation and storage of archaeological archives.

2.4 AIM 4

2.4.1 ***To assess the levels of completeness and consistency of the documentary archives and identify omissions in accordance with MAP2 and the standards required by the receiving museums.***

2.4.2 ***Objective 4.1***: to liaise with Tullie House Museum and Art Gallery and other receiving museums concerning the levels of completeness required for the deposition of the documentary archives.

2.4.3 ***Objective 4.2***: to ensure that an archive record is present for each event identified in Stage 1 of the Archives Project.

2.4.4 ***Objective 4.3***: to record the presence or absence of the principal components for all the documentary archives (including box-lists of artefacts and environmental remains), the drawing archives, and the photographic record using the adapted database and a record sheet. Copies of the latter will be inserted into the primary archives.

2.4.5 ***Objective 4.4***: to compile a record, following *MAP2* guidelines, of those elements of the archive, including indices of stratigraphic information, drawings and photographs, which are found to be missing from the primary site archives.

2.5 AIM 5

2.5.1 ***To compile quantifications of the CAU/CAL archives and record the details of any missing archive elements noted during the searches of primary records.***

2.5.2 ***Objective 5.1***: to compile quantifications of the documentary archival material that is currently stored in Shaddon Mill.

2.5.3 ***Objective 5.2***: to compile quantifications of the artefactual material that is currently stored in Shaddon Mill.

2.5.4 ***Objective 5.3***: to compile quantifications of the ecofactual material that is currently stored in Shaddon Mill.

2.5.5 ***Objective 5.4***: to check, in so far as it is possible, existing box-lists of artefacts and records of environmental material against numbers of boxes for each category of artefactual and environmental material currently stored at Shaddon Mill, in order to identify missing material that may be elsewhere.

2.5.6 ***Objective 5.5***: to liaise with Tullie House Museum and Art Gallery, other receiving museums, and relevant specialists regarding Carlisle material that may currently be in their care.

2.5.7 ***Objective 5.6***: to compile lists of missing artefactual and environmental material and to log, as far as it is possible, all artefactual and ecofactual material not at Shaddon Mill but known to be currently stored elsewhere. This will include material from projects that are currently being reported upon (including the Millennium and Rickergate projects), but which will eventually be returned to Shaddon Mill.

2.5.8 ***Objective 5.7***: to record the resulting information using the adapted database and paper record sheets. Copies of the latter will be inserted into the primary archives and a master copy will be compiled.

2.6 AIM 6

2.6.1 ***To locate whenever possible the basic event information that could not be found during Stage 1 of the Archives Project.***

2.6.2 ***Objective 6.1***: to search the primary records for missing data.

2.6.3 ***Objective 6.2***: to liaise with the District Land Registry to obtain details of landowners where this information is missing and where a large or significant artefactual or ecofactual assemblage has been located during the course of the detailed archive assessment.

2.6.4 ***Objective 6.3***: to contact current landowners and former employees of CAU/CAL, as required, to obtain missing landowner details or other missing information.

2.7 AIM 7

2.7.1 ***To record accurate trench locations for each event as required for the Carlisle UAD, or to record the absence of such data.***

2.7.2 ***Objective 7.1***: to locate trench location plans for each event within the CAU/CAL archive, or to record the absence of a location plan.

2.7.3 ***Objective 7.2***: to scan the trench location plans and overlay each scanned plan onto Ordnance Survey base maps generated in Autocad.

2.7.4 ***Objective 7.3***: to digitise trench locations and site boundaries in Autocad or Autocad Map by an experienced OA North illustrator or CAD operator based in Lancaster.

2.7.5 ***Objective 7.4***: to generate a shape file showing trench locations and site boundaries using Autocad Map.

2.7.6 ***Objective 7.5***: to add the shape file as a single layer to the existing GIS mapping created for Stage 1 of the Archives Project.

2.8 AIM 8

2.8.1 ***To record details of the current condition of the archives and to provide estimates of the amount of remedial work required.***

2.8.2 ***Objective 8.1***: to contact Tullie House Museum and Art Gallery and other receiving museums regarding conditions, conservation requirements and

archive details required for the deposition of documentary, artefactual and environmental archives.

2.8.3 ***Objective 8.2***: to undertake a condition check of the documentary archives currently stored in Shaddon Mill and estimate the amount of remedial work required to improve storage.

2.8.4 ***Objective 8.3****:* to locate sensitive artefactual and environmental materials currently stored in Shaddon Mill and to record the condition and stability of both the material itself and the storage media, including silica gel.

2.8.5 ***Objective 8.4***: to produce estimates of the number of artefacts and ecofacts requiring remedial conservation and x-radiography and to estimate the amount of remedial work required to improve storage.

2.9 AIM 9

2.9.1 ***To produce estimates of the amount of digital information to be supplied to the Archaeological Data Service (ADS).***

2.9.2 ***Objective 9.1***: to produce metadata describing the digital resource of the Archives Project for dissemination to the ADS and other relevant organisations.

2.9.3 ***Objective 9.2***: to liaise with the ADS and other organisations as required.

2.10 AIM 10

2.10.1 ***To consult on the feasibility of publishing a gazetteer of events undertaken by CAU/CAL.***

2.10.2 ***Objective 10.1***: to assess the practicality of publishing a gazetteer by means of a website or other publication methods.

2.10.3 ***Objective 10.2***: to assess the cost of publishing a gazetteer of events.

2.11 AIM 11

2.11.1 ***To disseminate the information on the Archives Project database to all relevant organisations.***

2.11.2 ***Objective 11.1***: to copy the Archives Project database and dispatch to English Heritage, Tullie House Museum and Art Gallery, Carlisle City Council and their archaeological advisor, Cumbria County Council's Historic Environment Service (CCCHES).

2.11.3 ***Objective 11.2***: to provide copies of the Archives Project database to all other relevant organisations who require it, such as the National Monuments Record (NMR).

2.11.4 ***Objective 11.3***: to provide data for the proposed Carlisle UAD, via Cumbria County Council, on trench locations for all events.

2.12 AIM 12

2.12.1 ***To report on the results of Stage 2 of the Archives Project and to provide recommendations for Stage 3.***

2.12.2 ***Objective 12.1***: to prepare an assessment report presenting and analysing the results of Stage 2 of the Archives Project.

2.12.3 ***Objective 12.2***: to make recommendations for the amount of remedial work required during Stage 3 of the Archives Project to enable the CAU/CAL archives to be deposited with the receiving museums.

3. METHODOLOGICAL RESULTS

3.1 INTRODUCTION

3.1.1 The key outcome of the Stage 2 assessment has been the creation of an up-to-date listing of the CAU/CAL archive and the identification of missing elements, such as documentary, finds and environmental indices and summaries. An assessment of the current condition of all the archival elements currently stored in Shaddon Mill has also been undertaken, and trench location plans and site boundaries for almost all field events within the City and District of Carlisle have been digitised for the Carlisle UAD. The data generated by the Stage 2 work have been added to an adapted and expanded version of the Stage 1 database. Recommendations and an updated project design for remedial works to be undertaken during Stage 3 of the Archives Project have also been prepared (*Sections 6-7*), together with a method statement (*Section 8*), resourcing and costings (*Sections 9* and *11*).

3.1.2 The methodology employed during Stage 2 closely followed the detailed method statement included in the Stage 1 report (OA North 2003, 56-66). Minor changes made to some of the proposed methodologies, agreed during the course of discussions with English Heritage and Cumbria County Council, are explained in the relevant sections below.

3.2 DATABASE ADAPTION

3.2.1 It became clear early in Stage 2 that the adapted database structure proposed in the updated project design accompanying the Stage 1 report (*op cit*, 56) was overly complicated and time-consuming to use. Furthermore, it did not cater well for later additions, such as new types of archival data. Consequently, the database was redesigned at the beginning of Stage 2, in consultation with English Heritage and Cumbria County Council, in order to resolve these issues.

3.2.2 The new design for the database took all of the tables listed in the Stage 1 report (*op cit*, table 24) and combined them into two tables (Tables 1 and 2, below). The main table, tblArchivQuant, records the quantification of individual archival objects for each event (Table 1). The second table, tblArchivTot, lists the total archival quantification for each event (Table 2). Both tables link directly to the main Events table (produced during Stage 1) by the unique EventID field.

3.2.3 In tblArchivQuant (Table 1), the archive is split into its constituent archival elements, such as documents, small finds, bulk finds, photographs, and drawings. Each element is then sub-divided further into more detailed categories, such as context sheets, coins, animal bones, slides, A3 plans, and so on. These categories are controlled by a lookup table to which new types can be added at any stage. As details of each archival category were entered to the database they were quantified, and the type of material the quantification

referred to (for example, folder, object, sheet or box) was recorded. These data are also controlled by a lookup table. Quantifications are given in terms of standard boxes (each measuring 450 x 250 x 175mm, or 0.0197m^3), in accordance with the draft guidelines for archive deposition provided by Tullie House Museum and Art Gallery (Tullie House Museum nd; see *Section 3.5.1*). Finally, the condition of the material, and its external and (where appropriate) internal packaging was recorded, again using a lookup table to control terminology.

Field	**Data type**	**Required**	**Description**
ObjectID	Auto-incrementing Number	Yes	Provides unique index for all records
EventID	Long Integer	Yes	Links to tblEvents
Object_Type	Controlled Text	Yes	Describes main object type
Detailed_Object_Type	Controlled Text	Yes	Describes detailed object type
Quantification	Double Integer (two decimal places)	Yes	Records basic quantification
Quantification_Type	Controlled Text	Yes	Describes type of quantification
Standard_Quantification	Double Integer (two decimal places)	Yes	Records quantification as number of standard boxes
Condition_Packaging	Controlled Text	No	Describes condition of external packaging
Condition_Object	Controlled Text	Yes	Describes condition of object
Condition_Internal_Packaging	Controlled Text	No	Describes condition of internal packaging
Remedy_Required	Memo	No	Describes any remedial work required
Notes	Memo	No	Records any additional information about the object

Table 1: Updated table for the quantification of individual archival objects for each event (tblArchivQuant)

3.2.4 TblArchivTot (Table 2) provides a simple quantification of the total archive for an event, in terms of folders, boxes, oversize drawings, and standard boxes.

Field	Data type	Required	Description
ArchivQuant_ID	Auto-incrementing Number	Yes	Provides unique index for all records
EventID	Long Integer	Yes	Links to tblEvents
Total_Folders	Double Integer (two decimal places)	No	Records total number of folders
Total_Boxes	Double Integer (two decimal places)	No	Records total number of boxes
Total_Oversize_Drawings	Double Integer (two decimal places)	No	Records total number of oversize drawings
Total_Standard_Boxes	Double Integer (two decimal places)	No	Records total number of standard boxes

Table 2: Updated table for the quantification of the total archival holding for each event (tblArchivTot)

3.3 RE-LOCATION AND RE-ORDERING OF DOCUMENTARY ARCHIVES

3.3.1 The Stage 1 assessment demonstrated that, whilst the artefactual and environmental archives in Shaddon Mill were reasonably well ordered, the documentary records were scattered around the building and were in urgent need of re-ordering and rationalisation (OA North 2003, 40-1). Furthermore, it was found that a considerable amount of correspondence and other paperwork relating to specific events, which should have been located with the rest of the documentary records in the appropriate archives, was stored in several different rooms, well away from the field records. It was therefore recommended that these documents should be integrated into the relevant event archives in order to permit thorough and efficient assessment and to allow the eventual deposition of an adequate archive. This work was undertaken at the beginning of Stage 2 and represented one of the first tasks to be completed during this stage of the project.

3.3.2 Once the scattered archival material had been integrated into the 'parent' archives, the task of re-ordering and re-locating the archives themselves could begin. Previously, the random distribution of the archives meant that it had been almost impossible for anyone unfamiliar with the layout of the building, and with little or no knowledge of the previous workings of the unit, to locate any given archive. Recommendations were put forward in the Stage 2 project design in order to resolve this problem (*ibid*).

3.3.3 When the project design was produced in July 2003, all the archival material generated by CAU/CAL (with the exception of certain elements removed for conservation, analysis, or other reasons; see *Section 3.6.1*) was stored in the

unit's former premises on Level 5 of Shaddon Mill. At the time, there was no reason to suppose that the material would be moved elsewhere in the foreseeable future. It was therefore proposed that a suitable room on Level 5 should be cleared to act as a central repository for post-1990 documentary archives, which would be stored in alphabetical order, by site code. It was envisaged that the pre-1990 archives, most of which were already stored together in a dedicated archive room, would be re-ordered alphabetically within that room (*op cit*, 58-9).

3.3.4 However, in the period between the submission of the project design and the commissioning of the Stage 2 work in April 2004, Shaddon Mill was sold to a developer who wished to convert the building into flats. Following discussions between the developer, Carlisle City Council, and Tullie House Museum and Art Gallery, it was agreed that the archives would remain in the building until new storage facilities could be secured. Since the developer wished to commence work on the upper levels of the Mill, however, it was further agreed that all the archival material would be moved downstairs, from Level 5 to Level 1. This operation was undertaken by a specialist contractor, under the supervision of Tullie House Museum and Art Gallery staff, in March-April 2004.

3.3.5 As a consequence of this development, re-ordering of the documentary archives could not be undertaken in accordance with the methodologies set out in the project design. Unlike Level 5, which was sub-divided into a number of offices, the new storage facility comprises a large, open-plan area with no significant sub-divisions. It was therefore not possible to re-locate the documentary archives to specific rooms, as originally intended. Instead, most of the documentary material, for both pre- and post-1990 projects, has been stored alphabetically by site code on a rack of dexion shelving (designated Shelving Rack 1 for labelling purposes). Additionally, five groups of records have been stored separately, namely:

- archives relating to a number of particularly large or complex fieldwork projects that generated extremely large quantities of records (see Table 3). These are stored on Shelving Rack 2;

- archives or archival elements relating to projects undertaken by organisations other than CAU/CAL (*Section 4.6*). These are stored on Shelving Rack 3 (part of the same block of shelving as Rack 2);

- the archives relating to the Millennium and Rickergate projects (MIL 1-5 and RIC A-F respectively), the bulk of which are currently stored away from Shaddon Mill. The small amount of material that remains in Shaddon Mill is stored on Shelving Rack 4 (part of the same block of shelving as Rack 5;

- archives relating to the large number of events that made up the Lanes parent project. These are stored on Shelving Rack 5;

- documents and other miscellaneous materials that are not event-specific (see *Appendix 2*). These are stored on Shelving Rack 6.

3.3.6 It was felt that integrating the huge archives generated by the Lanes and a few other extremely large fieldwork projects into the alphabetic sequence adopted for the rest of the documentary archives (which in most cases comprised only a few files and folders) would unbalance the whole system. Furthermore, in the case of the Lanes parent project, it was considered far better to keep all the events together in one place rather than to split them up through integration into the alphabetic system. The Millennium and Rickergate project archives were kept separate for similar reasons, and also because the bulk of the records for these sites are not in Shaddon Mill, but are currently being analysed for publication. Because the analytical process is constantly generating new archival elements, these archives essentially represent 'work in progress', which has made it difficult to estimate the amount of storage space they will ultimately require. For this reason, therefore, it has been thought best to provide them with a separate storage area in the short to medium term. Archives relating to non-CAU/CAL events have been stored separately to facilitate access and to permit rapid assessment in the future. The non-event specific material has been kept separate for obvious reasons.

3.3.7 The shelving racks on which these different groups of records are currently stored have been clearly labelled to facilitate access for all end-users (Table 3).

Shelving rack no	Contents
1	Documentary archives for all events except those on Racks 2-5
2	Documentary archives for Annetwell Street 1981-4 (ANN A), Annetwell Street 1989 (ANN D-G), Annetwell Street 1990 (ANN H), Blackfriars Street 1977-9 (BLA A-H), Castle Street 1981-2 (CST B)
3	Documentary archives/archival elements for non-CAU/CAL events
4	Documentary archives for all Millennium (MIL) and Rickergate (RIC) events
5	Documentary archives for all Lanes events, including standing building events
6	Non-event specific documents and miscellaneous materials

Table 3: Contents of numbered shelving racks at Shaddon Mill holding documentary archives

3.3.8 Generally speaking, it was found that, for most events, the primary field drawings (plans, sections, elevations) were reasonably well ordered. Most were stored in numerical order in 13 upright plan cabinets (each cabinet measuring approximately 1400 x 900 x 450mm) and required little re-ordering (another upright cabinet was found to be empty). Three lay-flat plan cabinets (each measuring approximately 1300 x 1000 x 800mm) that had originally been located in the Carlisle unit drawing office were, however, found to contain a haphazard mixture of drawings and illustrations from a large number of disparate events. These cabinets did require extensive re-ordering and rationalisation. A few cabinets contained all the drawings for a single large project (such as Annetwell Street), but most contained drawings relating to many different events. Labels provided an indication of the contents of some cabinets, although these were not always accurate, whilst others were

completely unlabelled. For the purposes of the assessment, therefore, each cabinet was given a numbered label and a full record of the contents of each was made. These data are presented in tabular form in *Appendix 3*.

3.4 TRAINING

3.4.1 In order to develop some familiarity with archive content, preparation and management, a member of the Stage 2 project team (John Zant) undertook three days' training in April 2004 under the direction of Oxford Archaeology's Archives Manager at Oxford. The training included the compilation of a number of genuine project archives and the preparation of archives for deposition. Particular attention was paid to deposition requirements, both in terms of archive content and storage media.

3.5 LIAISON WITH RECEIVING MUSEUMS

3.5.1 Prior to the commencement of Stage 2, personnel at Tullie House Museum and Art Gallery, which represents the ultimate repository for the great bulk of the archival material currently stored in Shaddon Mill, were contacted and a copy of the museum's draft guidelines for archive deposition was obtained (Tullie House Museum nd). Since some archaeological work had been undertaken by CAU/CAL beyond the City and District of Carlisle, within the Cumbrian administrative districts of Allerdale, Copeland, Eden and South Lakeland, and (in the case of a single desk-based assessment) within the City of Gloucester, it was also necessary to establish contact with the following museums:

- *Allerdale*: The Helena Thompson Museum, Workington;
- *Copeland*: The Beacon Heritage Centre, Whitehaven;
- *Eden*: Penrith Museum;
- *South Lakeland*: Kendal Museum of Natural History and Archaeology;
- *Gloucester*: Gloucester City Museum.

3.5.2 In addition to archives relating to work carried out by CAU/CAL, comparatively small quantities of archival materials relating to a number of projects undertaken by other organisations prior to the formation of CAU in 1977 were found in Shaddon Mill (*Section 3.3.5* and *Section 4.6*). For this reason it was necessary to establish contact with two further organisations, namely Cambridgeshire County Council's Historic Environment Record and York Minster Library (see *Section 4.14.5* below).

3.5.3 All the museums and other organisations listed in *Sections 3.5.1-2* were also contacted for guidance with respect to their deposition requirements, particularly with regard to storage, conservation and x-radiography. Staff at the Beacon Heritage Centre informed OA North that the *Archive Deposit Guidance Notes* issued by Derbyshire Museums Service (Derbyshire

Museums Service 2003) are currently being used by the Centre as an example of best practice in the absence of similar guidelines for Cumbria. A copy of the *Notes* was provided and the contents have been taken into consideration in the relevant sections of this report. Guidelines for the deposition of archaeological archives in the Cambridgeshire County Council Archaeology Store (Cambridgeshire County Council 2004) were provided by the Council's Historic Environment Record, and a copy of the draft guidelines for archive deposition with Gloucester City Museum and Art Gallery was obtained from the City Museum (Gloucester City Museum nd).

3.5.4 The other three Cumbrian museums have not produced guidelines, but all subscribe to the model set out by the Society of Museum Archaeologists (SMA) in *Towards an accessible archaeological archive* (Owen 1995), as, indeed, do those museums that have issued guidelines. For this reason, the recommendations for the Stage 3 remedial works presented in *Section 6* of this report closely follow the published SMA guidelines, whilst taking into account the local guidelines listed above. Personnel at the York Minster Library wish to undertake their own remedial works, for reasons that are explained elsewhere (*Section 6.15.4*).

3.5.5 Once the work of assessment and recording was completed, all the receiving museums were provided with basic information about the character and likely extent of the archival holdings for those archaeological events that were undertaken by CAU/CAL within their respective administrative districts.

3.6 LOCATION OF ARCHIVAL MATERIALS NOT IN SHADDON MILL

3.6.1 During the course of the Stage 1 work it became clear that some archival materials were not present in Shaddon Mill (*Appendix 4)* but had been dispatched to museums, specialists, and other organisations for display, assessment, conservation or other reasons when CAL was still operating (OA North 2003, 45). Unfortunately, no definitive list of this material was available, as exit forms were only sporadically completed. To address this problem, enquiries were made to a number of specialists and organisations who were known to have dealt with Carlisle material in the past. The results of these enquiries are detailed in the relevant section of this report (*Section 4.3*).

3.7 DOCUMENTARY ARCHIVES: DATA COLLECTION AND DATA ENTRY

3.7.1 ***Recording, quantification and condition assessment***: for each documentary archive, the presence or absence of the principal components, including contextual, drawn and photographic records, indices and matrices, was recorded on paper record sheets at Shaddon Mill prior to being entered into the adapted project database. A record of the present condition of all the archival elements was also compiled.

3.7.2 The first information to be input came from basic archive quantifications that had been compiled for some of the entries in the CAU/CAL site log and standing buildings recording log, or for some CAU/CAL client reports. Copies

of both logs and of the relevant client reports are currently held at OA North's premises in Lancaster (OA North 2003, 61). This information was available for approximately 150 of the 586 events, although some of the records subsequently proved to be inaccurate and it was therefore necessary to check them against the actual archival holdings present in Shaddon Mill.

3.7.3 In accordance with the Stage 2 project design, the audit of the Carlisle unit's archives undertaken by a University of Bradford placement student in 2000 was examined to determine if it contained any information relevant to the assessment (*ibid*). In the event, this document proved to be insufficiently detailed to be of use during Stage 2.

3.7.4 Where quantification information was not available in the site logs or in the copies of client reports held in Lancaster, it was obtained by a direct search of the primary archives stored in Shaddon Mill. In some cases quantifications could be obtained from indices present in the archives; where indices were missing or incomplete, the record sheets, drawings and so on were counted by hand.

3.7.5 In the Stage 2 project design, it was proposed that a paper record sheet be designed for the assessment, since it would not be possible to enter the data directly onto the database at Shaddon Mill (*op cit*, 42). This record sheet would be compiled for each archive and the data would subsequently be entered into the adapted project database. When paper records had been completed for all events, a copy of the record sheet was to be deposited with each of the original documentary archives and a master copy of all the records would be compiled.

3.7.6 In practice, the quantity of data proved to be so great that it was necessary to develop three documentary record sheets, copies of which are appended to this report (*Appendices 5, 6, 7*). On the *Documentary Archives Record Sheet* (*Appendix 5*), the presence or absence of all key archival elements was recorded by means of a series of tick boxes. Where appropriate, a record of the number of items (context sheets, plans, slides, and so on) was also made. The *Documentary Archives Bulk Quantifications Sheet* (*Appendix 6*) provided a means of recording and quantifying the various types of storage media present in the archive (box files, ring binders, folders, and so on), together with quantifications for oversize drawings (those larger than A3). Furthermore, since Tullie House Museum's *Guidelines for excavators for the deposition of archaeological archives* (nd) specified that all quantifications should be given in terms of standard boxes (each measuring 450 x 250 x 175mm, or $0.0197m^3$), the record sheet also included a field whereby the volume of each archive could be estimated in terms of numbers of standard boxes. Finally, the present condition of each major archival element, including the current state of storage and packaging, was recorded on a *Documentary Archives Condition Assessment Sheet* (*Appendix 7*) by means of a subjective scale (Good/Fair/Poor). Details of any basic remedial works required prior to archive deposition were also recorded on this sheet.

3.7.7 Copies of the *Documentary Archives Record Sheet* were deposited with the individual archives upon completion of the work. The other two sheets were

not copied since they provide a record of the current storage and condition of the archives, which will certainly change as a result of the remedial works planned for Stage 3 of the Archives Project.

3.7.8 Work on assessing and recording the contents and condition of the documentary archives commenced after the archives had been re-integrated and re-ordered in the manner described above (*Sections 3.3.1-7*). The records were assessed methodically on an event-by-event basis, beginning with the smaller archives that had been stored alphabetically and progressing to the larger and more complex archives generated by projects such as the Lanes and Annetwell Street. As the Lanes archive was being sorted and re-ordered, it was found that a considerable amount of documentation within the archive was not event-specific, but related to 'the Lanes project' generally. Since the recording system used in Stage 2 depends upon the ability to assign records to a particular event, it proved impossible to deal with this material on the record sheets or the database. For this reason, general Lanes documentation has been recorded and quantified in a separate table (see *Appendix 8*), as have the general artefactual and environmental material (*Appendix 9)*. Likewise, as has already been explained (*Section 3.3.5-6*), other non-event specific documents and materials have been recorded separately.

3.7.9 ***Non-CAU/CAL archives***: it was known that few archives relating to projects undertaken by organisations other than CAU/CAL were stored in the unit's former premises at Shaddon Mill (*Section 3.3.5*). These archives were not considered during Stage 1 of the Archives Project, which was principally concerned with defining the extent and character of the Carlisle unit's work from 1977 to 2001. During Stage 2, however, it was agreed with English Heritage and Cumbria County Council that it was important to assess and quantify *all* archival holdings at Shaddon Mill. To this end, the non-CAU/CAL archives were assessed in the same way as those relating to Carlisle unit projects, the only difference being that it was necessary to issue new site codes to some events for recording and data storage purposes. The new codes are listed below (see *Section 4.6*). The artefactual and environmental archives relating to these events were also quantified and assessed (*Sections 4.6* and *4.10*).

3.7.10 ***Data entry***: on completion of the assessment, the paper records were transferred to OA North's premises in Lancaster, where all the data were input to the adapted project database.

3.7.11 ***Archive location***: with five exceptions, all the documentary archival material assessed during the course of Stage 2 was located in Shaddon Mill. The exceptions were the bulk of the archives for the Millennium, Rickergate, and St Michael's Church, Workington sites (events MIL 1-5, RIC A-F, and SMW A/SMW B-F), and most of the documentary records for two phases of archaeological work at Carlisle Cathedral (events CAT A-F and CAT G-H). With the exception of a few files of miscellaneous papers, both the Millennium and Rickergate archives are currently stored at OA North's premises in Lancaster, where they are undergoing post-excavation analysis. The cathedral records were removed from Shaddon Mill shortly after CAL ceased trading in August 2001, and are currently stored securely in the

Cathedral Library. The archive generated by the excavations at St Michael's Church, Workington, was removed from the Mill at the request of the Rector of St Michael's some months prior to the commencement of the Stage 2 work. It is understood that the archive will be assessed for its archaeological potential in the near future, although the human remains from the site have been re-interred in St Michael's crypt. Although this archive could not be assessed in the same way as the others as part of the Archives Project, a record of its contents was provided by Tullie House Museum and Art Gallery and this information was added to the project database.

3.7.12 ***Completion of missing Stage 1 information***: in accordance with the proposals set out in the Stage 2 project design (OA North 2003, 45-6), a search was made during the course of the assessment for basic information that could not be located during Stage 1 of the project. Using data generated from the project database the relevant event archives were targeted in the hope of recovering some of this missing information. Carlisle City Council's Planning Department was contacted with regard to land ownership details for three events in Carlisle (see *Section 4.13.4*). The new information was then entered into the project database, although relatively little additional data was actually recovered.

3.7.13 When the Stage 2 project design was compiled, it was thought that a search of Land Registry records may have been required during Stage 2 in order to determine land ownership for a small number of events where this information was lacking (OA North 2003, 46-7). It was also suggested that, in exceptional cases, it might be necessary to contact current landowners and former CAU/CAL employees in the search for missing information (*op cit*, 63). In the event, however, it proved unnecessary to carry out these searches, for reasons that are explained elsewhere in this report (*Section 4.13.2-3*).

3.7.14 ***Extraction of trench location data for the Carlisle Urban Archaeological Database (UAD)***: a key requirement of the Carlisle UAD was the compilation of a digital map accurately locating excavation trenches and site boundaries for all events within the UAD study area (Cumbria County Council 2004). Since most events remain unpublished (OA North 2003, 20-2), this required the extraction of location plans and other illustrations directly from the primary archives stored in Shaddon Mill. Following discussions with English Heritage and CCCHES, it was agreed that the most cost-efficient way of gathering the data would be to undertake the work during Stage 2 of the Archives Project, when the documentary archives and drawn records were being assessed and re-ordered.

3.7.15 Consequently, a search was made of all published sources, client reports and other grey literature for trench location plans relating to all CAU/CAL field events (evaluations, excavations, and watching briefs) within the City and District of Carlisle. Where information was not available from these sources, the primary drawn records in the CAU/CAL archive at Shaddon Mill were searched and any useful drawings were extracted.

3.7.16 The trench location/site boundary plans were scanned to high-resolution and saved as digital raster images. Initially it was envisaged that AutoCad Map

2000 would be used for digitising the images and for georeferencing the resulting vector data, since it was not easy to do this accurately in the version of ArcView (3.3) that was then in use at OA North. However, since the Stage 2 project design was compiled, OA North has moved to a more recent version of ArcView (9.0), in which digitising and georeferencing of raster images is considerably easier and more accurate. Consequently, it was no longer necessary to use AutoCad Map for this process. ArcView (9.0) was also used for the Carlisle UAD.

3.7.17 The raster trench location and site boundary plans were inserted into the GIS and geo-referenced by matching topographical points on the plans with the same points in the modern Ordnance Survey mapping. The trench and site boundaries were then digitised within the GIS to create vector data in an ArcView shape file. In cases where a site consisted of multiple trenches, these were merged to create a single feature. The site code was attached to each trench location as an attribute, and this was used as a link to the database.

3.7.18 In some cases it was not possible to locate individual trenches accurately, either because the plans were not present in the site archives or because topographical features shown on the plans could not be linked to the current Ordnance Survey mapping. In these cases, every attempt was made to identify and locate the outer boundary of the event area (for example the field or property where the work took place), but in some cases even this did not prove possible. Consequently, a small number of sites could not be accurately located (see *Section 4.12.4*).

3.7.19 In order to highlight those events for which no trench and/or boundary data could be found, a numerical certainty attribute has been attached to each object in the shape file. Accurate trench plans that could be located precisely in relation to modern Ordnance Survey mapping have been attributed to Grade 1. Grade 2 relates to events where the trenches could be located with some slight margin of error, or where the boundary of the site could be accurately located in relation to modern Ordnance Survey mapping. Events where some doubts remain about the accuracy of site boundary data are attributed to Grade 3, whilst Grade 4 relates to those events for which no useful location data could be found.

3.8 ARTEFACTUAL AND ENVIRONMENTAL ARCHIVES: DATA COLLECTION AND DATA ENTRY

3.8.1 ***Recording and quantification***: unlike the documentary archives and drawn records, where re-ordering was clearly an essential prerequisite of the Stage 2 assessment, the artefactual and environmental materials in Shaddon Mill were, on the whole, stored in a reasonably well-ordered manner. Furthermore, a record of the location of each event archive had been compiled during an audit undertaken in 2000 (OA North 2003, 61). For this reason, no attempt was made during Stage 2 to re-order these materials, which were left where they had been placed following the move from Level 5 to Level 1 of Shaddon Mill. However, during assessment of the documentary archives, some artefacts from a wide variety of sites were found scattered amongst the paper records, mostly

in box files, small boxes, and finds bags. It would appear that most of these items had been removed from their respective archives for illustration during the lifetime of CAU/CAL but had never been returned upon completion of the work. Instead, they were stored haphazardly in files and drawers in the unit's drawing office, where they remained when the company ceased trading. These objects were returned to the appropriate archives as they came to light during the Stage 2 assessment.

3.8.2 As with the documentary and drawn records (*Section 3.6.1*), the first information to be collected was obtained from copies of the CAU/CAL site logs and client reports that are currently held at OA North's offices in Lancaster. The data derived from these sources were input directly to the project database. Where the information was not available, it was obtained directly from the primary archives in Shaddon Mill. Rather than relying on records and indices of artefactual and environmental material contained in the documentary archives, which were frequently found to be incomplete, unreliable, or simply absent, it was decided to undertake a rapid count of all the boxes, bags, and tubs of material in the Mill. This could be undertaken speedily and was felt to be the best way to produce a reliable list of the archival holdings within the Mill at the time of the assessment.

3.8.3 To this end, two further paper record sheets were produced on which the data could be rapidly recorded prior to being added to the database. Copies of these record sheets are appended to this report (*Appendices 10, 11*). On the *Artefactual and Environmental Record Sheet* (*Appendix 11*) the numbers of boxes of each type of artefactual material, both IRFs and bulk finds, were recorded. Where information was readily available from indices or other sources, quantities of individual IRF groups (such as coins and copper-alloy objects) were also recorded. However, since this was not a requirement of the Stage 2 assessment as set out in the project design, these data were not recorded where they would have been difficult and/or time consuming to obtain. Soil samples, wood/charcoal samples, and samples of other organic materials were quantified in terms of numbers of boxes, bags or tubs, as appropriate, and the number of soil monoliths (where present) was recorded. In accordance with the draft guidelines provided by Tullie House Museum and Art Gallery, an attempt was made to express the volume of each archival element in terms of numbers of standard boxes, as had been done for the documentary archives (*Section 3.6.4*).

3.8.4 ***Condition assessment (storage and packaging)***: the nature, condition, and efficacy of the packaging and labelling for each category of artefactual and environmental material were assessed and recorded on the *Artefactual and Environmental Archives Condition Assessment Sheet* (*Appendix 7*), by means of a subjective scale (Good/Fair/Poor). These data were later added to the Archives Project database. Details of any remedial work that may be required prior to archive deposition, such as re-packaging or re-labelling, were also recorded and the presence and condition of desiccants were noted.

3.8.5 The general ambient conditions under which the archives are currently stored were also noted. Building works associated with the conversion of Shaddon Mill to flats was under way during the two weeks in which observations were

made (see *Section 3.3.4*), and it is possible that this work increased levels of dust within the store. It also necessitated the movement of some of the storage racks.

3.8.6 ***Condition assessment (sensitive materials)***: systematic observation was confined to those material classes generally regarded as unstable or potentially unstable in long-term storage, and thus more likely to deteriorate under less than optimal conditions. In general, this group comprises objects of ferrous and non-ferrous metal (excluding gold) and organic materials, principally leather and wood.

3.8.7 In some circumstances, other materials, such as glass, prehistoric pottery, worked bone/ivory, amber and shale/jet, can also be unstable. With the exception of glass, it was possible to check the condition of all the items in these material categories that are currently stored at Shaddon Mill, since for the most part they occur only in small quantities. In the case of glass, the amount and rapidity of deterioration is generally dependent on its chemical composition, in simple terms whether it is soda- or potash-based, and the depositional conditions from which it was recovered. Depositional conditions in and around Carlisle are generally very favourable for the preservation of soda-based glass, but less so for potash-based glass. This difference is broadly chronological, with Roman glass usually recovered in excellent condition, whilst the preservation of medieval and post-medieval glass is often extremely variable. The scope of the project did not include examination of all the glass in store, but approximately 10% of the assemblage (roughly one box in ten) was subjected to rapid scanning as a check.

3.8.8 All metalwork was examined, and the physical condition of the material was assessed on a simple three-point scale, as follows:

Category 1: Good condition: there is no active degeneration and no obvious mechanical damage. It is stable as stored for the foreseeable future;

Category 2: Fair condition: there is little or no active degeneration and little obvious mechanical damage. It is essentially stable as stored, but monitoring is required;

Category 3: Poor condition: there has been visible active chemical degeneration (for example, spots of bronze disease are visible) and obvious mechanical degeneration (such as the shattering of iron objects as a result of the internal formation of corrosion products). This material is unstable and in need of remedial treatment and frequent monitoring.

3.8.9 All leather and most wood was examined, and the physical condition of the material was assessed on a similar three-point scale:

Category 1: Good condition: it has been conserved by freeze-drying with no active degeneration and no obvious mechanical damage. It is stable as stored for the foreseeable future;

Category 2: Fair condition: it is stored wet in cool, dark conditions. Little or no active degeneration and little obvious mechanical damage have taken place. It is essentially stable as stored, but monitoring is required;

Category 3: Poor condition: usually it has been allowed to dry under uncontrolled conditions. Visible active chemical degeneration (such as precipitation of white salts on surfaces) and obvious mechanical degeneration associated with the brittle nature of air-dried leather has taken place. It is stable, but of little archaeological potential. A discard policy should be considered.

3.8.10 For all categories of sensitive materials, the condition survey was restricted to material currently stored in Shaddon Mill. The Millennium and Rickergate project material is regarded as being under active curation, whilst the other objects located away from the Mill are currently stored in various places around the country (see *Section 4.3*), and were therefore not available for examination during Stage 2 of the Archives Project. As detailed assessment of each individual object was beyond the scope of the current project, the data presented in S*ection 4* have been extrapolated from a non-judgemental 10% sample (every tenth bag or envelope) of the material present in each box. For example, in the case of a box where each object in the sample group was found to be in Category 1, the entire contents of that box have been placed in the same group. In instances where the observed condition varied between Categories 1 and 2, or between Categories 1 and 3, the entire contents were so classed.

3.8.11 In addition, other pertinent information, such as the presence or absence of box lists, evidence that objects had been x-rayed, conserved, or in any way re-packed, was also recorded.

3.8.12 ***Condition assessment (bulk artefacts)***: for the most part, bulk artefacts, such as pottery, building materials, animal bone and metalworking debris, together with IRFs fashioned from stable materials such as glass, stone or ceramics, were not assessed in detail, since these material categories are, on the whole, stable and at minimal risk of deterioration during long-term storage. In any case, it was simply beyond the scope of the Stage 2 work to open every box of artefactual material currently stored in Shaddon Mill in order to assess the contents. A record of any defects noted in the external packaging of all artefactual categories was, however, made (*Section 3.8.4*), and it was clear from even a cursory examination that some boxes of particularly heavy materials, such as brick/tile or metalworking slag, were grossly overloaded.

3.8.13 During the course of the assessment, it was also noted that a not inconsiderable amount of bulk artefactual material in Shaddon Mill is currently stored in or on flimsy, open fruit trays or other unsuitable containers, rather than being properly packaged in sealed polythene bags within cardboard boxes. A record of these trays/containers and their contents was made and the data were added to the relevant event records on the project database.

3.8.14 ***Condition assessment (environmental samples)***: it was beyond the scope of the Stage 2 work to open every box, bag and tub of environmental material

currently stored in Shaddon Mill in order to assess the contents. Even if this had been possible, it would have been undesirable, since it may well have contributed to the degradation of these materials. In the case of old soil samples stored in bags within cardboard boxes, a random sample of approximately 10% of the assemblage was assessed. The condition of the few much larger bagged samples scattered about the store was noted, but the bags were not opened. Samples stored in well-sealed plastic tubs were not opened, as all are of comparatively recent origin and were presumed to be in good condition. A record of any defects noted in the external packaging of all samples was made, and from this it was clear that some boxes had been overloaded.

3.8.15 ***Non-CAU/CAL archives***: as with the documentary archives (*Section 3.6.7*), all artefactual and environmental materials in Shaddon Mill that related to projects undertaken by organisations other than CAU/CAL were recorded, quantified, and assessed in the same way as the archives generated by the Carlisle unit.

3.8.16 ***Data entry***: on completion of the assessment, the paper record sheets for the artefactual and environmental quantifications, and those recording data pertaining to the condition of the bulk finds, were transferred to Lancaster, where the data were input to the project database. The hand-written notes made during the assessment of the sensitive artefactual materials were transcribed to an Access database table and the data were later transferred to the overall Archives Project database.

3.8.17 ***Archive location***: the bulk of the artefactual and environmental material generated by the work of CAU/CAL between 1977 and 2001 is currently in Shaddon Mill. Until April 2004, it was stored in the unit's former premises on Level 5 of the Mill, but was moved downstairs to Level 1 in 2004 (*Section 3.3.4*). Following enquiries to a number of specialists and other organisations, however, it became clear that a considerable amount of archival material had been removed from the Mill in the past and never returned. The steps taken to trace and quantify this material, and its present whereabouts, are discussed elsewhere (*Sections 3.6* and *4.3*).

3.9 OTHER MATERIALS CURRENTLY STORED IN SHADDON MILL

3.9.1 In addition to the archives noted above, two other categories of material are currently stored in Shaddon Mill:

1. miscellaneous documents and other materials generated by CAU/CAL that cannot be related to specific archaeological events, including general correspondence and papers relating to the day-to-day administration of the Carlisle unit;

2. artefacts and other materials accessioned by Tullie House Museum and Art Gallery and stored temporarily in Shaddon Mill. These items, many of which are large and/or bulky, have been deposited in the Mill

since the demise of CAU/CAL in 2001, due to a lack of space in the principal museum stores.

3.9.2 All materials in Category 1 were quantified and assessed during Stage 2 of the Archives Project, since they clearly formed part of the Carlisle unit archive. However, because they were not event-specific, these items could not be added to the project database and were consequently dealt with separately (see *Section 4.11*). The Category 2 material is not relevant to the present study and was not assessed or quantified during Stage 2.

3.10 DATABASE TRANSMISSION

3.10.1 Once all the data input work was finished and the digital mapping was completed, metadata were produced describing the format of the resource and the information contained within it. This took the form of an Excel spreadsheet, and followed the standards of the Dublin Core Metadata Initiative, as adapted for the description of archaeological archives by the ADS (Miller 1996). The database, mapping, and metadata were then burnt onto CD-Rom disks and dispatched to all relevant organisations in the format that each required, in accordance with *Objectives 11.1-2* of the Stage 2 project design (OA North 2003, 66).

3.11 STAGE 2 ANALYSIS AND REPORTING

3.11.1 Following completion of the data collection, the information gathered during Stage 2 was collated and analysed. The results are presented and assessed in this report, in line with the objectives and methodologies set out in the updated project design, as presented in the Stage 1 report (op cit, 50-5).

3.12 RECOMMENDATIONS FOR STAGE 3

3.12.1 *Section 6* of the present report contains recommendations for Stage 3 of the Archives Project, whilst the updated aims and objectives are presented in *Section 7*. Accompanying method statements, resource requirements and costings for the Stage 3 works are also presented in *Sections 8-9* and *Section 11* of this report.

4. DATA QUANTIFICATION AND ANALYSIS

4.1 INTRODUCTION

4.1.1 This section presents quantifications and analysis of the major categories of information collected during the course of the Stage 2 work and entered into the project database. Missing information is quantified and assessed in *Section 4.13*.

4.2 ADDITIONAL CAU/CAL EVENTS

4.2.1 During the course of the Stage 1 work, 585 individual events undertaken by CAU/CAL between 1977 and 2001 were identified (OA North 2003, 14). To this list can now be added an additional event (BRD A), which was overlooked during Stage 1. Details of this event have been added to the project database, and a summary of the basic information is presented in Table 4. It has also been incorporated into all estimates of the overall size of the CAU/CAL archive that are presented in this report.

Site code	Event name	Date	Event type	Client	Landowner	Report
BRD A	Birdoswald fort, 'Time Team' investigation	1999	Excavation	'Time Team' production company	Cumbria County Council	None known

Table 4: Details of additional CAU/CAL event identified during Stage 2

4.2.2 Since BRD A was a 'stand alone' intervention unrelated to any other Carlisle event, it also qualifies for parent project status. Consequently, the total number of parent projects identified during Stage 1 has been revised upwards from 234 to 235. Details of the new parent project have been entered onto the Archives Project database.

4.3 CAU/CAL ARCHIVAL MATERIALS STORED OUTSIDE SHADDON MILL

4.3.1 It was clear from an early stage in the Archives Project that certain elements of the CAU/CAL archive were not present in Shaddon Mill (see *Section 3.6.1*). In the absence of a consistent and reliable system of exit sheets, however, it was not possible to state categorically where most of this material had been sent. During Stage 2, therefore, specialists and other organisations who were known to have dealt with Carlisle material in the past were contacted in order to determine the current location of these materials and facilitate the production of a definitive catalogue of CAU/CAL's archival holdings.

4.3.2 Letters were sent to a total of 24 individuals or organisations (listed in *Appendix 12*) requesting details of any Carlisle material they may have retained. From the 15 replies received, nine respondents provided details of

objects and assemblages that they or their organisations did indeed still hold, whilst six indicated that they did not have anything. In addition, e-mails were sent to all specialists currently involved in post-excavation analysis of assemblages from the Millennium and Rickergate sites, asking if they held any other Carlisle materials. Where replies were received, all were negative. Quantifications of all CAU/CAL archival materials currently held by OA North in Lancaster were also compiled.

4.3.3 Details of the whereabouts of all CAU/CAL archival materials currently stored away from Shaddon Mill have been entered into the individual event records on the project database, and the information is also presented in tabular form in *Appendices 4* and *13-16*. Most were dispatched to specialists and other organisations for assessment, analysis, conservation, or for other reasons whilst CAL was still operating. Some assemblages, however, most notably those associated with the Millennium and Rickergate projects, which are currently in the care of OA North at Lancaster, and the excavations at St Michael's Church, Workington, have been removed more recently for assessment and/or analysis (see *Section 6.5.1*).

4.3.4 In very broad terms, it is estimated that perhaps 15-20m^3 of archival materials of all types (equivalent to *c* 750-1000 standard boxes) and *c* 1000 oversize drawings are currently located away from Shaddon Mill. This material is believed to relate to approximately 33 CAU/CAL events (see *Appendices 4* and *13-16*) and a single non-CAU/CAL intervention, namely Dorothy Charlesworth's excavations at Annetwell Street (DC 72-79). This group represents approximately 10-13% of the total Carlisle archival holdings, which are estimated to have a volume of approximately 144.3m^3 (equivalent to *c* 7325 standard boxes; see *Section 5.2.7*). This figure does, however, include a large assemblage of human skeletal remains (381 complete or partial skeletons) from the excavations at St Michael's Church, Workington (SMW A and SMW B-F), which have been re-interred in the crypt of the church. If these remains are excluded from the calculations (and it is assumed that each skeleton was stored in one standard box), the size of the archive currently outside Shaddon Mill can be revised to *c* 370-620 standard boxes, or *c* 7.3-12.2m^3 (*c* 5-8.5% of the total). It should be noted that these materials have been included in all estimates of archive size (both for individual project archives and the Carlisle archive in its entirety) that are presented in this report.

4.4 QUANTIFICATION OF CAU/CAL DOCUMENTARY ARCHIVES

4.4.1 Documentary archives of some description were located for 509 CAU/CAL events (*c* 87% of the total), of which 301 are field events (excavations, evaluations, and watching briefs), eight are desk-based assessments and similar projects, and 199 are standing building recording events. The majority of these events had full documentary archives, comprising written, drawn and photographic records, but some comprised only one of these elements. This was particularly true of the standing building recording events, the archives for many of which consisted of only a few photographs and/or drawings. Of the 77 events (*c* 13% of the total) for which no documentary archive was located

at all, ten are field events, two are desk-based assessments, and 65 are standing building recording events. Whilst it is possible that some of these archives are located elsewhere, it seems probable that most simply do not exist. These data are summarised in Table 5. A list of events where a documentary archive was not located is presented in Table 6.

Event type	Archive located (% of total)	Archive not located (% of total)	Count
Desk-based assessments	8 (1.36)	2 (0.35)	10 (1.71)
Field events and other	301 (51.36)	10 (1.71)	311 (53.07)
Standing building recording events	200 (34.13)	65 (11.09)	265 (45.22)
Total	**509 (86.85)**	**77 (13.15)**	**586 (100)**

Table 5: Summary of status of CAU/CAL documentary archives

Site code	Site name	Event type	Date of work
ABB G	Abbey Street, Carlisle	Standing building recording	1980
AMB E	Amberfield, Burgh-by-Sands	Watching brief	2000
ANN J	Annetwell Street, Carlisle	Standing building recording	not known
BHW A	Backhouse Walk, Carlisle	Standing building recording	not known
BLA K	Blackfriars Street, Carlisle	Standing building recording	not known
BNK D	Bank Street, Carlisle	Standing building recording	1980
BNK E	Bank Street, Carlisle	Standing building recording	1980
BNK K	Bank Street, Carlisle	Standing building recording	1980
BNK M	Bank Street, Carlisle	Standing building recording	1980
BNK O	Bank Street, Carlisle	Standing building recording	1980
BNK Q	Bank Street, Carlisle	Standing building recording	1980
BNK S	Bank Street, Carlisle	Standing building recording	1980
BNK U	Bank Street, Carlisle	Standing building recording	1980
BNK V	Bank Street, Carlisle	Standing building recording	1980
BNK Z	Bank Street, Carlisle	Standing building recording	1980
CAT J	Carlisle Cathedral	Excavation	1990
CAT L	Carlisle Cathedral, the Fratry	Watching brief	1988
CAT P	Carlisle Cathedral	Watching brief	1987
CHU B	Church Street, Carlisle	Standing building recording	not known
CIT B	The Citadel, Carlisle	Standing building recording	not known
CRE A	The Crescent, Carlisle	Watching brief	1987
CST O	Castle Street, Carlisle	Standing building recording	not known
CST S	Castle Street, Carlisle	Standing building recording	1981
CST W	Castle Street, Carlisle	Standing building recording	1981
CTS B	The Courts, Carlisle	Standing building recording	not known
DST A	Devonshire Street, Carlisle	Standing building recording	1997
EDB A	Eden Bridge, Carlisle	Standing building recording	not known
ENG A	English Street, Carlisle	Watching brief	1987

Site code	Site name	Event type	Date of work
ENG F	English Street, Carlisle	Standing building recording	1980
ENG K	English Street, Carlisle	Standing building recording	1980
FIS B	Fisher Street, Carlisle	Watching brief	1980
FIS D	Fisher Street, Carlisle	Standing building recording	1985
FIS M	7-11 Fisher Street, Carlisle	Desk-based assessment	1990
GLL B	Globe Lane, Carlisle	Watching brief	1981
GLL E	Globe Lane, Carlisle	Standing building recording	1980
GLL V	Globe Lane, Carlisle	Standing building recording	1980
GRN D	Grinsdale Church, Grinsdale	Standing building recording	not known
HOC A	Hodgson's Court, Carlisle	Standing building recording	1980
JAS A	James Street, Carlisle	Watching brief	1983
KAL P	King's Arms Lane, Carlisle	Standing building recording	1980
KAL S	King's Arms Lane, Carlisle	Standing building recording	1981
KAL V	King's Arms Lane, Carlisle	Standing building recording	1981
KLA L	Keay's Lane, Carlisle	Standing building recording	1980
LEL L	Lewthwaite's Lane, Carlisle	Standing building recording	1980
LOW	Lowther Street, Carlisle	Watching brief	not known
LOW E	Lowther Street, Carlisle	Standing building recording	not known
LOW F	Lowther Street, Carlisle	Standing building recording	not known
LOW G	Lowther Street, Carlisle	Standing building recording	not known
LOW O	Lowther Street, Carlisle	Standing building recording	1980
LOW Z	Lowther Street, Carlisle	Standing building recording	1980
LOW AA	Lowther Street, Carlisle	Standing building recording	1980
MKT D	The Market Hall, Carlisle	Watching brief	1989
MKT E	The Market Hall, Carlisle	Standing building recording	1985
MTQ A	Moota Quarry	Desk-based assessment	1995
NCH B	Netherby Coop House	Standing building recording	1989
OGL M	Old Grapes Lane, Carlisle	Standing building recording	1982
OGL N	Old Grapes Lane, Carlisle	Standing building recording	1982
OGL O	Old Grapes Lane, Carlisle	Standing building recording	1982
OGL P	Old Grapes Lane, Carlisle	Standing building recording	1982
OTH B	Old Town Hall, Carlisle	Standing building recording	not known
SAN	The Sands, Carlisle	Watching brief	1983
SCO E	Scotch Street,	Standing building recording	not known

Site code	Site name	Event type	Date of work
	Carlisle		
SCO F	Scotch Street, Carlisle	Standing building recording	not known
SCO G	Scotch Street, Carlisle	Standing building recording	not known
SCO Q	Scotch Street, Carlisle	Standing building recording	1980
SCO DD	Scotch Street, Carlisle	Standing building recording	not known
SMB A	St Michael's Church, Burgh-by-Sands	Standing building recording	not known
SMG N	St Mary's Gate, Carlisle	Standing building recording	not known
SMG O	St Mary's Gate, Carlisle	Standing building recording	not known
SMS A	St Michael's Church, Stanwix	Standing building recording	not known
SRD	Scotland Road, Stanwix	Watching brief	1993
THB A	Meadowcroft, Thursby	Standing building recording	not known
WAR A	Warwick Road, Carlisle	Watching brief	1987
WGT E	Syke Road, Wigton	Watching brief	2000
WGT F	Syke Road, Wigton	Watching brief	2000
WWA B	West Walls, Carlisle	Standing building recording	1979
WWA C	West Walls, Carlisle	Standing building recording	1979

Table 6: List of CAU/CAL events where a documentary archive was not located (77 events)

4.4.2 In broad terms, it is estimated that the documentary archives for all CAU/CAL events (including those currently in Shaddon Mill and elsewhere) have a total volume of approximately 6.5m^3, equivalent to *c* 330 standard boxes. In addition, documents relating to the Lanes parent project, but not attributable to a specific event, account for a further *c* 1m^3, equivalent to *c* 50 standard boxes (see *Section 4.4.6*), giving an overall total of 7.5m^3, or 380 standard boxes. However, since the various files, folders, and boxes obviously do not form a solid, compact mass, the material currently occupies a space rather greater than this. It is estimated that the archives in Shaddon Mill alone currently occupy somewhere in the region of 11m^3 of shelving, equivalent to approximately 560 standard boxes. The entire assemblage (including the non-event specific Lanes material and all photographic binders) is thought to comprise approximately 1655 files and folders of all kinds. Estimates suggest there are also over 8900 oversize drawings of *c* A1/A2 size in the CAU/CAL archive. These drawings comprise the great bulk of the contents of the 16 plan cabinets that are currently stored in Shaddon Mill (13 upright and three lay-flat). The cabinets have a combined volume of approximately 11.2m^3. It should be noted that the calculations given above *do not* include either the material generated by non-CAU/CAL interventions or miscellaneous and non-site specific documents, which have been quantified separately (see *Sections 4.6*, *4.10* and *4.11*).

4.4.3 The size and quality of individual event archives varies considerably. Those associated with large-scale excavations, such as Annetwell Street and the Millennium Project, comprise many dozens of files, folders and binders and hundreds of drawings, whilst some of the archives relating to minor events such as watching briefs consist merely of a few notes on a sheet of paper. A detailed breakdown of the contents of each individual archive is available on the project database.

4.4.4 In the case of the Lanes parent project, quite large quantities of documentary materials were located that could be related to the project in general but not to a specific event within it. In total, it is estimated that this archive comprises approximately 130 files and folders of various types, with a volume of approximately $1m^3$ (equivalent to approximately 50 standard boxes). Approximately 117 oversize drawings of *c* A1/A2 size also form part of this assemblage. Since it was not possible to relate this material to an event, it could not be entered to the project database. A complete listing is, however, provided in *Appendix 8*.

4.5 QUANTIFICATION OF CAU/CAL ARTEFACTUAL AND ENVIRONMENTAL ARCHIVES

4.5.1 As with the documentary records, the great bulk of the artefactual and environmental assemblages generated by CAU/CAL remain in storage at Shaddon Mill, Carlisle, although some materials are, for various reasons, currently stored elsewhere (see *Section 4.3*). Details of all materials not presently in Shaddon Mill are available in the individual event records in the project database, and the data are also presented in tabular form in *Appendices 4* and *13-16*.

4.5.2 Artefactual archives of some sort were located for a total of 224 field events (72% of the total). Desk-based assessments and standing building recording events do not of course generate artefactual (or environmental) assemblages. Of the remaining 87 field events (28% of the total) for which no artefactual archive was located, the great majority (78) were small-scale watching briefs or rural evaluations, whilst nine were small-scale excavations. These data are summarised in Table 7. Events lacking an artefactual archive are indicated in *Appendix 1*. In all cases where an artefactual archive was absent, nothing was found in the documentary records to suggest that the event in question produced artefactual materials. It therefore appears that the absence of an artefactual archive represents a genuine lack of artefacts from these sites, rather than a failure to locate the materials during Stage 2.

Field event type	Archive located (% of total)	Archive not located (% of total)	Count
Excavation	87 (27.98)	9 (2.89)	96 (30.87)
Evaluation	72 (23.15)	15 (4.82)	87 (27.97)
Watching brief and other	65 (20.90)	63 (20.26)	128 (41.16)
Total	**224 (72.03)**	**87 (27.97)**	**311 (100)**

Table 7: Summary of status of CAU/CAL artefactual archives

4.5.3 By no means all fieldwork projects generate environmental samples, so it is unsurprising that many of the Carlisle events do not have an associated environmental archive. In all, environmental archives (comprising any combination of bulk soil samples, soil monoliths, wood samples, or other organic samples) were recorded for 95 field events (*c* 31% of the total). Of these, 60 were excavations, 20 were evaluations, and 14 were watching briefs. A single piece of structural timber, recovered from a standing building recording event, is also considered to constitute an environmental archive for that event. These data are summarised in Table 8. Those events that produced an environmental archive are indicated in *Appendix 1*.

Event type	Count	% of total
Excavation	60	63.16
Evaluation	20	21.05
Watching brief	14	14.74
Standing building recording	1	1.05
Total	**95**	**100**

Table 8: Summary of field events for which an environmental archive was located

4.5.4 In addition to the 95 field events for which environmental archives were located, there are 19 other events which, on the evidence of indices and other records present in the documentary archives, produced environmental materials that were not found during Stage 2 (Table 9). None of this material was located within the store at Shaddon Mill and there is nothing to suggest that any of it is currently stored elsewhere. Its whereabouts therefore remain unclear. Although it cannot be proven, it seems likely that the records relate to soil and wood samples that were discarded during the lifetime of the Carlisle unit. Why they should have been disposed of is not known; in some cases it may have been done after analysis was completed, whilst in others material may have been discarded because it had deteriorated to the point where it was no longer of any archaeological value.

Site code	Site name	Event type	Date of work	Record type
BBS A-B	Demesne Farm, Burgh-by-Sands	evaluation	1991	wood record sheets
BBS E	Burgh-by-Sands	excavation	1995	soil sample record sheets
BON B	Botcherby Nurseries	excavation	1997	soil sample index and record sheets; other records
CAL B	Crown and Anchor Lane, Carlisle	excavation	1982	wood record sheets
CAL E	Crown and Anchor Lane, Carlisle	excavation	1982	wood record sheets
CAS H	Carlisle Castle	building survey	1983	wood record sheets
CKL A*	Cocklakes	desk-based assessment	2000	soil sample index and processing sheets
KLA E	Keay's Lane, Carlisle	excavation	1982	soil sample processing sheets; wood record sheets
KNF X	Knowefield, Stanwix	excavation	1996	soil sample index
KPW A	Knockupworth Farm, Carlisle	evaluation	1997	soil sample record sheets
KPW B	Knockupworth Farm, Carlisle	evaluation	1997	soil sample record sheets
LDR A	Laing's depot, Dalston Road, Carlisle	evaluation	1994	other record
MKT C	The Market Hall, Carlisle	watching brief	1990	wood record sheets
OGL J	Old Grapes Lane, Carlisle	excavation	1982	wood record sheets
PHL A	Packhorse Lane, Carlisle	watching brief	1982	wood record sheets
TAR B (B)	Tarraby Lane, Stanwix	excavation	1996	other record
TAR C (D-E)	Tarraby Lane, Stanwix	excavation	1996	soil sample index
UCT A	Union Court, Carlisle	excavation	1982	wood record sheet
WGT G	Syke Road, Wigton	watching brief	2001	soil sample processing sheets

*Note: since CKL A was a desk-based assessment, this event cannot have generated an environmental archive. It seems probable that these records actually relate to one of two field events that formed part of the same parent project (CKL B and C) and were assigned to CKL A in error.

Table 9: Events where environmental records exist but no environmental archive was located

4.5.5 It is estimated that the entire CAU/CAL artefactual and environmental archive, or rather that part of it that can be related to specific projects (including mixed

boxes of materials from the Lanes project and other events), has a total volume of approximately 126m^3, equivalent to 6397 standard boxes. Additionally, wooden pallets holding oversize architectural stones and other heavy materials are calculated to occupy approximately 60m^2 of floor space, or *c* 6m^3 in volume (*c* 305 standard boxes). These estimates include all categories of artefactual and environmental materials currently stored both in Shaddon Mill and elsewhere. As with the documentary archives, however, this material occupies a space in Shaddon Mill considerably larger than that calculated above, since the boxes, tubs and other storage items obviously do not form a solid mass. At a rough estimate, the CAU/CAL artefactual and environmental archives currently occupy approximately 257m^3 of shelving within Shaddon Mill, equivalent to *c* 13,045 standard boxes.

4.5.6 As with the documentary archives, the size and quality of the artefactual and environmental collections varies considerably, and for the same reasons. A detailed breakdown of the contents of each individual archive is available on the project database.

4.5.7 In a number of instances, boxes of artefactual and environmental materials were located that could be related to a particular parent project but not to a specific event within that project. This was particularly common with materials relating to some of the larger parent projects. There were also numerous occurrences of boxes containing mixed assemblages comprising small quantities of material from several unrelated events. It is estimated that mixed boxes of this type currently stored in Shaddon Mill have a volume of approximately 4.5m^3, equivalent to approximately 228 standard boxes (these figures have been included in the estimates presented in *Section 4.5.4*). It is estimated that approximately 2.95m^3, or *c* 150 boxes, relate to the Lanes project, whilst the rest (*c* 1.55m^3 or 78 standard boxes) derive from a number of other events. Since these materials could not be related to a specific event, they could not be entered to the project database. Complete listings are, however, provided in the relevant *Appendices* of this report (*Appendix 9* for the Lanes, *Appendix 17* for the other sites).

4.6 QUANTIFICATION OF NON-CAU/CAL EVENT ARCHIVES

4.6.1 During the course of the Stage 2 assessment, primary archival elements for eight archaeological events pre-dating the formation of CAU in 1977 were found in Shaddon Mill, in addition to all the material generated by CAU/CAL from 1977 to 2001 (Table 10). Details of the contents of each archive are available on the adapted Archives Project database and are presented in summary form in Table 11. In total, the archives for these events comprise 51 files and folders of various types, 309 boxes of various sizes, and 93 oversize drawings of *c* A1/A2 size. Overall, these have a volume of approximately 5.7m^3, equivalent to *c* 288 standard boxes (*c* 0.3m^3 or 16 boxes of documentary records and *c* 5.4m^3 or 272 boxes of artefactual and environmental materials). By far the largest and most archaeologically significant of these assemblages is the archive generated by Dorothy Charlesworth's work on and adjacent to Annetwell Street from 1972 to 1979 (DC 72-79). This archive alone comprises 26 files/folders of documentary

materials and 191 boxes of artefacts and ecofacts, equivalent to approximately 167 standard boxes (*c* 3.3m^3). In addition, 61 oversize drawings are also present in the DC 72-79 archive.

Site code	Event name	Dates	Director(s)	Organisation
DC 72-79	Annetwell Street, Carlisle	1972-79	D Charlesworth	Department of the Environment
CAG 75	Grapes Lane and Hodgson's Court, Carlisle	1975	P Clack and P Gosling	Central Excavation Unit
CBS 77*	Cumberland Building Society/Fisher St, Carlisle	1977	D Neal	Central Excavation Unit
H 69	Hinton Hall, Haddenham, Cambridgeshire	1969	J Le Patourel	Department of the Environment
P 76	Old Grammar School, Penrith	1976	T Clare	Cumbria County Council
SCO 58-62*	Vasey's, 58-62 Scotch St, Carlisle	1976	T Clare	Cumbria County Council
TAR 76*	Tarraby Lane, Stanwix, Carlisle	1976	G Smith	Central Excavation Unit
YM 68-64*	York Minster	1968-74	A D Phillips	York Minster Excavation Committee

*NB These site codes were issued by OA North as part of Stage 2 for the purposes of data entry and data manipulation

Table 10: Non-CAU/CAL events with complete or partial archives in Shaddon Mill (eight events)

Site code	Event name	Archive type	Approx archive size (standard box equivalent and m^3)
DC 72-79	Annetwell Street, Carlisle	Documentary, artefactual, environmental	*c* 167 (*c* 3.3m^3)
CAG 75	Grapes Lane and Hodgson's Court, Carlisle	Documentary, artefactual	*c* 61 (*c* 1.2m^3)
CBS 77	Cumberland Building Society/Fisher St, Carlisle	Documentary, artefactual	*c* 36.5 (*c* 0.7m^3)
H 69	Hinton Hall, Haddenham, Cambridgeshire	Documentary, artefactual	*c* 17 (*c* 0.3m^3)
P 76	Old Grammar School, Penrith	Glass (post-medieval)	2 (0.05m^3)
SCO 58-62	Vasey's, 58-62 Scotch St, Carlisle	Interim report; animal bone	*c* 2 (0.05m^3)
TAR 76	Tarraby Lane, Stanwix	Documentary	*c* 2 (*c* 0.05m^3)
YM 68-74	York Minster	Documentary (medieval tile record sheets, medieval tile drawings; tile list; summary and notes. All original documents, not copies	0.5 (0.05m^3)
Total size			***c* 288 (*c* 5.7m^3)**

Table 11: Summary of contents of non-CAU/CAL archives in Shaddon Mill (eight events)

4.6.2 Whilst five of the non-CAU/CAL projects were undertaken in Carlisle and one in Penrith, the other two took place in Cambridgeshire and York. The Charlesworth archive and the archives relating to excavations at the Cumberland Building Society, Carlisle, in 1977 (CBS 77) and in the Lanes area of Carlisle in 1975 (CAG 75) were certainly the subject of analysis by CAU staff during the 1980s and early 1990s. None of the data from these sites was, however, fully published. The reason why the other archives, and in particular those associated with events that occurred outside Carlisle, came to be stored in the Mill are unknown, although it seems likely that CAU staff had also been engaged in analysis of these archives, or of particular archival elements, at some stage. The excavation undertaken by the Central Excavation Unit at Tarraby Lane, Stanwix, in 1976 (TAR 76 in Table 10) was subsequently published in *Britannia* (Smith 1978).

4.6.3 Additionally, one or more documentary records relating to 11 projects undertaken by organisations other than CAU/CAL were also noted in Shaddon Mill. In all cases, however, these documents proved to be photocopies of

original site records rather than primary archival elements. It is presumed that these documents were sent to Carlisle for the information of CAU/CAL personnel, who may have been working on the analysis of certain elements of the project (for example, the medieval pottery). Since these materials do not represent part of a primary archive they have been added to the category of miscellaneous or non-event specific material (see *Section 4.11*).

4.6.4 In addition to the above, small quantities of unprovenanced artefactual material were recorded, together with materials relating to nine sites or events that may never have been formal archaeological projects. In total, these materials have a volume of approximately 1.5m^3, equivalent to 76 standard boxes. All these materials are quantified in Table 12, and a brief assessment of their current packaging condition is provided. It should be noted that as these data are not event-specific they have not been added to the Archives Project database.

Site code	Event name	Material	Standard boxes	Other	Approx archive size (standard box equivalent)	Packaging condition
None	Beckfoot	mixed finds		1 small box	c 0.15	Good
					Sub-total: c 0.15	
BUS 72	Unknown	pottery	1	1 box (320 x 320 x 100mm)	c 1.5	Good
					Sub-total: c 1.5	
CAS?	Carlisle Castle	pottery	1		1	Good
		wood		2 unboxed fragments (1650 x 250 x 150mm, 120 x 220 x 100mm)	c 3	Require boxing
		stone		7 outsize stones	1 pallet	
					Sub-total: c 4 boxes and 1 pallet	
None	'Elizabeth's allotment'	glass	1		1	Good
					Sub-total: 1	
None	Kirkandrews	pottery		1 small box	c 0.15	Good
					Sub-total: c 0.15	
None	Laycock	tile	6		6	Good
					Sub-total: 6	

Site code	Event name	Material	Standard boxes	Other	Approx archive size (standard box equivalent)	Packaging condition
None	Lowther St gas main	pottery	1		1	Good
					Sub-total: 1	
None	Lowther St bus station	mixed-pottery	1		1	Good
					Sub-total: 1	
None	Weatheriggs, Penrith	post-Roman pottery	2		2	Good
					Sub-total: 2	
None	Unknown provnance	Roman pottery (for lectures)	5		5	Good
		post-Roman pottery (for lectures)	1		1	Good
		post-Roman pottery		1 plastic bag (370 x 240 x 100mm); 1 tray (600 x 400 x 100mm)	1.7	Require boxing
		brick	3		3	Good
		stone	2	65 outsize stones, of which 16 used to stabilise plan chests	2 and c 7 pallets	Stones in plan chests need extracting
		animal bone	1		1	Good
		coins		1 small box and 1 small plastic bag	c 0.2	Require boxing
		wood		2 unboxed fragments (930 x 330 x 20mm and 190 x 130 x 80mm); 2 plastic boxes (660 x 450 x 160mm and 320 x 230 x 160mm)	c 6	Require boxing
		C14 samples	1		1	Good

Site code	Event name	Material	Standard boxes	Other	Approx archive size (standard box equivalent)	Packaging condition
		organic material		1 box (270 x 240 x 40mm)	c 0.15	
		miscellaneous	4	1 small box	c 0.15	Good
					Sub-total: 21.2 boxes and 7 pallets	
Approx size					**c 76 standard boxes (c 1.5m^3)**	

Table 12: Artefactual and environmental materials in Shaddon Mill from sites/events of unknown status, and material of unknown provenance

4.6.5 When these materials are taken into account, the total archive of non-CAU/CAL events currently stored in Shaddon Mill comprises approximately 7.2m^3 of material, equivalent to *c* 365 standard boxes. Of this, the documentary archives comprise *c* 0.3m^3 (*c* 15 standard boxes), whilst the artefactual and environmental materials account for some 6.9m^3 (*c* 350 standard boxes).

4.7 CONDITION ASSESSMENT OF CAU/CAL DOCUMENTARY ARCHIVES

4.7.1 Details of the current condition of all the documentary archives are provided in the individual event records on the project database. In each case, an assessment of the condition of the archive is provided, together with comments on the likely extent of any remedial works that may be required. Key archival elements, such as documentary, photographic, artefactual and environmental indices, that are either missing or incomplete are discussed below (*Section 4.13.6-7*). A summary of the extent of missing or incomplete elements is also provided in (*Section 4.13.1)*. Although it is possible that some indices, particularly those comprising a single record sheet, could have been genuinely lost in the past, it seems likely that in the great majority of cases these 'missing' archival elements were never actually compiled.

4.7.2 The likely extent of remedial works required to bring the documentary archives up to deposition standard is discussed in detail in *Sections 6* and *7* of this report, where two options for the nature and extent of the Stage 3 works are set out.

4.7.3 Early in Stage 2 of the Archives Project, the entire documentary archive for all CAU/CAL events was re-ordered (*Section 3.3*). Most of the archives are currently stored on sturdy metal shelving racks in Shaddon Mill, although some materials are at the present time located away from the Mill *(Section 4.3*).

4.7.4 The documentary archive as a whole comprises the primary written, drawn, and photographic records generated by all CAU/CAL's archaeological work between 1977 and 2001, together with all documentation, illustrations and other materials produced as a result of subsequent post-excavation analysis and research. The latter includes a comparatively small amount of electronically-generated data in the form of old computer disks and files holding computer-generated trench location plans. Over the period of the Carlisle unit's existence, the archive appears to have grown organically, with little or no central control, with the result that it now comprises a large and somewhat haphazard collection of files and folders of many different types. Whilst none of the material appears to be deteriorating significantly at this stage, the question of re-packaging for long-term storage is clearly a major issue (see *Section 6)*.

4.7.5 ***Written archive***: it is estimated that the written records for all CAU/CAL events are currently stored in approximately 1275 files and folders of various types. The main types of folders used include A4 box files, lever arch files, ring binders, magazine files, and manila folders. Small quantities of other types of storage media are also present in some individual archives. In addition, there are approximately 130 folders of documents relating to the Lanes project that cannot be associated with a specific event, giving a total of *c* 1405 folders in all. It should be noted that these figures do not include miscellaneous (non-project) documentation, such as that relating to the administration of the Carlisle unit, or that generated by non-CAU/CAL events, both of which have been dealt with separately (*Sections 4.6.1, 4.10-4.11,* and *Appendix 2*).

4.7.6 Whilst the majority of the individual files in which the CAU/CAL written records are stored are in reasonably good condition, significant numbers show evidence of damage or deterioration. Many others are inadequately labelled, and indeed a programme of clear, consistent, and permanent labelling of the entire collection would be highly desirable. In general, it is clear that much of the archive does not conform to current standards for the long-term storage of archaeological archives. Many of the older card-based files, such as box files, magazine files, lever arch files, and manila folders, are unlikely to be made of acid-free materials, whilst in many of the archives paperwork is held together with staples and uncoated metal paperclips. Both of these are undesirable from the point of view of long-term storage, due to the potential damage their corrosion products can cause to the paper archive. There are also numerous examples of ring binders and lever arch files containing sheets that have come loose and are in danger of being lost.

4.7.7 As a *minimum* requirement, it is estimated that approximately 220 (*c* 16%) of the files and folders currently used to store the CAU/CAL written archive are in urgent need of replacement, and it would be advisable to re-label all or most of the rest. All loose sheets must also be repaired and re-integrated into the correct files and folders. Ideally, all the paper records should be re-packaged in acid-free cardboard archive boxes, and all staples and uncoated paper clips should be removed. Estimation of the numbers of staples and paper clips currently in the archive, or of loose sheets requiring remedial work, lay

beyond the scope of the current project. Any work of this kind would, however, necessitate the thorough checking of every file in the archive.

4.7.8 During the course of the Stage 2 assessment, it was noticed that, whilst the great majority of contexts sheets, finds and environmental indices, and other paperwork in each event archive, was correctly marked with the site code, a small proportion of the record sheets lacked this vital information. No doubt this can be put down to a simple oversight by those filling in the sheets, but the result is that it would be difficult or impossible to reunite these sheets with the rest of the archive if they ever became detached. Ideally, the contents of each archive should be checked and any such omissions corrected.

4.7.9 ***Drawn archive***: the great majority of the primary field drawings and other illustrations in the CAU/CAL archive were produced on oversize permatrace sheets of roughly A1-A2 size. Most of the sheets are ungridded and somewhat varied in size, since they were cut from rolls of permatrace. Latterly (from *c* 2000), the unit began to use pre-cut and pre-gridded sheets in A1, A2 and A3 sizes. All the estimated 8805 oversize drawings that can be attributed to specific events are currently stored on suspension strips in 13 upright steel plan cabinets. To this figure can be added a further 117 drawings relating to the Lanes project, which cannot be associated with a specific event, giving a total of 8922 oversize drawings. The much smaller numbers of A3 field drawings are mostly stored with the rest of the documentary archives in A3 ring binders. The great majority of A3-sized field drawings were generated during the Millennium project of 1998-2001. It should be noted that these calculations do not include oversize illustrations associated with non-CAU/CAL events, or those included amongst the miscellaneous and non-event specific materials (see *Section 4.6.1*, *4.10-4.11* and *Appendix 2*).

4.7.10 Most of the oversize drawings are in good condition and are reasonably well ordered and labelled within their respective cabinets, although a number require re-hanging, as their suspension strips have become (or are in the process of becoming) detached. The precise number of drawings that require re-hanging is not known, but estimates suggest that some kind of remedial work on the drawn archive may be required for a minimum of 50 field events (*c* 16% of the total). This is a particular problem with some of the older archives such as the Lanes, where some drawings have become stuck together by the adhesive used on the suspension strips.

4.7.12 There remains, however, the broader question of whether the drawings should be extensively re-ordered in the same way that the rest of the documentary archive was re-ordered during Stage 2 (*Section 3.3*). As things currently stand, the drawings for each individual event are stored together in numerical order, but the event archives generally are stored in no particular order, but are scattered randomly amongst the various cabinets. In practice, it is not too difficult to locate the drawings for any given event, since an index of the contents of each drawing cabinet has been produced during Stage 2 (see *Appendix 3*). Clearly, however, it would be desirable for the drawings to be stored in alphabetical order by site code, in line with the bulk of the documentary archive.

4.7.12 Most of the A3 field drawings are in good condition, although some binders require re-labelling. In some cases, the binders themselves are deteriorating and should be replaced.

4.7.13 In addition to the above, there are considerable numbers of illustrations that were once located in the Carlisle unit's drawing office. These comprise relatively small (generally A3- and A4-sized) drawings of many different types. Some are trench location plans and others original artwork for inclusion in client reports and other grey literature. Many of these consist of an inked acetate drawing taped onto a paper copy of a digitally generated OS map. There are also large numbers of original, card-mounted drawings of artefacts of all types, both archive-standard drawings and publication-standard illustrations for academic reports. Much of this material, which is quantified in the event records on the project database, is currently stored in magazine files with the documentary archives, although some is in lay-flat plan chests, where drawings from a large number of unrelated events are stored together in a rather haphazard manner.

4.7.14 ***Photographic archive***: the CAU/CAL photographic archive consists principally of colour slides, colour prints and associated negatives, and black-and-white contact prints and negatives. Much smaller quantities of black-and-white prints are also present in a few archives. With the exception of a small number of black-and-white enlargements, most of which appear to relate to the Lanes project, all slides, prints, contact prints, and negatives are stored in paper or plastic slide/print/negative sleeves in photographic ring binders. It is estimated that up to 250 files are present in the entire archive. The great majority of the binders are in good condition, with very few in an obviously poor state, although the whole collection would greatly benefit from a programme of re-labelling. Internally, however, the great majority of the sleeves in which the photographs and negatives are stored do not meet current standards for the long-term storage of archaeological archives and should be replaced.

4.7.15 In the case of the photographic archives for *c* 90 field events (*c* 29% of the total), it was found that some or (frequently) all of the individual slides and prints/contact prints are either not labelled at all or are not adequately labelled. Of these events, it is estimated that approximately 50 do not have an existing photographic index. In these cases, it is very difficult to see how this deficiency can now be remedied, but for the remaining 40 events it would be possible to label the photographs by referring to the relevant indices, although this is likely to be a time-consuming task.

4.7.16 Another major problem with the archive as it currently stands is that many of the photographic files contain images or negatives that relate to more than one event. Indeed, in some cases individual negative strips or contact strips contain images belonging to more than one event. This makes it impossible to store the photographs and negatives with the rest of the documentary archive. It is estimated that approximately 210 field events (*c* 67% of the total) have at least some photographic images currently stored in mixed folders. In the majority of these cases, it seems likely that all or most of the photographs for a particular event are stored in this way. In addition, up to 150 standing building recording

events (*c* 57% of the total) also have photographs/negatives and/or other documentary records that are currently stored in mixed folders. This would not be so bad if there was a record in the event archive that indicated in which file(s) the associated photographs and negatives were stored. Unfortunately, in many cases such a record does not exist, which makes it extremely difficult to locate the photographs or negatives for some events. Probably the only way to remedy this situation, short of taking copies of all the affected images, would be to number all the mixed photographic files and create an index of their contents, copies of which could then be placed in the relevant archives.

4.7.17 During the course of the Stage 2 assessment, it was also noted that in some archives the photographic index sheets had been stored in the same files as the photographs (slides or prints) themselves. In these cases, the indices should be extracted from the photographic files and re-united with the rest of the written records.

4.7.18 ***Digital archive***: the digital archive comprises four principal elements:

- approximately 500 5.25-inch floppy disks, containing analytical data relating to events undertaken during the 1980s and 1990s, together with other miscellaneous data;

- approximately 100 3.5-inch floppy disks containing analytical data, drafts of client report texts, and so on relating to events undertaken from the mid-1990s to 2001;

- approximately 1000 computer files, totalling 400Mb of data, which was salvaged from several old CAU/CAL computers at Shaddon Mill prior to disposal of the computers by Carlisle City Council. The files are mainly in Word, Excel and Access formats. Approximately 202 files, representing 329Mb of data, relate specifically to the Millennium project, and consist mainly of database back-ups and early versions of lists quantifying the finds. The other 798 files, representing 71Mb of data, consist mainly of non-event specific data, such as archival lists, correspondence and administrative documentation. These files were copied onto two CD-Roms;

- a total of 45 CAD files, in Terramodel format, holding digital trench location and survey data for a number of events undertaken between 1997 and 2001 (Table 13). For the purposes of the current project, not all the files were usable in the GIS, as not all were geo-referenced to the Ordnance Survey grid.

Site code	Event name	Event type	Date of work
AMB C	Amberfield, Burgh-by-Sands	excavation	1999
ART A	Arthuret, Solway Moss	evaluation	1999
BGT A	Botchergate, Carlisle	evaluation	1998
BGT E	King Street, Botchergate, Carlisle	evaluation	2001
BGT F	84-88 Botchergate, Carlisle	desk-based assessment	2001
BLA J	Blackfriars St, Carlisle	excavation	1998
BRM E	Frenchfield, Brougham, Penrith	excavation	1999
BRM F	Frenchfield, Brougham, Penrith	watching brief	2000
BRM G	Frenchfield, Brougham, Penrith	watching brief	2000
CAS F-G	Carlisle Castle	watching brief	2001
CAT T	No 4 The Abbey, Carlisle Cathedral Close	watching brief	2000
CKL B	Cocklakes	evaluation	2001
CKL C	Cocklakes	excavation	2001
COC A	The Fitz, Cockermouth	evaluation	1999
COC C	The Fitz, Cockermouth	evaluation	2000
COC D	Cockermouth, new auction mart site	evaluation	2001
GAL A	Garlands Hospital, Carlisle	evaluation	2000
GRN C	Edenholme Farm, Grinsdale	evaluation	1999
INF E	Cumberland Infirmary, Carlisle	evaluation	2001
KIK A	Kirkborough, Sycamore Road, Netherton	evaluation	2000
KIT A	Adjacent to A66, Kirkby Thore	evaluation	1999
KIT B	Field 8866, Kirkby Thore	evaluation	2000
M6 A	M6 extension (A74 upgrade)	desk-based assessment	2000
MIL 1	The Millennium, Carlisle, Trench 1	excavation	1998
MIL 2	The Millennium, Carlisle, Trench 2	excavation	1999
MIL 3	The Millennium, Carlisle, Trench 3	excavation	1999
MIL 4	The Millennium, Carlisle, Trench 4	excavation	1999
MIL 5	The Millennium, Carlisle, Trench 5	excavation	2000
MLH B	Milton House, Burgh-by-Sands	excavation	1998
NER A	Greenacres, Newton Reigny	evaluation	2001
PAP A	Papcastle (Time Team)	excavation	1998
PET A	Peter Lane, Morton, Carlisle	evaluation	1999
RIC D	Rickergate (Lanes extension), Carlisle	excavation	1998
RIH A	Rickerby House, Rickerby, Carlisle	evaluation	2001
RUS A	Rusland Tannery	evaluation	2000
SCA A	Scaleby Castle	evaluation	2000
SEA A	Field 0006, Seaton, Workington	evaluation	2001
SHA A	Field 0700, Shap	evaluation	2000
SRD E	Scotland Road, Stanwix, Carlisle	evaluation	1999
SRD F	18-22 Scotland Road, Stanwix, Carlisle	watching brief	1999
SXS E	Stanwix Primary School, Carlisle	excavation	1999
THU A	Meadowcroft, Thursby	evaluation	1999
THU B	Meadowcroft, Thursby	excavation	1999
WGT A	Syke Road, Wigton	evaluation	1998
WIN B	Windsor Way, Carlisle	excavation	1999

Table 13: List of CAU/CAL events for which digital (Terramodel) location/survey data was located

4.7.19 The old 5.25-inch disks are currently stored in cardboard boxes in OA North's premises at Lancaster. According to the labels, a considerable number contain data relating to specialist analysis of artefactual and environmental assemblages from some of the major field events of the 1980s, including the

Lanes, Annetwell Street, Castle Street, and Blackfriars Street. Data relating to other events of the 1980s and early 1990s also appear to be contained on some disks. In a large number of cases, however, the disks are unlabelled, or are labelled in a way that is unintelligible, and their contents are therefore unknown. All the 3.5-inch disks, the CD-Roms containing the data salvaged from the CAU/CAL computers, and the Terramodel data are currently stored at OA North's premises in Lancaster, where they were assessed as part of Stage 2 of the Archives Project.

4.8 CONDITION ASSESSMENT OF CAU/CAL ARTEFACTUAL ARCHIVES

4.8.1 As with the documentary archives, the likely extent of remedial works required to bring the artefactual and environmental archives to deposition standard is discussed in detail in *Sections 6-8*, where two options for Stage 3 are put forward. Details of damaged boxes and other containers that require replacement can be found in the individual event records on the project database. Like the documentary archives, it is clear that the current condition of the archive is variable.

4.8.2 ***Storage and packaging***: the collection is currently stored on sturdy metal racking, but often with several boxes stacked one upon another with no supplementary support. The number so stacked seldom exceeds three standard-sized cardboard boxes, but there is clear evidence that this practice has on several occasions contributed to the collapse of the outer packaging. The open nature of the racking means that the stored boxes have become extremely dusty and unpleasant to handle. The height of the racking necessitates frequent over-head lifting and large objects such as timbers stored on the top shelves of racks are effectively inaccessible. Heavy objects stored on the floor beneath the racking are also effectively inaccessible. Both situations also pose potential Health and Safety problems with regard to the lifting of heavy objects.

4.8.3 The relatively close proximity of the banks of racks means that the already inadequate natural and artificial lighting is reduced considerably. It is also easy to knock against individual boxes and dislodge labels. Where numerous small boxes are stored together, sometimes on stacks of a dozen or more, there is a significant risk of collapse.

4.8.4 ***Outer packaging***: outer packaging is principally of two sorts, namely card and rigid polythene containers. Standard rectangular cardboard boxes with stapled corners in large and small sizes, and polythene (Stewart) boxes in small, medium, and large sizes, are all present. There are also several examples of the use of cardboard boxes of non-standard sizes, including old packaging boxes evidently re-used opportunistically. In some instances, heavy and/or outsize materials, such as brick/tile, stone, amphorae, and substantially complete pots, are stored on or in flimsy wooden fruit trays and boxes. Repeated handling and movement of the material from one store/area to another over a number of years has caused some deterioration in some parts of the assemblage. In particular, many cardboard boxes show signs of damage, especially at the corners, where the staples have proved to be a point of weakness. Over-

packing of some of the large-sized boxes has also resulted in some collapse of individual boxes when stacked.

4.8.5 A substantial proportion of the sensitive artefactual assemblage is stored in non-standard packaging. Often this is the result of bespoke packaging and support made during the conservation process, but on occasion it is due to *ad hoc* storage in open trays and unsuitable containers, which leads to increased risk of damage, often to important pieces. A particular concern is the storage of many of the more attractive finds in open containers. This is as a result of some particularly attractive objects having been kept aside for display and public relations purposes and not subsequently returned to their original packaging.

4.8.6 ***External labelling***: simple storage systems such as that used at Shaddon Mill are reliant on the clear, permanent labelling of individual containers. It is clear that all boxes were originally labelled, and that some systematic effort had been made to maintain this labelling. The labels, however, are not self-adhesive, but are fixed to individual containers, both cardboard and polythene, with masking tape or other transparent sticky tape. It is an unfortunate fact that the adhesive on these tapes degrades rapidly, and most of the labels are now partially (and in some cases wholly) detached.

4.8.7 Labelling should be indelible and clearly legible. The use of ballpoint pens (Biros) has resulted in some loss, as the ink is not stable in sunlight and eventually fades completely. Although not a criticism of the packing, sloppy handwriting and illiteracy has resulted in some confusion, especially with numerals. In addition, the re-use of boxes without the complete obliteration of the former labelling has also led to some superficial confusion.

4.8.8 ***Internal packaging***: the condition of the internal packaging within containers holding sensitive artefactual materials varies greatly. In the case of finds from excavations undertaken during the 1980s and early 1990s, the predominant internal packaging used was small, self-adhesive manila envelopes. The use of such envelopes was common practice at the time but there are several problems associated with them. They can only be sealed once, and in order to avoid waste they tend not to be sealed, the flap being tucked into the body of the envelope. This creates a lack of security for the object within, since any disturbance can result in objects sliding out of the envelopes. As metal objects are generally unmarked, this can result in a loss of provenance and consequent diminution of archaeological importance. Furthermore, the envelopes are not rigid, so individual objects lack support unless tightly packed within their outer packaging, and this has inevitably led to the over-packing of many containers. The use of manila envelopes for copper alloy and iron objects appears not to have affected their condition, but it must be noted that the storage of lead in association with organic materials (such as these paper envelopes) is not now recommended.

4.8.9 On a number of occasions, an intermediate container has been provided. In these cases the individual finds within their envelopes are packed in small cardboard boxes, which are in turn nested within a larger cardboard box

(termed box in box within the database). This seems to have been a successful and secure method of packaging.

4.8.10 Objects from more recent excavations are predominantly stored in small, self-seal polythene bags. In the main these are perforated, as required, but again they lack support for the objects within. Only in the case of material derived from the most recent excavations was supplementary support provided by the addition of corrugated foam to the individual bags.

4.8.11 Today it is normal practice to store objects of different material categories separately, as their storage requirements differ. Material from many of the Carlisle projects, including many of the more recent excavations, is, however, stored in mixed boxes and is thus subject to an increased risk of damage or decay.

4.8.12 ***Internal labelling***: the majority of individual containers are clearly and indelibly labelled. The use of ballpoint pens raises fewer problems in this context, since the internal box environment is low-light, which reduces the likelihood of fading. However, the same problems of poor handwriting and literacy found on the external packaging (*Section 4.8.7*) also apply to the internal labelling.

4.8.13 ***Desiccants***: most boxes containing metalwork also contain conventional desiccants (silica gel). These are either loose in the outer packaging, loose within the internal packing, in sewn cloth bags, or in perforated or unperforated polythene bags within the outer packaging. It must be noted that the inclusion of silica gel within unperforated polythene bags serves no purpose whatsoever.

4.8.14 The silica gel used in all cases is of the blue/pink variety and all the gel encountered was pink, indicating high humidity. A considerable proportion of the Stewart boxes contain visible humidity indicator strips, and these too showed high humidity in all cases.

4.8.15 ***Box lists and other indicators of box contents***: none of the boxes examined contain box lists, and indeed it is known that the inclusion of box lists in storage containers was not routinely undertaken by the Carlisle unit. However, the audit carried out in 2000 (*Section 3.7.3*) resulted in a list of contexts or IRF numbers being written on the outside of a considerable number of the individual storage boxes. A complete check of the contents of all boxes against these lists was beyond the scope of the present project, but a running check in the case of boxes containing only IRFs consistently showed discrepancies, there usually being less objects within the box than was recorded during the audit. No attempt has been made at this stage to correlate finds to individual site archives.

4.8.16 ***Condition of sensitive materials***: in total, *c* 1000 boxes were investigated, together with approximately 100 other individual finds that were found loose on the shelves, detached from their respective archives (see *Section 3.8.1*). The condition survey was confined to material currently stored in Shaddon Mill and was based on a non-judgemental 10% sample of the material present

in each box (see *Section 3.8.10*), from which the data presented below have been extrapolated.

4.8.17 ***Coins***: in the main, coins had been separated from other objects of copper alloy or silver, and were stored separately in the individual project archives at Shaddon Mill. As far as could be ascertained, all coins were dealt with as IRFs, so the quantifications represent absolute quantities.

4.8.18 In total, 1140 coins were examined in Shaddon Mill and additional information was available regarding a further 534 coins from the Millennium Project, which are temporarily stored elsewhere, giving a total of 1674 coins for which data are available. No attempt was made to subdivide the coins chronologically, although an informed supposition is that at least 75% are of Roman date, with the majority of the remainder being post-medieval or modern. In spite of the fact that Carlisle was an important urban centre in the medieval period, relatively few medieval coins have been recovered from excavations within the city.

4.8.19 The coins stored at Shaddon Mill are generally boxed separately from the other copper-alloy objects. Silver coins are normally included in the same boxes, under the same headings. No attempt was made to quantify the silver examples separately. A single gold coin was also noted, boxed separately. The bulk of the assemblage is stored in 24 boxes containing only coins (plus four loose coins), and a further 22 mixed boxes contained small numbers of coins. There are a further nine boxes from the Millennium Project, making 56 boxes in total. These data are summarised in Table 14. Most of the large cardboard boxes contain mixed artefactual groups, of which the coins represent only one of several components.

Box type	Count	% of total
Large 'Stewart'-type	14	25.00
Small 'Stewart'-typ	1	1.79
Large cardboard box	23	41.06
Small cardboard box	17	30.36
Non-standard	1	1.79
Total	**56**	**100**

Table 14: Summary of external packaging in the assessed CAU/CAL coin assemblage

4.8.20 Silica gel was present in only four of the boxes. It was in all cases pink, indicating high humidity within the micro-environment of the outer packaging.

4.8.21 The coins in Shaddon Mill are stored in a range of inner packaging (Table 15). In general, the change from storage in manila envelopes to polythene self-seal bags reinforced with foam is chronological, with the assemblages from the more recent excavations being generally better packaged. The great majority of the coins that had been packed in reinforced polythene bags come from the Millennium Project of 1998-2001, where this type of packaging was standard.

Envelope type	Count	% of total
Manila only	168	10.03
Manila within polythene	693	41.40
Polythene only	114	6.81
Polythene and foam reinforcement	534	31.90
Other	165	9.86
Total	**1674**	**100**

Table 15: Summary of internal packaging in the assessed CAU/CAL coin assemblage

4.8.22 In the case of the coins, approximately 87% of the assessed material falls into Categories 1 and 2, which are regarded as stable and require only a programme of systematic monitoring (see *Section 3.8.8* for definitions). A further *c* 12.5% (Categories 1-3, 2-3) are at slightly higher risk and probably require more frequent monitoring. Only *c* 0.2% of the assemblage is likely to require significant intervention to ensure the continued stability of the objects in question. These data are summarised in Table 16 below.

Condition category	Count	% of total
1	99	8.68
1-2	246	21.58
2	649	56.93
1-3	75	6.58
2-3	69	6.05
3	2	0.18
Total	**1140**	**100**

Table 16: Summary of condition of the assessed CAU/CAL coin assemblage in Shaddon Mill

4.8.23 It proved difficult to assess the numbers of coins x-rayed, as comparatively few records or plates were located in the CAU/CAL archive. The assessment was therefore done on the basis of the presence of x-ray reference numbers written on the internal packaging. From this, an estimated 483 (42%) of the coins stored at Shaddon Mill have been x-rayed, a figure that largely coincides with the numbers conserved. All of the coins from the Millennium excavations have been x-rayed.

4.8.24 Numbers of conserved coins likewise proved difficult to determine, as conservation records were not readily available for most events. As with the copper-alloy assemblages, the assessment was done on the basis of the presence or absence of certain indicators (see *Section 4.8.32*). Of the material stored in Shaddon Mill, an estimated 512 coins (45%) have been subject to some cleaning and/or conservation. The assemblage from the Millennium excavations has been through a process of selection for conservation and all necessary work has been completed.

4.8.25 ***Gold and silver***: six items of gold were noted in the CAU/CAL assemblage (not including coins; see *Sections 4.8.17-24*), stored in a total of four small cardboard boxes (Table 17). All are relatively small and all appear to comprise fragments of jewellery. One gold object had been packed in a manila

envelope, whilst the other five are packed in polythene self-seal bags (Table 17). The items are in good condition (Category 1) but would benefit from more secure packaging. Conservation is unnecessary for these objects. In total, 13 fragments of silver (not including coins) and a further 60 items of what appeared to be nickel-silver were recorded. The silver is stored in a variety of boxes (Table 17), with internal packaging comprising several different types of envelope, in common with the rest of the IRF assemblage (Table 18). The items are in a condition similar to that of the copper alloy (see *Sections 4.8.26-33*); none have been obviously conserved or x-rayed. The nickel-silver artefacts, all of which appear to be relatively modern desert spoons, are stored loose and unwrapped in large, self-seal polythene bags within a single standard cardboard box. These items are unconserved and stable, but will require re-packaging if they are to be retained in the collection (Table 19). Two gold artefacts and one object of silver were recovered from the Millennium excavations and are actively curated.

Box type	Count
Gold	
Small cardboard box	4
Silver	
Small 'Stewart'-type	1
Large cardboard box	1
Small cardboard box	2
Nickel-silver	
Large cardboard box	1
Total	**9**

Table 17: Summary of external packaging in the assessed CAU/CAL gold and silver assemblage

Envelope type	Count	% of total
Gold		
Manila only	1	1.27
Polythene only	5	6.32
Silver		
Manila only	1	1.27
Manila within polythene	12	15.19
Nickel-Silver		
Polythene only	60	75.95
Total	**79**	**100**

Table 18: Summary of internal packaging in the assessed CAU/CAL gold and silver assemblage

Condition category	Count	% of total
Gold	6	7.59
1		
Silver		
1-2	12	15.19
3	1	1.27
Nickel-silver		
2-3	60	75.95
Total	**79**	**100**

Table 19: Summary of condition of the assessed CAU/CAL gold and silver assemblage in Shaddon Mill

4.8.26 ***Copper alloy***: as far as could be ascertained, all copper-alloy finds had been dealt with by CAU/CAL as IRFs, so that the quantifications represent absolute quantities. The figures exclude copper-alloy coins, which were assessed separately (*Sections 4.8.17-24*).

4.8.27 In total, 4137 copper-alloy objects were examined in the store at Shaddon Mill. Additionally, information pertaining to 1296 objects from the Millennium Project, which are temporarily stored elsewhere, was also available, giving a total of 5433 objects for which detailed data were collected. Further copper-alloy objects, and indeed artefacts of many other material categories, are known to be currently stored at other locations (see *Section 4.3* above and *Appendices 4* and *13-16*), but the precise numbers of individual artefacts are not known at the present time. These objects were not available for detailed examination. It must be noted that an IRF can comprise more than one fragment, but no attempt was made to quantify the assemblage in such detail at this stage.

4.8.28 The copper-alloy assemblage at Shaddon Mill is stored in 116 boxes and 15 bags, whilst that from the Millennium Project occupies another 34 boxes, giving an overall total of 165 containers. Information received from external specialists and others indicates that small numbers of copper-alloy artefacts are currently elsewhere, but the number of additional boxes these artefacts represent is not currently known. A breakdown of the types of boxes used in the storage of the rest of the assemblage is provided in Table 20. Silica gel was present in approximately 75% of the boxes examined in Shaddon Mill and was in all cases pink, indicating high humidity within the micro-environment of the outer packaging.

Box type	Count	% of total
Large 'Stewart'-type	50	30.30
Small 'Stewart'-type	15	9.09
Large cardboard box	41	24.85
Small cardboard box	38	23.03
Non-standard	6	3.64
Bags	15	9.09
Total	**165**	**100**

Table 20: Summary of external packaging in the assessed CAU/CAL copper-alloy assemblage

4.8.29 In Shaddon Mill, copper-alloy objects are stored in a range of inner packaging (Table 21). In general, the change from storage in manila envelopes to polythene self-seal bags reinforced with foam was chronological, the great majority of finds stored using reinforced polythene bags coming from the Millennium excavations of 1998-2001. With the exception of the Millennium Project, this detailed level of data was not available for the other copper-alloy objects currently stored away from Shaddon Mill.

Envelope type	Count	% of total
Manila only	1878	34.56
Manila within polythene	1539	28.33
Polythene only	620	11.41
Polythene and foam reinforcement	1381	25.42
Other	15	0.28
Total	**5433**	**100**

Table 21: Summary of internal packaging in the assessed CAU/CAL copper-alloy assemblage

4.8.30 It is clear that approximately 65% of the assessed copper alloy falls into Categories 1-2, which is regarded as stable and requiring only a programme of systematic monitoring. A further 31.5% (Categories 1-3 or 2-3) are at slightly higher risk and probably require more frequent monitoring. Only *c* 4% of the assemblage is likely to require significant intervention to ensure the continued stability of the objects in question (Table 22).

Condition category	Count	% of total
1	168	4.06
1-2	1259	30.43
2	1235	29.85
1-3	248	6.00
2-3	1056	25.53
3	171	4.13
Total	**4137**	**100**

Table 22: Summary of condition of the assessed CAU/CAL copper-alloy assemblage in Shaddon Mill

4.8.31 It proved difficult to assess the numbers of copper-alloy objects that had been x-rayed, as x-ray records and plates were only located for a relatively small

number of events. The assessment was therefore undertaken on the basis of the presence of x-ray reference numbers written on the internal packaging. Using this method it is estimated that approximately 1051 objects, representing *c* 25% of the material in Shaddon Mill, have been x-rayed. This figure is broadly consistent with estimates of the amount of conserved material (see *Section 4.8.32*), which suggests that x-radiography was regarded as part of the conservation process, rather than a tool to aid determination of what was to be conserved, as would be the case today. Where this method is adopted, most, if not all, of the copper-alloy assemblage is routinely x-rayed. In the case of the Millennium Project, approximately 50% of the assemblage was x-rayed. The rest of the material comprised simple objects in an extremely good state of preservation, for which x-radiography was unnecessary (OA North 2002b, 83).

4.8.32 Numbers of conserved objects likewise proved difficult to determine, as few conservation records were located within the documentary archives in Shaddon Mill. The assessment was therefore done on the basis of the presence or absence of certain indicators, such as supplementary packaging and/or the addition of conservator's comments or references (such as laboratory numbers). In some cases, the outer packaging was labelled as containing conserved or unconserved items. Of the material stored in Shaddon Mill, an estimated 1164 objects (28%) have been subject to some form of conservation. All of the Millennium Project copper alloy has been through a process of selection for conservation, and all necessary work has been completed on this assemblage.

4.8.33 It should be noted that the waterlogged conditions that are encountered widely in the Roman levels at Carlisle are unusually favourable to the survival of copper alloy, and objects are frequently recovered from these levels in pristine condition (Categories 1 or 1-2 in Table 22). In these cases there is no obvious need for x-radiography and the overall need for conservation is also often considerably reduced. This comment also applies equally to the assemblage of copper-alloy and silver coins in the CAU/CAL archives (*Sections 4.8.17-25*).

4.8.34 ***Iron***: in so far as could be ascertained, iron finds were dealt with by CAU/CAL in two different ways. Most were regarded as having archaeological significance in their own right, and were therefore dealt with as IRFs. In some instances, however, objects recovered from contexts considered to be of little archaeological significance (for example modern topsoil) were treated as bulk finds. The quantifications therefore represent absolute quantities when referring to IRFs and approximate estimations when referring to bulk finds.

4.8.35 In all, 5374 iron IRFs and 206 boxes of bulk iron were examined in Shaddon Mill. Additional information regarding 3546 iron IRFs from the Millennium Project, which are temporarily stored elsewhere, was also available, giving an overall total of 8920 IRFs from which data could be collected.

4.8.36 A rough estimate was made of the number of objects classed as bulk iron by counting the contents of two relatively typical boxes. Both were found to contain approximately 1000 small fragments (predominantly nails), which suggests a very approximate figure of 200,000 fragments for the assemblage as a whole.

4.8.37 The ironwork at Shaddon Mill is currently stored in 622 boxes (416 containing IRFs and 206 containing bulk iron) and 13 non-standard containers. The iron from the Millennium excavations occupies a further 124 boxes, giving a total of 746 boxes and 13 other containers. Information received from external specialists indicates that relatively small numbers of iron artefacts are currently elsewhere, but the precise number of additional boxes these artefacts represent cannot currently be estimated. A breakdown of the types of boxes used in the IRF assemblage from Shaddon Mill and the Millennium Project is provided in Table 23. Silica gel was present in approximately 38% of the boxes examined in Shaddon Mill and was in all cases pink, indicating high humidity within the micro-environment of the outer packaging.

Box type	Count	% of total
Large 'Stewart'-type	113	20.44
Small 'Stewart'-type	29	5.24
Large cardboard box	138	24.95
Small cardboard box	260	47.02
Non-standard	13	2.35
Total	**553**	**100**

Table 23: Summary of external packaging in the assessed CAU/CAL iron assemblage (IRFs only)

4.8.38 Iron objects are stored in a range of inner packing (Table 24). As with the other categories of sensitive materials in the CAU/CAL archive, the change from storage in manila envelopes to polythene self-seal bags reinforced with foam is chronological, with the objects from the most recent projects being, on the whole, better packaged than those from earlier excavations. Most of the objects stored in reinforced polythene bags come from the Millennium excavations of 1998-2001.

Envelope type	Count	% of total
Manila only	3529	39.56
Manila within polythene	1337	14.99
Polythene only	438	4.91
Polythene and foam reinforcement	3571	40.04
Other	45	0.50
Total	**8920**	**100**

Table 24: Summary of internal packaging in the assessed CAU/CAL iron assemblage

4.8.39 Approximately 66% of the assessed ironwork falls into Categories 1 and 2, which can be regarded as stable and requires only a programme of systematic monitoring. A further 28% (Categories 1-3, 2-3) are at slightly higher risk and will require more regular monitoring. Only *c* 6% of the assemblage are likely to need significant intervention to ensure their continued stability (Table 25).

Condition category	Count	% of total
1	27	0.50
1-2	314	5.84
2	3213	59.79
1-3	156	2.90
2-3	1337	24.89
3	327	6.08
Total	**5374**	**100**

Table 25: Summary of condition of the assessed CAU/CAL iron assemblage in Shaddon Mill

4.8.40 As with the other categories of metalwork, it proved difficult to assess the numbers of objects x-rayed in the absence of readily accessible records. The assessment was therefore done on the basis of the presence of x-ray reference numbers written on the internal packaging. An estimated 16% (868 objects) of the material in Shaddon Mill has been x-rayed, a figure that is broadly coincident with the amount of material that had been conserved. Approximately 33% of the Millennium material has been x-rayed. The rest of the assemblage comprised simple objects in an excellent state of preservation for which x-radiography was unnecessary, since it would have contributed nothing to the understanding of these objects.

4.8.41 In the absence of readily available conservation records, assessment of conservation status was done on the basis of the presence or absence of certain indicators (see *Section 4.8.32*). Of the material stored in Shaddon Mill, an estimated 506 objects, representing only *c* 9.5% of the assemblage, have been subject to some kind of conservation. All the iron from the Millennium excavations has been through a process of x-radiography and selection for conservation, and all the necessary work has been completed on this assemblage.

4.8.42 Even when dry and adequately packed, corroded ironwork is fragile and easily damaged. Any renewal of the process of oxidisation leads to extensive cracking as the corrosion layer lifts away from the active surface of sound metal. This can result in the literal explosion of objects as the corrosion layers shatter. This damage is much exacerbated by handling, even with care, and can reduce objects to a pile of small fragments. This mechanical damage is noticeable in a substantial proportion of the bulk iron and to a lesser extent in the IRFs currently stored in Shaddon Mill. Handling of this material was therefore kept to a minimum throughout the Stage 2 assessment.

4.8.43 It should be noted that the waterlogged conditions encountered in the earlier archaeological levels in some parts of Carlisle are relatively favourable to the survival of iron, and as a consequence objects are often recovered in good condition (Categories 1 or 1-2). There is, however, a large amount of corroded material in the Carlisle assemblage, since good survival of iron is more deposit-specific than is the case for other metals. Current best practice encourages the initial x-ray of all ironwork as a method of identifying objects that might be mistaken for nails, due to their surfaces being obscured by

corrosion products. Following this methodology would, however, result in considerable expenditure if it were applied to all the material stored at Shaddon Mill, much of which has not yet been x-rayed (*Section 4.8.40*).

4.8.44 ***Lead***: all lead finds appear to have been dealt with as IRFs by CAU/CAL, so the quantifications represent absolute quantities. In all, 1360 objects were examined in Shaddon Mill and additional information regarding 400 lead artefacts from the Millennium excavations was also obtained, giving a total of 1760 objects that were available for assessment.

4.8.45 The lead at Shaddon Mill is stored in 193 boxes and nine bags, whilst that from the Millennium excavations occupies a further eight boxes, making an overall total of 201 boxes and nine bags. The types of containers used to store the lead assemblage are summarised in Table 26. Silica gel was present in approximately 35% of the boxes and was in all cases pink, indicating high humidity.

Box type	Count	% of total
Large 'Stewart'-type	108	51.43
Small 'Stewart'-type	1	0.48
Large cardboard box	75	35.71
Small cardboard box	17	8.09
Non-standard (bags)	9	4.29
Total	**210**	**100**

Table 26: Summary of external packaging in the assessed CAU/CAL lead assemblage

4.8.46 The lead objects are stored in a range of inner packing (Table 27). As with most other categories of sensitive materials, the change from the use of manila envelopes to polythene self-seal bags reinforced with foam is chronological, with most of the latter being used for the finds from the Millennium excavations of 1998-2001. It is clear that around the time of the audit undertaken by the University of Bradford placement student in 2000 (*Section 3.7.3*), an attempt was made to upgrade the packaging of the lead objects in the Shaddon Mill store. This was done by placing the objects in unlabelled polythene self-seal bags, which were in turn placed inside the original manila envelopes, which retained the record of provenance. This group of material accounts for 639 (99%) of the 643 objects that appear in the 'Other' column in Table 27.

Envelope type	Count	% of total
Manila only	17	0.96
Manila within polythene	472	26.82
Polythene only	225	12.78
Polythene and foam reinforcement	403	22.91
Other	643	36.53
Total	**1760**	**100**

Table 27: Summary of internal packaging in the assessed CAU/CAL lead assemblage

4.8.47 Approximately 88% of the assessed lead falls into Categories 1 and 2, which can be regarded as stable and requires only a programme of systematic monitoring. A further *c* 11.7% (Category 2-3) require more regular monitoring, whilst only *c* 0.3% are likely to need significant intervention to ensure their continued stability (Table 28). Some of the lead objects were found to be covered by a thick layer of a dry, dusty white corrosion product that had also formed loose deposits within inner packaging. As all lead corrosion products are mildly toxic, this discovery raises possible Health and Safety concerns.

Condition category	Count	% of total
1	115	8.46
1-2	438	32.20
2	643	47.28
1-3	-	-
2-3	159	11.69
3	5	0.37
Total	**1360**	**100**

Table 28: Summary of condition of the assessed CAU/CAL lead assemblage in Shaddon Mill

4.8.48 As lead is x-ray opaque, it is not normal practice to x-ray this material. Consequently, none of the lead in Shaddon Mill has been subject to x-radiography, nor has any of the material from the Millennium excavations.

4.8.49 The lack of readily available conservation records has hampered the assessment of the conservation status of the lead assemblage. As with other material categories, therefore, the assessment was done on the basis of the presence or absence of certain indicators (see *Section 4.8.32*). Of the material stored in Shaddon Mill, an estimated 40 objects, representing only *c* 3% of the total assemblage, have been subjected to some form of conservation, in the majority of cases through the removal of corrosion products. The lead from the Millennium excavations went through a selection process for conservation and all the necessary work has been completed.

4.8.50 ***Leather***: the leather assemblage in Shaddon Mill was quantified by bag rather than by fragment, since the latter was outside the scope of the present assessment. Approximately 2014 bags of leather in 87 boxes and one non-standard container were examined, but it should be noted that the fragment count must be considerably larger than this figure, since individual bags might contain anything from one to several hundred fragments. In addition, 12 boxes of unconserved leather in poor condition were noted, containing an estimated 1000 further fragments (Table 29). Two large assemblages of leather, from the Millennium Project of 1998-2001 and the Rickergate excavations of 1998-9, were undergoing post-excavation analysis at the time of the assessment and were therefore not available for the present study. It is, however, known that all this material has been conserved and is in excellent (Category 1) condition.

Box type	Count	% of total
Large 'Stewart'-type		-
Small 'Stewart'-type		-
Large cardboard box	99	99.00
Small cardboard box		-
Non-standard (bags)		1.00
Total	**100**	**100**

Table 29: Summary of external packaging in the assessed CAU/CAL leather assemblage

4.8.51 For the most part, perforated self-seal polythene bags were favoured for the storage of conserved leather, although some of the material conserved in the 1970s is packed in tissue within shallow boxes; this practice was, however, confined mainly to material within the Dorothy Charlesworth (DC 72-79) archive. Unconserved material was stored damp in unperforated bags, either in refrigerators or in large cardboard boxes. Several of the bags have imperfect seals, which has allowed the leather to dry. The use of desiccants is not appropriate to the storage of leather and none were noted in the Carlisle assemblage.

4.8.52 From a rapid scan of every accessible bag of leather in Shaddon Mill, it is estimated that *c* 78.5% of the assessed material falls into the Categories 1 or 2, which can be regarded as stable and requiring only a programme of systematic monitoring. A further *c* 10% (Category 2-3) probably require more regular monitoring, whilst *c* 11.5% are likely to need significant intervention to ensure their continued stability (Table 30). This latter group of material could well be irredeemably lost, and it is suggested that a discard policy should be considered if this were the case.

Condition category	Count	% of total
1	313	15.55
1-2	791	39.27
2	474	23.53
1-3	-	-
2-3	199	9.88
3	237	11.77
Total bags	**2014**	**100**

Table 30: Summary of condition of the assessed CAU/CAL leather assemblage in Shaddon Mill

4.8.53 Approximately 49% of the total assemblage (984 bags) has been conserved, mostly by freeze drying. On occasion, this material was found to have been stored together with other items that had been air-dried. The rest of the assemblage assessed is unconserved. Some of this material has been air dried, whilst other items have been stored wet. It is clear from labelling on the packaging that at least 12 boxes of air-dried leather had been intended for discard, and it is quite possible that none of the unconserved leather from earlier sites was purposely retained. A small sub-set of leather has been conserved using a technique other than freeze-drying. A colourless viscous

liquid (possibly glycerine) was seen to be weeping from several of these items. This may have Health and Safety implications and will probably lead to the deterioration of this material in the medium to long-term.

4.8.54 ***Other organic materials***: although wooden artefacts should, strictly speaking, be included in this section, they have been incorporated for convenience into an overall assessment of the wood in the Carlisle archive (including artefacts, structural timbers and samples) that appears in *Sections 4.9.8-13*. In addition to objects of leather and wood, the assemblage of organic artefacts in the Carlisle archive comprises a small group of textiles and corded fibres (approximately 15-20 fragments). All but two fragments appear to have been conserved and were appropriately re-packaged during this process. All conserved fragments are in excellent condition (Category 1). The unconserved rope, which has been stored wet, appears stable (Category 1-2) but would benefit from conservation. Some damage was noted to the outer packaging on one item.

4.8.55 ***Glass***: an approximate 10% sample of the glass currently stored in Shaddon Mill was examined by rapid scan. Most was found to be adequately packed and in good condition, but some late glass, notably late seventeenth-eighteenth-century dark green bottles, is deteriorating slightly and the storage conditions for this material could benefit from review.

4.8.56 ***Prehistoric pottery***: all the small assemblages of prehistoric pottery in the Shaddon Mill store were examined by rapid scan. All were adequately packaged and in good condition, although the extremely friable nature of such pottery is always a cause for concern, and the material would therefore benefit from a packaging upgrade.

4.8.57 ***Other potentially sensitive materials***: small groups of ivory, jet/shale and amber (comprising two, 18 and four items respectively) were examined by rapid scan. All are sensitive to storage environment and extremes of humidity can cause lamination or shattering. Every object was examined and all seemed to be in good condition (Category 1-2) and stable. Packaging is, however, inadequate and should be improved. It was noted that on at least two occasions boxes labelled jet/amber were empty, with no indication of the whereabouts of the contents.

4.8.58 ***Condition of bulk materials***: bulk artefacts such as pottery, ceramic building materials, animal bones, metalworking slag, and stone were not assessed in the same detail as the sensitive materials, since these collections tend to be stable and at minimal risk of deterioration. A record of any defects noted in the external packaging was, however, made and any grossly overloaded boxes were noted.

4.8.59 It is estimated that the CAU/CAL bulk artefactual archive is currently stored in approximately 2750 boxes of all types. Of these, *c* 150 (*c* 6%), almost all standard boxes measuring 450 x 250 x 175mm, are currently in a poor condition and will require replacement. This includes a number that had been overloaded with heavy materials, such as brick and tile, or which had been stacked at the bottom of a pile of heavy boxes and had simply collapsed.

Almost the entire assemblage of boxes currently used to store the bulk artefactual materials require re-labelling, since in most cases the labels were secured with masking tape that has now lost its adhesive qualities. Consequently, many labels have become, or are in the process of becoming, detached from the boxes.

4.8.60 During the course of the assessment, it was noted that a not inconsiderable amount of bulk artefactual material in Shaddon Mill is currently stored in or on flimsy, open fruit trays or other unsuitable containers, rather than being properly packaged in sealed polythene bags within cardboard boxes. It is estimated that approximately 70 trays/containers of material, equivalent to *c* 80-100 standard boxes, will require replacement with new boxes. The materials currently stored on trays are thought to relate to approximately ten field events.

4.8.61 As with the sensitive artefactual materials, none of the boxes of bulk finds currently contain box lists. Most of the boxes are also coated with a thick layer of dust, and the condition of the internal packaging (principally polythene bags) within each box is extremely variable. Some bags are clearly overfilled with heavy materials and have split open. Furthermore, during the course of the Stage 2 assessment, several bags of missing artefacts from the Millennium Project were found in boxes of artefacts from other events, where they seem to have been deliberately placed. The remedial works planned for Stage 3 of the Archives Project will provide an opportunity to search for those Millennium artefacts (and possibly also items from other events) that remain unlocated.

4.8.62 ***General security***: as many of the artefacts examined during the course of Stage 2 have an intrinsic monetary value (in some cases quite a high value), improved security procedures should be considered for the archive as a whole.

4.9 CONDITION ASSESSMENT OF CAU/CAL ENVIRONMENTAL ARCHIVES

4.9.1 As with the other parts of the CAU/CAL archive, the likely extent of remedial works required to bring the environmental archives to deposition standard is discussed in *Section 6*. Details of damaged boxes and other containers that require replacement can be found in the individual event records on the project database.

4.9.2 ***Storage and packaging***: the current state of packaging and labelling of all the environmental materials in Shaddon Mill was assessed as part of Stage 2, and the data were entered into the project database. Many of the general comments on the storage and packaging of the artefactual archives (*Sections 4.8.2-16)* apply equally to the environmental archives.

4.9.3 ***Bulk soil samples***: for most of the lifetime of the Carlisle unit, soil samples were routinely taken and stored in 5-litre polythene bags that were themselves stored in standard cardboard boxes. It is estimated that approximately 750 standard boxes of soil samples and *c* 300 unboxed samples in bags are currently stored in Shaddon Mill (Table 31). An estimate of the total number of bagged samples contained within the boxes lay beyond the scope of the

present assessment. It is presumed that the bulk of the soil samples currently stored in Shaddon Mill were taken for palaeobotanical and palaeoentomological analysis, although this is not explicitly stated in most of the sample records.

Sample type	Count	% of total
Bagged bulk samples, boxed (No of boxes)	750	41.44
Bagged bulk samples, unboxed (No of bags)	300	16.57
Plastic sample tubs	600	33.15
Soil monolith samples (No of tins)	60	3.31
Other samples	100	5.53
Total	**1810**	**100**

Table 31: Approximate quantifications of assessed environmental soil samples

4.9.4 The majority of the smaller bagged samples are reasonably stable, although in a significant number of cases the soil has been exposed to the air and has dried out, often forming a solid, concreted mass within the bag. This is a particular problem with the assemblages from excavations undertaken in the late 1970s and 1980s. Furthermore, since several bagged samples were routinely stored in a single standard box, and boxes were often stacked one on top of another, the weight of soil has frequently resulted in the distortion or collapse of boxes. Consideration should be given to the adoption of an appropriate discard policy with respect to this material (see *Section 6.9*). The problems with the labelling of artefact storage boxes (*Section 4.8.59*) also apply to the boxes used to store environmental samples.

4.9.5 From the commencement of the Millennium Project in the late 1990s, it became standard practice for soil samples to be taken and stored in robust 10-litre plastic tubs. Most samples from CAU/CAL projects undertaken in the period 1999-2001 are stored in this way, and it is estimated that approximately 600 samples of this type are currently stored in Shaddon Mill (Table 31). These samples are for the most part well packaged, clearly labelled, and generally survive in an extremely good state of preservation. The majority are not stored on shelving racks but are stacked in rows up to three, four, or even five tubs in height directly on the floor of the Mill. The tubs appear, however, to be robust enough to tolerate this mode of storage without any problems of collapse or other damage to the packaging, at least in the short term. The method of stacking tubs on the floor in this way rather than on shelves was adopted by CAU/CAL, and was replicated when the assemblage was moved from Level 5 to Level 1 in 2004.

4.9.6 ***Soil monoliths***: soil monolith samples (also known as column samples) are present in the Carlisle archive, although in comparatively small numbers (approximately 60 have been recorded in Shaddon Mill; Table 31). These samples were taken to permit detailed analysis of soil formation processes within particular soil profiles. All are stored horizontally in the steel tins in which they were originally taken, some on the shelving racks used for the artefactual and environmental assemblages, whilst others have been placed on the floor, in some cases in stacks several tins deep. Most of the tins are wrapped with several layers of clear polythene and are adequately labelled. The condition of the soil within is not known as none of the wrappings were

removed during the assessment, although it was noted that several (perhaps most) of the tins are rusting to a greater or lesser degree.

4.9.7 ***Other samples***: several environmental samples other than bulk soil samples were examined by rapid scan. Approximately 100 units were noted (Table 31), mainly comprising small bags of dried flots or prepared microscope slides. All were in excellent condition.

4.9.8 ***Wood***: wood was quantified by bag rather than by fragment, since the latter would have been an extremely time-consuming exercise and would have necessitated the unwrapping of large timbers, which could have prejudiced the continued stability of these items. Approximately 2392 bags or wrapped baulks of wood were examined, but it must be noted that the actual fragment count will be considerably larger, as an individual bag might contain anything from one to tens of fragments. Other wooden items are known to be currently stored at other locations (see *Section 4.3* and *Appendix 2*) but these were not available for examination.

4.9.9 The Carlisle wood assemblage falls into three distinct groups, namely artefacts, structural timbers, and wood samples (Table 32). The latter were taken for species identification, dendrochronological dating or, less frequently, for radiocarbon assay. Significant numbers of conserved Roman wooden writing tablets were noted. All were optimally packaged between glass sheets within cushioned polythene bags that were themselves stored in plastic boxes. These artefacts were not assessed in detail in order to keep disturbance to a minimum and to maintain the integrity of the packaging.

Object type	Count	% of total
Wooden artefacts	418	17.47
Composite artefacts that include wood	43	1.80
Structural timbers	248	10.37
Samples for species identification	641	26.80
Samples for dendrochronological dating	718	30.02
Other	324	13.54
Total bags	**2392**	**100**

Table 32: Summary of the assessed CAU/CAL wood assemblage by object type

4.9.10 The wood at Shaddon Mill is stored in 150 boxes. A further 53 objects, mainly large timbers, are wrapped in polythene sheeting and are unboxed (Table 33). The use of desiccants is not appropriate to the storage of wood and none were noted. In general, perforated self-seal polythene bags were favoured for small, conserved wooden items. Unconserved material was stored damp in unperforated bags, either in refrigerators or in large cardboard boxes. Several of the bags were found to have imperfect seals, which had allowed the wood to dry out. In so far as it was possible to tell, all the surviving larger timbers in Shaddon Mill appear to be unconserved. A few conserved larger timbers from the Millennium site are currently on temporary display at Tullie House Museum and Art Gallery.

Box type	Count	% of total
Large 'Stewart'-type	11	5.42
Small 'Stewart'-type	2	0.98
Large cardboard box	128	63.05
Small cardboard box	9	4.44
Unboxed (polythene wrapped timbers)	53	26.11
Total	**203**	**100**

Table 33: Summary of external packaging in the assessed CAU/CAL wood assemblage

4.9.11 The condition survey was confined to material in store at Shaddon Mill, as the Millennium Project assemblage is regarded as being under active curation, whilst the small amounts of wood stored elsewhere were not available. Detailed assessment of individual objects was beyond the scope of the current project. Rather, the assessment was based on a rapid scan of every accessible bag or package of wood in Shaddon Mill. Most of the large timbers were not opened, either as a result of restricted accessibility, or on the premise that further disturbance would prejudice their stability. As a result of this work, it is estimated that *c* 94% of the conserved and unconserved wood assessed during Stage 2 fall into Categories 1 or 2, which can be regarded as stable and requires only a programme of systematic monitoring. A further *c* 2.5% (Categories 2-3) are at slightly higher risk and may require more frequent monitoring. Only around 3.5% of the assemblage are likely to need significant intervention to ensure continued stability (Table 34). This material could well already be irredeemably lost, and a discard policy should be considered, if this proves to be the case.

Condition category	Count	% of total
1	96	4.01
1-2	48	2.01
2	2100	87.79
1-3	-	-
2-3	64	2.68
3	84	3.51
Total bags	**2392**	**100**

Table 34: Summary of condition of the assessed CAU/CAL wood assemblage in Shaddon Mill

4.9.12 Approximately 20% of the assemblage in Shaddon Mill (484 bags) has been conserved, mostly by freeze-drying. This material comprises a mixture of artefacts such as combs, bowls and barrels, together with a number of sampled stakes and other small structural timbers. The storage of conserved wood appeared to have caused more problems than most other categories of finds, mainly on account of the fragility of freeze-dried wood. Several objects were found to have been broken, probably beyond repair, and several others are inadequately packaged. The remainder of the assemblage is unconserved and is mostly stored damp or wet within sealed polythene bags. In some instances,

the bags had become damaged and the contents had air-dried. This material is probably a candidate for disposal.

4.9.13 The huge assemblage of wood generated by the Millennium excavations has been reduced to a minimum by means of a structured discard policy that was applied to the structural timbers from the site, with the agreement of Tullie House Museum and Art Gallery. All artefacts have been conserved by freeze-drying and are securely packaged, and a few particularly important larger pieces have been selected for conservation, in consultation with Tullie House Museum and Art Gallery. Some unconserved material currently remains in store as a reserve, potentially for dating purposes, but it has been agreed that that majority of these items will ultimately be discarded. As the Millennium assemblage is currently undergoing active curation, final quantifications are not yet available.

4.10 CONDITION ASSESSMENT OF NON-CAU/CAL EVENT ARCHIVES

4.10.1 The documentary archives for the non-CAU/CAL events currently stored in Shaddon Mill were assessed in exactly the same way as the archives relating to the Carlisle unit events. The comments in *Section 4.7* therefore apply equally to these archives. The artefactual and environmental archives were not assessed in as much detail as those relating to CAU/CAL events, although records of the condition of external packaging and labelling were made.

4.10.2 ***Documentary archive***: the documentary records for all non-CAU/CAL events in Shaddon Mill are currently stored in a total of 51 files and folders. There are also 93 oversize drawings associated with two events, namely Dorothy Charlesworth's excavations on Annetwell Street (DC 72-79), and P Clack and P Gosling's work in the Lanes area (CAG 75). Most of the files are in reasonable condition, although all would benefit from re-labelling. Several of the oversize drawings are becoming detached from their suspension strips. Several dozen black and white photographic negatives in the DC 72-79 archive are inadequately labelled, whilst *c* 50 black and white prints in the CAG 75 archive are currently loose in box files and require appropriate packaging.

4.10.3 ***Artefactual and environmental archives***: the non-CAU/CAL artefactual and environmental archives in Shaddon Mill are currently stored in 310 boxes of various types. All but a handful of the boxes are in good condition and do not require replacement. As with the Carlisle assemblage as a whole, however, all the boxes urgently require re-labelling and the compilation of box-lists.

4.11 NON-EVENT SPECIFIC MATERIAL

4.11.1 In addition to the documentary records within each individual event archive, the Stage 2 assessment located a large amount of documentary material that does not relate to specific events or parent projects. Much of this material is paperwork relating to the administration of CAU/CAL, including timesheets, minutes of internal and external meetings, general correspondence, and other

miscellaneous paperwork. These documents were extracted during the course of the assessment, and are now stored in 111 files and folders on a separate shelving rack in Shaddon Mill (see *Section 3.3.5* and Table 3). Also stored on this shelving are various miscellaneous items of equipment and stationary that were removed from the archive during Stage 2. Since these materials cannot be related to a specific event they do not appear on the project database, but a complete listing is provided in *Appendix 2*. In total, they have a volume of approximately 3.6m^3, equivalent to approximately 183 standard boxes, although they currently occupy rather more than 4m^3 of shelving space in Shaddon Mill.

4.11.2 In total, 526 oversize illustrations, mostly old editions of Ordnance Survey maps, have also been attributed to this category. No assessment of the present condition of any of the non-event specific materials was made, although the manner in which they are currently stored was recorded.

4.12 EXTRACTION OF TRENCH LOCATION DATA FOR CARLISLE UAD

4.12.1 During the Stage 2 assessment a search was made in the CAU/CAL archive for trench location plans for all field events situated within the City and District of Carlisle, in accordance with the requirements of the Carlisle UAD (OA North 2007). In a few of cases plans were available in published sources, but for the great majority of events it was necessary to obtain the data from client reports or, in a considerable number of cases, directly from the primary drawn records.

4.12.2 Of the 311 field events undertaken by CAU/CAL from 1977 to 2001, 53 were outside the City and District of Carlisle and were therefore not relevant to the UAD. Although it was known that not all of the remaining 258 events would be situated within the UAD study area, the precise boundaries of the UAD had yet to be agreed when the Stage 2 work was being undertaken. For this reason, it was necessary to attempt to locate plans for all these events.

4.12.3 For the purposes of this project, the events for which plans were needed have been divided into four groups or grades, depending upon the locational data that were available:

Grade 1: events where the individual trenches could be accurately located in relation to modern Ordnance Survey mapping;

Grade 2: events where the trenches could be located with some slight margin of error, or where the boundary of the site could be accurately located in relation to modern Ordnance Survey mapping;

Grade 3: events where only the site boundary could be located, and even this cannot be regarded as definitely accurate;

Grade 4: events for which no useful location data could be found.

4.12.4 Of the 258 events for which location data were required, plans of some kind were obtained for a total of 238 (92%), although the quality and accuracy of the data were variable. Accurate trench plans that could be located precisely in relation to modern Ordnance Survey mapping (Grade 1) were found for 193 sites (75%). These plans were extracted from the documentary archives and transferred to OA North's premises in Lancaster, where they were scanned and digitised. A total of 24 events (9%) could be assigned to Grade 2 and a further 21 (8%) to Grade 3. The plans for these events were also transferred to Lancaster for scanning and digitisation. In the case of 20 events (8%), usable data were completely absent and the sites could not be located (Grade 4). These data are summarised in Table 35, and a full list of all the relevant field events is provided in *Appendix 18*.

Grade	Count	% of total
1	193	75
2	24	9
3	21	8
4	20	8
Total	**258**	**100**

Table 35: Summary of trench location data available for field events within the City and District of Carlisle (for explanation of grades see Section 14.12.3)

4.13 MISSING INFORMATION

4.13.1 ***Missing Stage 1 data***: during Stage 2, a search was made of the documentary archives for basic information that could not be located during Stage 1 of the project. Using data generated from the project database, the relevant event archives were targeted in the hope of recovering some of this missing information, although in the event very little new data was found. The amount of basic information that remains unaccounted for is summarised in Table 36.

	Event type					
	Excavation	Evaluation	Watching brief	Standing building	Other	**Total**
Information category						
Director	-	-	2	-	-	**2**
Dates	-	-	1	29	-	**30**
Reason	-	-	-	40	-	**40**
Summary	1	-	-	-	-	**1**
Parish	-	-	-	-	1	**1**
Grid ref	-	-	-	-	-	**-**
Site type and period	-	-	-	-	-	**-**
Land use	-	1	-	-	1	**2**
Landowner	3	4	30	91	1	**129**
Landowner address	6	4	39	95	7	**15**
Client	-	1	1	1	-	**3**

Table 36: Summary of basic information relating to CAU/CAL events that could not be located during the Carlisle Archives Project

4.13.2 During Stage 1, it was thought that a search of Land Registry records might be required in Stage 2 in order to determine land ownership for a number of events where this information was lacking. The information was potentially of vital importance in determining ownership of the artefactual assemblages recovered from these sites. On the completion of Stage 1, landowner details remained completely absent for a total of 37 field events, not including standing building recording events or those sites that were known to have produced no artefactual archives (OA North 2003, 28, table 16). Of these, however, no less than 26 were events (listed in Table 37) that involved works undertaken by the major utilities companies (gas, water and electricity). In almost all cases, the archaeological works associated with these events comprised a watching brief undertaken during the insertion or replacement of sewers, water pipes, gas pipes, or electricity cables set in long, narrow pipe/cable trenches. These service trenches invariably ran for considerable distances, mostly along streets or roads in the centre of Carlisle (although a few extended for several kilometres across open countryside), and therefore inevitably crossed land that was in multiple ownership. In order to ascertain ownership of artefacts from these events, therefore, the following information would be required:

i) the names and addresses of all the landowners *at the time the archaeological work took place*;

ii) the owners' current addresses;

iii) the *precise find-spot* of each artefact.

Site code	Event name	Event type	Year
ABB A	Abbey Street	Watching brief	1987
ANN B	Annetwell Street	Watching brief	1987
BBS E	Burgh-by-Sands	Excavation	1996
BNS B	Bowness-on-Solway	Watching brief	1999
BNS C	Bowness-on-Solway	Watching brief	2000
BOT A	Botchergate	Watching brief	1985
BRM A	Brougham	Watching brief	1995
CGT A	Caldewgate	Watching brief	1983
CST A	Castle Street	Watching brief	1980
CST C	Castle Street	Watching brief	1983
CST D	Castle Street	Watching brief	1983
CST E	Castle Street	Watching brief	1986
CST F	Castle Street	Watching brief	1986
DRU A	Drumburgh	Watching brief	1999
EDS A	English Damside	Watching brief	1987
ENG A	English Street	Watching brief	1987
FIS A	Fisher Street	Watching brief	1983
GLS A	Glasson	Watching brief	1999
GMK A	Green Market	Watching brief	1983
JAS A	James Street	Watching brief	1983
LOW	Lowther Street	Watching brief	unknown
PAP B	Papcastle	Watching brief	2000
PAT A	Paternoster Row	Watching brief	1982
RKG A	Rickergate	Watching brief	1997
SRD	Scotland Road	Watching brief	1993
WAR A	Warwick Road	Watching brief	1987

Table 37: Events involving service providers where landowner details remain unresolved (26 events)

4.13.3 During the Stage 2 assessment, it was very quickly ascertained that in almost all cases detailed information on the precise find-spots of individual artefacts was not available in the relevant event records. In some cases, it might have been possible to trace individual objects back to an approximate find-spot if the location of the context from which they were recovered was known. This would, however, have been an extremely time-consuming task, since it would have to be undertaken separately for almost every individual potsherd, coin, or bone fragment. Furthermore, it was found during Stage 2 that, in the great majority of cases, these events produced only very small artefactual archives of little archaeological potential. It soon became apparent, therefore, that it would not be cost-effective to pursue land ownership in these 26 cases.

4.13.4 Of the remaining 11 events, eight proved to have limited artefactual assemblages following the Stage 2 assessment (Table 38). Since Stage 1 had suggested that Land Registry searches were unlikely to be cost-effective for those events with limited artefactual archives and/or little archaeological potential (OA North 2003, 46), no further work was undertaken in pursuit of information pertaining to these eight sites. This left only three events where a search was considered to be worthwhile. As it transpired, however, a Land

Registry search proved unnecessary even in these cases, since land ownership details were successfully obtained through a second search of planning records held by Carlisle City Council (the first search having been carried out during Stage 1). The landownership details for these events are detailed in Table 39.

HOWGILL	Howgill	Finds collection	1984
KGM B	Kingmoor, Carlisle	Evaluation	1998
KIT A	Adjacent to A66, Kirkby Thore	Evaluation	1999
LCA A	Land adjacent to Park House Farm, Lowca	Evaluation	1996
OPR	Old Penrith	Excavation	1997
SHS A	South Henry Street, Carlisle	Watching brief	1982
STANWIX	Stanwix, Carlisle	Watching brief	1991
TAR B (trench B)	Tarraby Lane, Stanwix, Carlisle	Excavation	1996

Table 38: Events with limited artefactual archives where landowner details remain unresolved

Site code	Event name	Event type	Year	Landowner
LOW A	46-52 Lowther Street	Watching brief	1990	Universal Land Development (UK)
RIH A	Rickerby House	Evaluation	2001	McKnight and Son Builders
SRD C	Scotland Road	Watching brief	1986	The Church Commissioners

Table 39: Events for which landowner details were traced during Stage 2

4.13.5 All the additional data collected during the course of Stage 2 were added to the adapted project database. It seems probable that any basic information that has not already been recovered is unlikely to be located in the future.

4.13.6 ***Missing archival elements:*** one of the most important results of Stage 2 has been the production of a database containing detailed information about the contents of each project archive generated by CAU/CAL. The collection of these data has also facilitated the compilation of a list of basic archival elements (particularly indices) that are *not* present in the individual documentary archives (Table 40). In most cases, it is not known why these documents are missing, although it seems probable that in the majority they were never completed during the course of the project.

Missing archival element	Count (no of events)
context index	91
drawings index	108
photographic index	110
bulk finds records/indices	61
small finds indices	51
environmental records/indices	21
site summary	14
Total	**456**

Table 40: Summary of basic archival elements missing from the CAU/CAL documentary archives

4.13.7 Most of the missing indices and other elements could be compiled as part of the Stage 3 remedial works. It would, however, be extremely difficult to compile photographic indices retrospectively unless chalkboards or similar features containing contextual information appear in the photographs (which in many cases they do not).

4.13.8 In addition to the above (see also *Section 4.8.16*), a major failing of the CAU/CAL archive as it currently stands is the almost complete absence of box-lists providing summaries of the contents of each box of artefactual material in Shaddon Mill. The provision of such lists will be a fundamental requirement of Stage 3.

4.14 ARCHIVE DEPOSITION

4.14.1 ***CAU/CAL events:*** although the great majority of archaeological interventions carried out by CAU/CAL occurred within the City and District of Carlisle, it was known that a relatively small number of events had taken place in other administrative districts within Cumbria. The spatial distribution of events and parent projects are summarised in Table 41, which includes the extra event and parent project located during the course of Stage 2 (see *Section 4.2*).

District	No of events	% of total	No of parent projects	% of total
Carlisle	533	90.96	194	82.55
Allerdale	32	5.46	23	9.78
Eden	14	2.39	11	4.68
Copeland	5	0.85	5	2.13
South Lakeland	1	0.17	1	0.43
Outside Cumbria	1	0.17	1	0.43
Totals	**586**	**100**	**235**	**100**

Table 41: Distribution of parent projects and events by administrative district

4.14.2 As a result of the detailed assessment undertaken during Stage 2, it is now possible to produce estimates of the amounts of archival material that may ultimately require deposition with the appropriate receiving museums in each of the administrative districts listed in Table 41. For each district, details of the approximate size of each archival holding, together with information on the location of any archival elements not currently stored in Shaddon Mill, have been provided to the relevant museums. A summary of the quantification data is presented in Table 42, and a list of events located outside Carlisle District is provided in Table 43.

District	Museum	Archives (Events)	Files and folders (all types)	Boxes (all types)	Total volume (m^3)	Oversize drawings
Allerdale	Helena Thompson	32	*c* 79	*c* 539 (*c* 158)*	*c* 10.98 (*c* 3.46)*	571
Carlisle	Tullie House	533	*c* 1529	*c* 6006	*c* 129.02**	8199
Copeland	Beacon Heritage Centre	5	*c* 8	3	*c* 0.05	28
Eden	Penrith	14	*c* 33	30	*c* 0.81	113
South Lakes	Kendal	1	*c* 2	2	*c* 0.11	11
Gloucester	Gloucester	1	4	-	*c* 0.03	-
Sub-total		***586***	***c 1655***	***c 6580 (6199)****	***141 (133.48)****	***8922***
Non-CAU/CAL archives		8	162	401	5.7	93
Miscellaneous material		-	111	-	3.6	526
Unprovenanced material		-	-	38	1.5	-
Sub-total		***8***	***273***	***439***	***10.8***	***571***
Total		**594**	***c* 1928**	***c* 7019 (6638)***	***c* 151.8 (144.28)***	**9541**

*Figures in brackets exclude 381 boxes of human remains from the excavations at St Michael's Church, Workington, (SMW A and SMW B-F) which have been re-interred in the crypt of the church and may therefore not be available for future deposition.
** The volume of material to be deposited with Tullie House Museum and Art Gallery includes approximately $6m^3$ of oversized artefactual materials currently stored on pallets

Table 42: Approximate quantities of archival materials to be deposited with receiving museums, and materials where deposition remains uncertain

4.14.3 The work undertaken during Stage 1 of the Archives Project demonstrated that no deposition agreements existed for any of the archives generated by CAU/CAL (OA North 2003, 19). It is also clear that some museums in the region are currently reluctant, or unable, to accept archival materials from archaeological excavations (for example, Heritage and Arts Unit 2001, part 3, 4). Consequently, whilst it is probable that the great bulk of the archival materials in Shaddon Mill will ultimately be received by the appropriate museums, the possibility that some items may be stored or displayed elsewhere, either due to the wishes of their owners or for other reasons, cannot be discounted. It is important to note that the figures presented in Table 42 are based on the assumption that *all* documents, artefacts, and ecofacts will ultimately be accessioned by the relevant receiving museums. The calculations take no account of materials that may end up elsewhere.

District	Parent project	Events (site codes)	Event type
Allerdale	Bowness-on-Solway, Maia House	BNS A	Evaluation
	Bowness-on-Solway, water mains	BNS B	Watching brief
	Bowness-on-Solway, electricity cables	BNS C	Watching brief
	Bowness-on-Solway, fieldwalking	BNS D	Fieldwalking
	Cardurnock, water mains	CDK A	Watching brief
	Cockermouth, The Fitz	COC A, C	Evaluation
	Cockermouth, Bridge St	COC B	Evaluation
	Cockermouth, new auction mart site	COC D	Evaluation
	Drumburgh, water mains	DRU A	Watching brief
	Glasson, water mains	GLS A	Watching brief
	Kirkbride, roadworks	KIB A	Watching brief
	Netherton, Kirkborough, Sycamore Rd	KIK A	Evaluation
	Workington, Lillyhall landfill site	LHL A	Desk-based assessment
	Maryport, Irish St	MAR A	Watching brief
	Maryport pumping station	MPS A	Watching brief
	Cockermouth, Moota Quarry	MTQ A	Desk-based assessment
	Cardurnock, North Plain Farm	NPF A	Watching brief
	Papcastle (Time Team)	PAP A	Excavation
	Papcastle, electricity cables	PAP B	Watching brief
	Stainburn bypass	SBP A	Walkover survey
	Seaton, Workington	SEA A	Evaluation
	St Michael's Church, Workington	SMW A, B-F	Evaluation, Excavation
	Wigton, Tiffenthwaite Farm, Syke Rd	WGT A, B, C, D, E, F, G	Evaluation, Watching brief
	Westnewton (Silloth reinforcement pipeline)	WNT A	Watching brief
Copeland	Egremont Castle	EGT A	Watching brief
	Park House Farm, Lowca	LCA A	Evaluation
	Lowca	LWC A	Evaluation
	St Bridget's Church, Moresby	MSB A	Watching brief
	Westlakes Science and Technology Park	WHI A	Evaluation
Eden	Brougham, water main	BRM A	Watching brief
	Brougham Castle, custodian's cottage	BRM B	Excavation
	Brougham, Frenchfield	BRM C, E, F, G	Evaluation
	Brougham Castle, display boards	BRM D	Watching brief
	Kirkby Thore, A66 widening	KIT A	Evaluation
	Kirkby Thore, field 8866	KIT B	Evaluation
	Newton Reigny, Greenacres	NER A	Evaluation
	Old Penrith, telegraph poles	OPR	Excavation
	Penrith, Southwaite Green Mill	PSM A	Evaluation
	Sandford	SDF A	Evaluation
	Shap, Field 0700	SHA A	Evaluation
South Lakeland	Rusland Tannery	RUS A	Excavation
Gloucester	Blackfriars, Gloucester	BFG A	Desk-based assessment

Table 43: List of CAU/CAL parent projects and events located outside the City and District of Carlisle

4.14.4 ***Non-CAU/CAL events:*** archival elements relating to eight non-CAU/CAL events are currently stored in Shaddon Mill (*Section 4.6*). Of these, three (CAG 75, CBS 77 and TAR 76) relate to excavations in Carlisle (at the Lanes, the Cumberland Building Society, and the Tarraby Lane respectively) that were carried out during the 1970s by the then Central Excavation Unit (CEU) of the Department of the Environment (DoE). The archive of the late Dorothy Charlesworth's work at Annetwell Street, Carlisle, from 1972 to 1979 (DC 72-79) was also created under the auspices of the DoE, since Ms Charlesworth was an Inspector of Ancient Monuments at the time of the excavations.

4.14.5 Recent discussions with appropriate personnel from Tullie House Museum and Art Gallery, the Centre for Archaeology, English Heritage, and CCCHER have indicated that Tullie House Museum and Art Gallery would be the most appropriate repository for the material generated by these four events. Indeed, English Heritage's records at Fort Cumberland indicate that the Tarraby Lane archive was fully deposited with Tullie House Museum and Art Gallery in 1995, so it is unclear how the documentary records came to be stored at Shaddon Mill. Probably they were loaned by the museum to CAU personnel undertaking post-excavation work on CAU events in the Tarraby Lane area, but were never returned. The Cumberland Building Society archive appears to have been similarly loaned for the purposes of conducting post-excavation and publication work on the results of this excavation. In this case, a considerable amount of work does seem to have been done and an incomplete draft report produced, although the project was never completed.

4.14.6 It was further agreed that the archive generated by Tom Clare's work at Scotch Street, Carlisle, in 1976 (SCO 58-62) should also be deposited with Tullie House Museum and Art Gallery, whilst the glass from his excavations at Penrith Old Grammar School in 1976 (P 76) should be deposited with Penrith Museum. The drawings and records pertaining to the collection of medieval tiles from the York Minster excavations of 1968-74 (YM 68-74) should be returned to York Minster Library, where the rest of the archive associated with that project is currently held (L Hampson *pers comm*). The Library has confirmed that it is willing to accept the archive. Cambridgeshire County Council's Historic Environment Record have indicated that they would be prepared to take the archive relating to the 1969 excavation at Hinton Hall in Cambridgeshire (H 69). This information is summarised in Table 44.

Site code	Event name	Receiving museum/organisation
DC 72-79	Annetwell Street, Carlisle	Tullie House Museum and Art Gallery
CAG 75	Grapes Lane and Hodgson's Court, Carlisle	Tullie House Museum and Art Gallery
CBS 77	Cumberland Building Society/Fisher St, Carlisle	Tullie House Museum and Art Gallery
H 69	Hinton Hall, Haddenham, Cambridgeshire	Historic Environment Record, Cambridgeshire County Council
P 76	Old Grammar School, Penrith	Penrith Museum
SCO 58-62	Vasey's, 58-62 Scotch St, Carlisle	Tullie House Museum and Art Gallery
TAR 76	Tarraby Lane, Stanwix	Tullie House Museum and Art Gallery
YM 68-64	York Minster	York Minster Library

Table 44: Possible receiving bodies for non-CAU/CAL archival materials currently stored in Shaddon Mill

4.15 ESTIMATION OF DIGITAL INFORMATION

4.15.1 Following completion of Stage 2 of the Archives Project, an attempt was made to estimate the likely size of the project's digital archive at the end of the Stage 3 remedial works. This was necessary in order to inform both the ADS, to whom the data will ultimately be sent for long-term storage, and all other relevant organisations to which the data might be disseminated (*Section 4.17*). The estimate was achieved by adding the additional tables that are proposed for Stage 3 (see *Section 8.2*) to the existing Stage 2 database, the size of which is of course known. In order to reduce the size and complexity of the database at the end of Stage 3, it is proposed that all lookup tables be removed, since they will no longer be required after data entry has been completed.

4.15.2 It is estimated that the project's digital archive will ultimately comprise the following components:

- a database, consisting of 12 tables generated during Stage 1 of the Archives Project (OA North 2002a, 20-2, table 6; OA North 2003, 6, table 1), two tables generated during Stage Two (Tables 1 and 2 in this report), and the two tables proposed for Stage 3 (*Section 8.2*), with a total estimated size of 8Mb;

- a shape file containing all the trench location data that could be found for field events located within the City and District of Carlisle (see *Section 4.12*), with an approximate size of 250Kb.

4.15.3 On the basis of this information, the ADS have provided estimates for the likely cost of long-term storage of the project archive, based on three different levels of user-interface (see *Section 4.16*).

4.16 GAZETTEER OF CAU/CAL EVENTS

4.16.1 At the end of Stage 1 of the Archives Project, it was clear that the results of most of the work undertaken by CAU/CAL from 1977 to 2001 remained unpublished. It was therefore recommended that consideration should be given to publishing an archive gazetteer, in order to ensure that basic information for each site or project was available in the public domain (OA North 2003, 49; *Section 2.10*). Given the nature of the data, it was clear that online publication of such a gazetteer would be preferable. During Stage 2, the following options for achieving this aim were considered:

- production and hosting of a web-site 'in-house' by OA North;
- production, by OA North, of a web-site hosted by a commercial Internet Services Provider (ISP);
- hosting of the data as a special collection on the ADS web-site.

4.16.2 Following discussions with English Heritage, CCCHER, and Tullie House Museum and Art Gallery, it was agreed that the resource would be of greatest use to the archaeological community if it was hosted by the ADS. Not only is their web-site well-known by, and accessible to, all members of the profession, but the organisation itself is set up to provide long-term hosting and storage of this type of data. It is envisaged that the Archives Project database will be hosted by the ADS as a special collection, in the much same way as the data generated by the *Defence of Britain Project* (http://ads.ahds.ac.uk/catalogue/specColl/dob). The data could also be easily accessed by means of links to the ADS from the Tullie House Museum and Art Gallery and CCCHER web-sites, and indeed from any other appropriate sites.

4.16.3 In terms of the type of interface required for the data, it was further agreed that a searchable database would be preferable to a map-based interface, since the cost of obtaining digital mapping data of sufficient detail to display online would be considerable. Additional costs would also be incurred from the ADS for building such a site.

4.17 DISSEMINATION OF INFORMATION

4.17.1 Once data input and production of digital mapping were completed, metadata, describing the format of the resource and the information contained within it (see *Section 3.10*) were produced. The database, mapping, and metadata were then burnt onto CD-ROM disks and dispatched to all relevant organisations in the format that each required, in accordance with *Objectives 11.1-2* of the Stage 2 project design (OA North 2003, 66).

5. CONCLUSIONS

5.1 INTRODUCTION

5.1.1 It has been possible, during Stage 2 of the Archives Project, to achieve virtually all the aims and objectives set out in the updated project design (OA North 2003, 50-5). The total amount of archival material generated by CAU/CAL between 1977 and 2001 has been established and a detailed inventory of the contents of each individual event archive has been compiled. The documentary archives have been re-ordered and stray material integrated into the 'parent' archives. Missing documentary archival elements have been identified for all events and basic information that remains unaccounted for has been quantified. The present location of considerable quantities of archival materials that are currently stored away from Shaddon Mill has also been ascertained.

5.1.2 The condition of all archival elements inside Shaddon Mill has been assessed and recorded, and trench location and site boundary data have been digitised and geo-referenced for the great majority of field events within the study area of the Carlisle UAD. The resulting information is logged on the adapted database. Recommendations and an updated project design for remedial works required prior to archive deposition have been produced (Aim 1; *Section 7*), together with a method statement (*Section 8*), resourcing and staffing (*Section 9*) and costings (*Section 11*). In addition, information on the current status of post-excavation and publication work for unpublished events that produced data worthy of dissemination is provided (*Section 5.3*). The results of Stage 2 are set out in detail in *Sections 3* and *4* of this report. The following section provides a summary of those data.

5.2 RESULTS OF STAGE 2

5.2.1 ***Events***: the total of 585 individual CAU/CAL events recorded in Stage 1 has increased to 586 following the discovery of an additional excavation event (BRD A) that had previously been overlooked (*Sections 4.2.5-6*). The total number of parent projects has also been revised upwards from 234 to 235. Details of the new event and parent project have been entered onto the Archives Project database and a link has been established to the relevant record in the County Historic Environment Record (CCCHER).

5.2.2 In addition to the interventions undertaken by CAU/CAL, complete or near-complete archives relating to eight excavations carried out by other organisations prior to the formation of the Carlisle unit were also found to be present in Shaddon Mill (*Section 4.6*). Five of these archives relate to excavations in Carlisle and one to a site in Penrith; the other two were associated with projects undertaken in Cambridgeshire and York. It seems likely that this material found its way to Shaddon Mill as a result of analytical work being undertaken on these projects by CAU/CAL personnel.

5.2.3 ***Database adaption***: in consultation with English Heritage and the CCCHER, the Archives Project database created for Stage 1 of the project was expanded and adapted to take the large quantities of additional data collected during Stage 2 (*Section 3.2*). The database was also redesigned to make it more accessible to all end-users, with several proposed tables being combined into two principal tables.

5.2.4 ***Re-ordering of documentary archives***: in the period between the completion of Stage 1 of the Archives Project and the beginning of Stage 2, all the materials stored in CAU/CAL's former premises on Level 5 of Shaddon Mill were moved to Level 1, in order to facilitate work on the conversion of the building to flats (*Section 3.3.4*). The move was undertaken by a specialist contractor supervised by staff from Tullie House Museum and Art Gallery. At the beginning of Stage 2, most of the documentary archives were re-arranged in alphabetical order on racks of shelving erected on Level 1, and scattered documents that had formerly been separated from the rest of the documentary material were integrated into the appropriate 'parent' archives (*Section 3.3.5*). The documentary archives relating to a small number of extremely large projects, such as the Lanes and Annetwell Street, were stored separately on their own shelving racks. All the racks containing documentary archives were numbered and a record of their contents was made (Table 3). Similarly, all drawing cabinets holding outsize drawings and other illustrations were numbered and their contents recorded (*Appendix 3*).

5.2.5 ***CAU/CAL material not in Shaddon Mill:*** from the outset of the Archives Project, it was clear that some elements of the CAU/CAL archive were stored away from Shaddon Mill. In the absence of consistent exit records it was, however, impossible to know precisely how much material was involved or where it was currently located. In order to address this problem, letters were sent to 24 organisations and individual specialists requesting information on any Carlisle material they may have retained (*Section 4.3*). All the information provided by the 14 respondents was collated (see *Appendix 12*) and added to the project database. Whilst it seems probable that the whereabouts of most of the material has now been determined, the possibility that some archival elements may remain in storage elsewhere cannot be completely discounted.

5.2.6 ***Overall quantifications of Carlisle archival holdings***: all archival elements currently stored in Shaddon Mill were quantified as part of Stage 2. The archival holdings include all documents, artefacts, and ecofacts generated by the 586 archaeological interventions undertaken by CAU/CAL between 1977 and 2001 (*Sections 4.4* and *4.5*). They also incorporate other miscellaneous and non-event specific materials generated by the unit (*Section 4.11*) and archival materials relating to eight events carried out by other organisations prior to the formation of CAU/CAL (*Section 4.6*). The only items in the Mill excluded from the Stage 2 assessment were those deposited on a temporary basis by Tullie House Museum and Art Gallery since CAU/CAL ceased trading in 2001. In so far as it has been possible to do so, all CAU/CAL archival materials currently stored away from Shaddon Mill have been traced and quantified (*Section 4.3*).

5.2.7 Overall, the Carlisle archives have a volume of approximately 151.8m^3, equivalent to *c* 7706 standard boxes (a standard box being a cardboard storage box measuring 450 x 250 x 175mm, or 0.0197m^3). Of this total, documentary archives relating to CAU/CAL events represent approximately 7.5m^3, or *c* 381 standard boxes (*c* 4.94% of the total), whilst the CAU/CAL artefactual and environmental archives make up approximately 133.5m^3, or *c* 6777 standard boxes (*c* 87.94%). Boxes of unprovenanced CAU/CAL artefacts/ecofacts account for approximately 1.5m^3, or *c* 76 standard boxes (*c* 0.99%), whilst miscellaneous and non-event specific CAU/CAL materials make up a further 3.6m^3, or *c* 183 standard boxes (*c* 2.37%). Archives relating to the eight non-CAU/CAL events add approximately 5.7m^3, or *c* 289 standard boxes (*c* 3.76%) to the total. In addition, approximately 9541 oversize drawings of all kinds are present in 16 plan cabinets, which have a combined volume of approximately 11m^3. These data are summarised in Table 45.

Archive	Approx size (m^3)	Approx size (standard box equivalent)	% of total	Approx outsize drawings	% of total
CAU/CAL					
documentary	7.5	381	4.94	8922	93.5
artefactual and environmental	133.5	6777	87.94	-	-
unprovenanced artefacts	1.5	76	0.99	-	-
miscellaneous	3.6	183	2.37	526	5.5
Non-CAU/CAL	5.7	289	3.76	93	
Total	**151.8**	**7706**	**100**	**9541**	**100**

Table 45: Approximate size of the entire Carlisle archival holding

5.2.8 For practical purposes, the figures presented in *Section 5.2.7* and Table 45 are somewhat misleading, since they take no account of the 'wasted' space that inevitably exists in even the most well-ordered store. The Carlisle archive would indeed occupy approximately 151.8m^3 if all the archival elements formed a solid, compacted mass, but as this is obviously not the case the archive actually occupies a considerably larger space. At a rough estimate, the documentary archives for both CAU/CAL and non-CAU/CAL interventions currently stored in Shaddon Mill occupy approximately 11m^3 of shelving, equivalent to *c* 560 standard boxes, whilst the artefactual and environmental archives occupy *c* 257m^3 of shelving (approximately 13,045 standard boxes). Pallets holding outsized architectural stones and other bulky materials also take up approximately 60m^2 of floor space (6m^3, equivalent to *c* 305 standard boxes). The miscellaneous and non-event specific materials occupy a further 4m^3 of shelving (*c* 203 standard boxes), whilst the 16 plan cabinets holding oversize drawings have a volume of approximately 11m^3 (*c* 560 standard boxes).

5.2.9 From the above, a very approximate figure of 289m^3 (equivalent to 14,670 standard boxes) for all the materials currently stored in Shaddon Mill can be calculated. Precise figures are not yet available for the amount of storage space required by the archival elements located away from Shaddon Mill. However, since it is estimated that the volume of these materials may be in the region of

15-20m^3 (*Section 4.3.4*), a figure in excess of 30m^3 for storage purposes may be appropriate. In very broad terms, therefore, it is possible to suggest that all the Carlisle archival holdings quantified during Stage 2 of the Archives Project require approximately 319m^3 of storage space, equivalent to *c* 16,196 standard boxes. These data are summarised in Table 46.

Archive type	Approx size (m^3)	Approx size (standard box equivalent)	% of total
Documentary (all)	11	560	3.46
Artefactual and environmental (all)	257	13,045	80.54
Miscellaneous and non-event specific	4	203	1.25
Pallets	6	305	1.88
Plan cabinets	11	560	3.46
Material away from Shaddon Mill	*c* 30	*c* 1523	9.41
Total	***c* 319**	***c* 16,196**	**100**

Table 46: Approximate storage space requirements for the entire Carlisle archive

5.2.10 ***Archive condition:*** the present condition of all documentary, artefactual and environmental archives currently stored in Shaddon Mill was assessed during Stage 2 of the Archives Project. For the documentary archives, the condition of all files and folders was assessed and a record was made of those requiring replacement or re-labelling (*Section 4.7*). Key archival elements, such as drawn, photographic, artefactual and environmental indices, that are either missing or incomplete, were also quantified. For the artefactual and environmental archives, the present condition of external packaging for all material categories (IRFs, bulk finds, and samples of all types) was assessed and records were made of boxes and other packaging requiring replacement or re-labelling (*Sections 4.8 and 4.9*). For all sensitive material categories, including metalwork, wood, and leather, the condition of the objects themselves and of their internal packaging was also recorded and the presence/absence of desiccants was noted.

5.2.11 ***Documentary archive***: it is estimated that the entire Carlisle documentary archive comprises approximately 1817 files and folders of all types, including photographic files and miscellaneous materials. Of these, approximately 195 (*c* 10.7%) are currently located away from Shaddon Mill and 1622 (*c* 89.3%) are stored at the Mill. Of the latter, approximately 1330 (*c* 73.6% of the overall total) relate to specific CAU/CAL events, and a further 130 (*c* 6.8% of the total) relate to the Lanes parent project but cannot be directly associated with a specific event. The eight non-CAU/CAL events account for 51 files/folders (2.7%), whilst a further 111 (6%) are present in the assemblage of miscellaneous and non-event specific materials stored in the Mill. These data are summarised in Table 47. It is estimated that up to 250 (*c* 13%) of the files in the archive hold photographic prints, negatives, and slides.

Description	No of files	% of total
Files in Shaddon Mill		
CAU/CAL events	*c* 1330	*c* 73.2
Lanes parent project only	*c* 130	*c* 7.2
Non-CAU/CAL events	*c* 51	*c* 2.8
Miscellaneous	*c* 111	*c* 6.1
Sub-total	***c 1622***	***c 89.3***
Files away from Shaddon Mill	*c* 195	*c* 10.7
Total	***c* 1817**	**100**

Table 47: Approximate quantification of files/folders in the Carlisle archive

5.2.12 Although the majority of files and folders in Shaddon Mill are in reasonably good condition, almost all would benefit from re-labelling. In addition, approximately 230 (*c* 16%) (*c* 220 relating to the CAU/CAL archive and ten associated with non-CAU/CAL events) will need to be replaced as a *minimum* requirement of the Stage 3 remedial works (*Sections 4.7.7* and *6.7*). Similar estimates are not available for the files stored away from Shaddon Mill, but if the proportions are broadly similar to those above, approximately 30 extra files would be needed, giving a total of *c* 260. The condition of the 111 files holding miscellaneous materials was not assessed in detail, as most appeared to be in good condition. Ideally, all the documentary archives should be thoroughly checked for inappropriate materials (such as staples and uncoated paperclips) and re-packaged to modern standards (see *Section 6.7*).

5.2.13 Most of the photographic files are in good condition, but up to 40 may need replacing due to damage or deterioration. More significantly, the great majority of the inner sleeves in which the individual slides, prints, negatives, and contact prints are held do not conform to modern archive standards, and all will need to be replaced. In the case of *c* 90 field events (28.9% of CAU/CAL field events and 15.4% of all CAU/CAL events), some or all of the photographs are either inadequately labelled or not labelled at all. Very many files also contain images or negatives from multiple events, making it impossible to store the material with the rest of the archives in these cases. It is estimated that approximately 210 field events and 150 standing building recording events (together representing 61.4% of all CAU/CAL events) have at least some photographic images currently stored in mixed folders. Some files also currently hold both photographs (slides or prints) and photographic index sheets, contrary to best practice (*Sections 4.7.14-17*). Remedial works required to bring the photographic archive up to an acceptable standard are discussed in *Section 6.7*.

5.2.14 Of the estimated total of 9541 oversize illustrations in the Carlisle archive, approximately 8613 (90.3%) are currently stored in Shaddon Mill, with *c* 928 (9.7%) being located elsewhere. Some 8805 (92.3% of the total) can be directly related to specific CAU/CAL events, 117 (1.2%) can be related to the Lanes parent project, and 93 (1%) to the eight non-CAU/CAL events. A further 526 illustrations (5.5%), mostly old Ordnance Survey maps, cannot be

related to a specific event or project and have been assigned to the Miscellaneous category. These data are summarised in Table 48.

Description	**No of drawings**	**% of total**
CAU/CAL events	8805	92.3
Lanes parent project only	117	1.2
Non-CAU/CAL events	93	1
Miscellaneous	526	5.5
Total	**9541**	**100**

Table 48: Approximate quantifications of oversize illustrations in the Carlisle archive

5.2.15 The precise number of individual illustrations that may require re-hanging or other remedial works is not known. The majority are in good condition, but, as a *minimum* requirement, it is thought that some kind of remedial work on the drawn archive may be required for approximately 50 field events (*c* 16% of CAU/CAL field events or *c* 8% of all events). Complete re-ordering of all the oversize illustrations is highly desirable, since the archives are currently stored in no particular order (*Sections 4.7.10-11*). Ideally, all the illustrations should be re-packaged to modern archival standards within archivally stable cardboard plan boxes designed specifically for the purpose (see *Section 6.7*).

5.2.16 Only a limited amount of digital information is present in the archive (*Sections 4.7.18-19*). The largest component comprises approximately 500 5.25-inch floppy disks, most of which are packed into old cardboard boxes. Labelling on some of the disks enables then to be related to specific events, or at least to specific parent projects. However, in a large number of cases the labelling is either obscure or completely absent, which means that the contents of these disks are not currently known. Approximately 100 3.5-inch floppy disks were also recorded. Some contain data and texts relating to specific projects, whilst others contain miscellaneous information that is not event specific. Approximately 400Mb of data, in the form of approximately 1000 old text files, spreadsheets and databases, were salvaged from a number of old CAU/CAL computers in Shaddon Mill, prior to the disposal of these machines by Carlisle City Council in March 2004. These files, many of which can be related to specific CAU/CAL events or parent projects, have been copied onto CD-Rom disks. Approximately 45 CAD files (in Terramodel format), holding digital location and survey data for some of the more recent CAU/CAL events, were also copied from the old computers in Shaddon Mill. Remedial works for these archival elements are discussed in *Section 6.7*.

5.2.17 ***Artefactual and environmental archives****:* at a rough estimate, the Carlisle artefactual and environmental archives are currently stored in approximately 6674 boxes of all kinds, together with a smaller number of other types of packaging such as bags, wooden pallets (for large and/or heavy items), and trays. Of this total, approximately 1357 (*c* 20%) are currently located away from Shaddon Mill and 5317 (*c* 80%) are stored at the Mill. The great majority (approximately 6065, or 90.88% of the total) relate to specific CAU/CAL events, whilst a further 310 (*c* 4.65%) relate to non-CAU/CAL events. There are some 127 boxes of materials (*c* 1.9%) that can be related to the Lanes parent project but

not a specific event, and a further 81 boxes (*c* 1.21%) of mixed artefacts and ecofacts from a variety of CAU/CAL interventions. In addition, 38 boxes of unprovenanced artefacts (*c* 0.57% of the total) and 53 boxes (*c* 0.79%) of miscellaneous and non-event specific materials were recorded. These data are summarised in Table 49. Remedial works required to upgrade both the artefactual and environmental archives to acceptable standards are set out in *Sections 6.8* and *6.9*).

Description	No of boxes	% of total
CAU/CAL events	6065	90.88
Lanes parent project	127	1.90
Mixed boxes	81	1.21
Non-CAU/CAL events	310	4.65
Miscellaneous	53	0.79
Unprovenanced	38	0.57
Total	**6674**	**100**

Table 49: Approximate numbers of boxes in the Carlisle archive

5.2.18 Most of the boxes, trays, and bags of material currently in Shaddon Mill are stored on sturdy shelving racks, although a not inconsiderable amount, including many plastic sample tubs and all the materials on wooden pallets, is stored on the floor of the Mill. In many cases, several boxes are stacked one upon another on the shelves, with no supplementary support. This practice has led to the collapse of the outer packaging on a number of occasions. Heavy objects stored on the upper shelves and on the floor beneath the racking pose a potential Health and Safety risk through the necessity for overhead lifting or the lifting of heavy boxes from the floor. Much of the outer packaging is extremely dusty and dirty as a result of many years of storage on open shelving.

5.2.19 Outer packaging is mostly of two types, namely cardboard boxes of various sizes (particularly the large 'standard' box, measuring 450 x 250 x 175mm) and plastic 'Stewart'-type boxes, again in several shapes and sizes. Over-packing and frequent movement/handling has led to damage and deterioration of some cardboard boxes, and some have totally collapsed. In the great majority of cases, labels were attached by means of masking tape, much of which has lost its adhesive qualities. As a result, some labels have become detached from their boxes and many more are in imminent danger of becoming detached. The use of unstable inks (particularly Biro) on some labels has led to the loss of some information. In some instances, heavy and/or outsize objects are currently stored on flimsy fruit trays or boxes with no lids.

5.2.20 Internal packaging for bulk finds, such as pottery, animal bone, ceramic building materials, and metalworking slag, usually consists of self-seal polythene bags labelled with the appropriate site information. Packaging for IRFs is, however, extremely varied, the type of packaging employed being (generally speaking) dependent upon the period when the archive was generated. Small, un-rigid, manila envelopes dominate the archives of sites from the late 1970s to the early 1990s. Objects from more recent excavations are mostly stored in unsupported, self-seal polythene bags. Only in the case of material from the most recent excavations was supplementary support

provided, in the form of corrugated foam. Many of the Carlisle IRFs are stored in mixed boxes holding objects of several different material categories, a situation that is contrary to current best practice. Silica gel and/or humidity indicator strips were present in most of the IRF boxes. In all cases, the gel and the strips indicated high levels of humidity.

5.2.21 For most of the lifetime of the Carlisle unit, soil samples were taken in 5-litre self-seal polythene bags that were themselves stored in standard cardboard boxes. It is estimated that approximately 750 standard boxes of soil samples and *c* 300 unboxed samples in bags are currently stored in Shaddon Mill (*Section 4.9.3* and Table 31). From the late 1990s, it became standard practice for soil samples to be taken and stored in robust 10-litre plastic tubs, approximately 600 of which are stored in Shaddon Mill.

5.2.22 The majority of the bagged samples are reasonably stable, although in a significant number of cases, particularly in the older archives, the soil has dried out. Furthermore, since several samples were routinely stored in a single standard box, and heavy boxes were often stacked one on top of another, many boxes have distorted or collapsed. The samples in plastic tubs are for the most part well packaged, clearly labelled, and in good condition. The majority are not stored on shelving racks but are stacked several tubs in height directly on the floor of the Mill.

5.2.23 Approximately 60 soil monolith samples (column samples) are also present in the Carlisle archive. All are stored horizontally in the steel tins in which they were originally taken. Most of the tins are wrapped with several layers of clear polythene and are adequately labelled. The state of the soil within is not known as wrappings were not removed.

5.2.24 It is known that the inclusion of box lists in boxes and other storage containers was not routinely undertaken by CAU/CAL. No lists were found in any of the boxes examined during the course of the Archives Project.

5.2.25 During the course of the condition assessment for the sensitive materials (principally metalwork, leather, and wood), approximately 1000 boxes were opened and examined. The survey was based on a sample of *c* 10% of the material present in each box, from which the detailed data presented in *Section 4.8* were extrapolated. As a rough estimate, it is thought that the entire assemblage of sensitive objects currently in Shaddon Mill comprises approximately 12,000 individual objects, *c* 2000 bags of leather and *c* 2400 bags of wood (Table 50). It should be noted that this is an estimate based on extrapolated data and does not include material not in Shaddon Mill at the time of the assessment (including the large assemblage of IRFs recovered from the Millennium excavations). Precise quantification of the total number of individual IRFs lay beyond the scope of the current project, although estimates suggest that the total is likely to be in excess of 20,000.

Object type	Condition category			Totals
	1, 2 and 1-2	1-3 and 2-3	3	
Coins	994 (87.19%)	144 (12.63%)	2 (0.18%)	1140 (100%)
Gold/silver	18 (22.78%)	60 (75.95%)	1 (1.27%)	79 (100%)
Copper alloy	2662 (64.34%)	1304 (31.53%)	171 (4.13%)	4137 (100%)
Iron	3554 (66.13%)	1493 (27.79%)	327 (6.08%)	5374 (100%)
Lead	1196 (97.94%)	159 (11.69%)	5 (0.37%)	1360 (100%)
Leather (bags)	1578 (78.35)	199 (9.88%)	237 (11.77%)	2014 (100%)
Wood (bags)	2244 (93.81)	64 (2.68%)	84 (3.51%)	2392 (100%)
Totals	**12,246 (71.51%)**	**3423 (24.59%)**	**827 (3.90%)**	**16,496 (100%)**

Table 50: Summary of the condition of sensitive artefacts in the Carlisle archive (quantifications extrapolated from a 10% sample)

5.2.26 The physical condition of the sensitive materials was assessed on a simple three-point scale (Categories 1, 2, and 3; see *Sections 3.8.8-9*). Whilst the condition of the objects inevitably varied, the assemblage as a whole was found to be in generally good condition. Overall, approximately 71.5% of the assemblage falls into Categories 1 and 2, which can be regarded as stable, and these require only a programme of systematic monitoring. An average of 24.6% of the assessed objects fall into Categories 1-3 or 2-3. These items are considered to be at a slightly higher risk and probably require more frequent monitoring. Only 3.9% of the assemblage is likely to require significant intervention to ensure the continued stability of the objects in question (Category 3). These data are summarised in Table 50.

5.2.27 It proved difficult to assess the numbers of metal objects that had been subjected to x-radiography, as records and plates were only located for a relatively small number of events. In most cases, therefore, the assessment was undertaken on the basis of the presence of x-ray reference numbers written on the internal packaging. Using this method, it is estimated that approximately 2402 objects, representing *c* 22% of the relevant material (coins, copper alloy, iron and silver) in Shaddon Mill, has been x-rayed (*c* 28%, if the few silver and nickel-silver objects, none of which have been x-rayed, are excluded). This figure is broadly consistent with estimates of the amounts of metalwork that had been conserved (see *Sections 4.8.24* and *5.2.28*), suggesting that x-radiography was regarded as part of the conservation process, rather than a tool to aid determination of what was to be conserved, as would be the case today. A breakdown of the estimated number of x-rays for each material category is provided in Table 51.

Material category	No x-rayed	% of entire material category
Coins	483	42.37
Copper alloy	1051	25.40
Iron	868	16.15
Total	**2402**	**27.97***

* average % of the total assemblage of sensitive materials x-rayed

Table 51: Summary of estimated number of x-rays undertaken by material category

5.2.28 Numbers of conserved objects likewise proved difficult to determine, as few conservation records were located within the documentary archives in Shaddon Mill. The assessment was therefore done on the basis of the presence or absence of certain indicators, such as supplementary packaging and/or the addition of conservator's comments or references (such as laboratory numbers). In some cases, the outer packaging was labelled as containing conserved or unconserved items. Of the relevant material stored in Shaddon Mill, an estimated 2222 metal objects (estimated to be *c* 18.38% of the total metalwork assemblage), 984 bags of leather (*c* 48.86% of the total assemblage), and 484 bags of wood (*c* 20.33%) have been subject to some form of conservation. These data are summarised in Table 52.

Material category	No of objects conserved	% of entire material category
Coins	512	44.91
Gold/silver/nickel-silver	-	-
Copper alloy	1164	28.14
Iron	506	9.42
Lead	40	2.94
Leather (bags)	984	48.86
Wood (bags)	484	20.33
Total	**3690**	**22.09***

* average % of the total assemblage of sensitive materials conserved

Table 52: Summary of estimated numbers of conserved objects by material category

5.2.29 In addition to the above, approximately 15-20 fragments of preserved textiles and corded fibres were present in the archive (*Section 4.8.54*). All but two of the items have been conserved and all are in good condition. A *c* 10% sample of the glass and the small assemblage of prehistoric pottery currently stored in Shaddon Mill was rapidly scanned (*Sections 4.8.55-6*). Most was found to be adequately packaged and in good condition. Small groups of potentially sensitive objects, such as ivory, jet/shale and amber, were also assessed and were found to be stable and in good condition (*Section 4.8.57*).

5.2.30 ***Trench location plans for UAD:*** during Stage 2, a search was made for trench location plans relating to the 258 field events undertaken by CAU/CAL within the City and District of Carlisle, in accordance with the requirements of the Carlisle UAD. The quality of location data available in the archive was found

to be very varied, and consequently a four-point grading system was adopted (see *Sections 4.12.3-4*). Location plans of some sort were obtained for 238 events (92%), although the quality and accuracy of the data were variable. Accurate trench plans that could be located precisely in relation to modern Ordnance Survey mapping (Grade 1) were located for 193 sites (75%). A total of 45 events (17%) could be assigned to Grades 2 and 3, where less accurate or less reliable data were available. These plans were extracted from the documentary archives and transferred to OA North's premises in Lancaster, where they were scanned and digitised. In the case of 20 events (8%), usable data were completely absent and the sites could not be located (Grade 4). A full list of all the relevant field events is provided in *Appendix 18*.

5.2.31 ***Missing information:*** during Stage 2, a search was made for basic information that could not be located during Stage 1 of the project, although in the event very little new data was found (see *Sections 4.13.1-5*). Probably the most significant development was the recovery, from records held by Carlisle City Council, of landownership details for three additional events (*Section 4.13.4* and Table 39).

5.2.32 The detailed assessment undertaken during Stage 2 has facilitated the compilation of a list of basic archival elements (particularly indices) that are *not* present in the individual documentary archives (*Sections 4.13.6-8*). In most cases, it is not known why these documents are missing, although it seems probable that in the majority they were never completed during the course of the project. In total, some 456 key archival elements, mostly context, photographic, drawing, finds, and environmental indices, are currently unaccounted for. Additionally, a major failing of the CAU/CAL archive as it currently stands is the almost complete absence of box-lists, providing summaries of the contents of each box of artefactual material in Shaddon Mill (*Section 4.8.16*).

5.2.33 ***Archive deposition:*** most archaeological interventions carried out by CAU/CAL occurred within the City and District of Carlisle. Additionally, 52 events took place in other administrative districts within Cumbria (*Section 4.14.1* and Table 40), and a single desk-based assessment was carried out on a site in the City of Gloucester. As a result of the Stage 2 work, it is now possible to provide estimates of the amounts of archival material that may require deposition with the various district museums (*Sections 4.14.2-3* and Table 40). From the overall total of approximately 144.3m^3 of material thought to be present in the Carlisle archive, it is estimated that roughly 123m^3 (*c* 85%) relates to events undertaken within Carlisle and its District. This material will ultimately be the responsibility of Tullie House Museum and Art Gallery. Of the remaining 15%, *c* 5.7m^3 derives from non-CAU/CAL events (*Section 5.2.35*) and *c* 12m^3 from events outside the Carlisle district. The rest (*c* 3.6m^3) comprises miscellaneous and non-event specific materials, the ultimate fate of which has yet to be determined.

5.2.34 Of the assemblage from outside Carlisle, almost all relates to Cumbrian sites, situated within the districts of Allerdale (32 archives, totalling *c* 10.98m^3), Copeland (five archives, *c* 0.05m^3), Eden (14 archives, *c* 0.81m^3), and South Lakeland (one archive, *c* 0.11m^3). Only a single event, a desk-based

assessment for a proposed development in Gloucester, lies outside Cumbria. This project produced only a very small amount of archival material (approximately 0.03m^3).

5.2.35 Four of the eight non-CAU/CAL archives or archival elements currently in Shaddon Mill relate to work carried out in Carlisle during the 1970s under the auspices of the former Central Excavation Unit of the DoE (*Section 4.14.4*). Consultation with English Heritage at Fort Cumberland, and Tullie House Museum and Art Gallery suggests that it would be appropriate to deposit these archives, which have a combined volume of approximately 5.2m^3, with Tullie House. The museum is also the appropriate repository for a fifth archive (with a volume of *c* 0.04m^3), which was generated by the then County Archaeologist for Cumbria during excavations in the centre of Carlisle in 1976 (*Section 4.14.6*).

5.2.36 Of the three archives relating to events beyond Carlisle, one (comprising only two standard boxes of post-medieval glass, with a volume of *c* 0.04m^3) was generated by excavations (again undertaken by the then County Archaeologist) in Penrith during 1976, and should therefore be deposited with Penrith Museum. Advice received from Cambridgeshire County Council's Historic Environment Record indicates that they would be prepared to accept the archive relating to excavations at Hinton Hall, Haddenham, Cambridgeshire, in 1969, which has an estimated volume of *c* 0.3m^3. A small number of original drawings of medieval tiles, together with associated record sheets and notes relating to excavations at York Minster in 1968-74, should be deposited with York Minster Library, which has indicated that it would be willing to accept this archive (*Section 4.14.6*).

5.2.37 ***Estimation of digital information***: the likely size of the Archive Project's digital archive following completion of the Stage 3 remedial works has been estimated, in order to inform the ADS and all other relevant organisations to which the data might be disseminated (*Section 4.17*). In order to reduce the size and complexity of the database at the end of Stage 3, it is proposed that all lookup tables be removed, since these will no longer be required after data entry has been completed. It is estimated that the project's digital archive will ultimately consist of a database with an estimated size of 8Mb and a shape file, containing trench location data for field events within the City and District of Carlisle, with an approximate size of 250Kb (*Section 4.15*).

5.2.38 ***Gazetteer of CAU/CAL events***: at the end of Stage 1 of the Archives Project, it was recommended that consideration be given to publishing an online gazetteer of the CAU/CAL archive, to ensure that basic information for all events was available in the public domain. Following discussions with English Heritage, CCCHER, and Tullie House Museum and Art Gallery during Stage 2, it was agreed that the data would be of greatest use to the archaeological community if it were hosted by the ADS as a special collection, linked to the Tullie House Museum and Art Gallery and CCCHER web-sites (*Section 4.16*). It was further agreed that a searchable database would be preferable to a map-based interface on grounds of cost.

5.2.39 ***Database transmission and dissemination of information***: once the work of data entry and digital mapping was completed, metadata were produced describing the format of the resource and the information contained within it, as set out in *Objectives 9.1-2* of the Stage 2 project design (OA North 2003, 65). The database, mapping, and metadata were then burnt onto CD-ROM disks and dispatched to all relevant organisations in the format that each required, in accordance with *Objectives 11.1-2* of the project design (*op cit*, 66).

5.3 POST-EXCAVATION AND PUBLICATION STATUS

5.3.1 During Stage 1 of the Archives Project, information was provided on the current status of reporting for all archaeological events undertaken by CAU/CAL, and suggestions for possible approaches to the dissemination of unpublished data were put forward (OA North 2003, 32-9). It was established that only 17 events (less than 3% of the total) had been fully or adequately published (*op cit*, 34, table 19). Work was in progress on a total of 275 events (the great majority related to the Lanes project), although in most cases these projects had been static for a number of years and little recent progress had been made (*op cit*, 36, table 20). Of the remaining 293 events identified during Stage 1, 140 were felt to have produced archaeological data of sufficient importance to warrant publication, and tentative suggestions on the appropriate level and type of reporting were made (*op cit*, 37-9, tables 21 and 22). To this list can now be added the additional event located during Stage 2 (BRD A; see *Sections 4.2.5-6*), bringing the total to 141. The data generated by a total of 153 events were considered to have little archaeological potential. In these cases, it was suggested that the data should be retained as an archive but not published (*op cit*, 39, appendices 6-9).

5.3.2 The detailed assessment of individual event archives undertaken during Stage 2 of the Archives Project has produced a much clearer picture of the extent to which post-excavation work had progressed for each event prior to the demise of CAL in 2001. The presence of assessment reports, specialist reports, draft publication texts, publication drawings, and other analytical data has been logged on the project database, as have details of the conservation status of sensitive artefactual assemblages. Analysis of these data can go some way to determining the amount of post-excavation work completed for each of the 141 events described above, and for the 275 where work is in progress, and can provide a broad indication of the archaeological potential of the data in each archive. Whilst it must be stressed that informed decisions relating to specific events or projects can only be made following a formal archaeological assessment of the project archives, it is evident from the work undertaken so far that some projects have greater potential than others. It is also clear that the post-excavation process is more advanced in some cases than in others. In general terms, therefore, the Stage 2 work has made it possible to identify those events with the greatest potential and to differentiate between those projects where the post-excavation process is comparatively well advanced and those where little or no analytical work has been undertaken.

5.3.3 Summaries of the current status of post-excavation work for the 275 sites where work is in progress and the 141 unpublished events (*Section 5.3.1*) are presented in Tables 53 and 54. The listing of unpublished events follows that adopted for the Stage 1 report, where events were grouped thematically under a number of possible publication headings (OA North 2003, 38, table 22). For the 275 sites where post-excavation or publication work of some kind has been started (Table 53), the extent of recent progress, in so far as it can be known, is stated. In the case of the 141 other events, no recent progress has been made to the authors' knowledge, unless otherwise stated.

5.3.4 Suggestions as to how the data from these sites might be disseminated were put forward in the Stage 1 report and are not repeated here (see *Section 5.3.3*). In each case, an attempt has been made to provide an indication of the archaeological potential of the data (High, Good or Moderate) based on the grading system adopted during Stage 1 (OA North 2003, 37 and table 22). In the absence of formal archaeological assessments this is of course intended only as a rough guide. It should be noted that in all cases basic finds-processing work, such as washing, marking and bagging/boxing of finds, has been undertaken. Key interpretative elements such as matrices and phasing texts are listed where they are present in the event archive.

Site code	Project name	Potential	Post-excavation status	Level of progress
ANN A*	Annetwell St, Carlisle 1973-84 (*Roman fort*)	High	Draft stratigraphic text complete; all or most specialist reports complete; all or most accompanying illustrations complete. No recent progress known	Static for some years - English Heritage-funded
ANN D-G (one event)	Annetwell St, Carlisle 1989 (*Roman fort*)	High	Uncertain: probable incomplete draft publication text and various incomplete specialist reports. No recent progress known	Static for some years
ANN H	Annetwell St, Carlisle 1990 (*Roman fort*)	High	Uncertain: probable incomplete draft publication text and various incomplete specialist reports. No recent progress known	Static for some years
CAS F-G (one event)	Carlisle Castle 2001 (*medieval castle*)	Moderate	Incomplete draft publication text. No recent progress known	Uncertain
CAT A-F	Carlisle Cathedral 1985	Moderate	Existing report in the *Transactions of the Cumberland and Westmorland Antiquarian and Archaeological Society*, probably an interim; more work needed	Uncertain
CAT G-H (one event)	Carlisle Cathedral Treasury 1988 (*early medieval, medieval, and post-medieval cemetery*)	High	Draft texts for the following: stratigraphic report, human remains, coins, jet artefacts, iron artefacts; some (most?) of accompanying illustrations complete. Several specialist reports incomplete or outstanding. No recent progress known	Static for some years, but some possibility David Weston of Carlisle Cathedral will take this forward
CKL A-C (three events)	Cocklakes 2001 (*prehistoric settlement*)	Good	Possible draft publication text available (incomplete?). No recent progress known	Post-excavation assessment undertaken by the Archaeological Practice, Newcastle, 2002-3. Current status uncertain

Site code	Project name	Potential	Post-excavation status	Level of progress
KIT A	Kirkby Thore 1999 (*Roman vicus*)	Moderate	Incomplete publication text available. No recent progress known	Uncertain
South Lanes (136 events)	South Lanes, Carlisle 1978-82 (*Roman town, medieval city*)	High	Monograph published in 2000 (McCarthy 2000); draft of specialist reports Fascicules 1 and 2 now in project archive	Uncertain; probably no recent progress
North Lanes (115 events)	North Lanes, Carlisle 1978-82 (*Roman town, medieval city*)	High	Incomplete draft of stratigraphic text for monograph (to end of Roman period only); draft texts for following specialist reports – lithics, Roman coarse pottery, Roman coins, Roman and medieval brick/tile, textiles, Roman animal bone, dendrochronology, human bone, early medieval coins, insects, palaeobotanical remains. Small finds mostly catalogued but not discussed. Several other specialist reports incomplete or absent altogether. Many illustrations complete but many outstanding and some not mounted	Static for some years. A project design to complete publication work was commissioned by English Heritage from OA North in June 2005
LOW A	46-52 Lowther St, Carlisle 1990 (*Roman and medieval settlement*)	Moderate	Interim report published (Flynn 1994)	No further work since interim produced
MIL 1-5 (five events)	Millennium excavations, Carlisle 1998-2001 (*Roman fort, medieval castle*)	High	Post-excavation assessment produced in 2002. Analysis completed; final editing and typesetting in progress. On schedule for publication in 2009	Advanced and ongoing
PAP A	Papcastle (Time Team) 1998 (*Roman vicus*)	Moderate	Draft matrix, report text and some drawings available	OA North has written and submitted client report in April 2008
RIC A-F (six events)	Rickergate (Lanes extension), Carlisle 1997-99 (*medieval city defences*)	High	Post-excavation assessment produced in 2002. Analysis complete for medieval element of the site, and publication text prepared	Advanced and ongoing
SMG A-L** (one event)	St Mary's Gate (Cumberland Building Society), Carlisle 1978 (*Roman town, medieval city*)	Good	Incomplete stratigraphic text and accompanying drawings in archive; no recent progress known	Static for some years

* the post-excavation work on ANN A (Annetwell Street 1981-4) also incorporates the results of a non-CAU/CAL event, namely Dorothy Charlesworth's excavations in the same area from 1972 to 1979 (DC 72-79). This work was carried out under the auspices of the then Department of the Environment (DoE).

** the post-excavation work on SMG A-L (Cumberland Building Society 1978) also incorporates the results of a non-CAU/CAL excavation, namely David Neal's work at the Cumberland Building Society in 1977 (CBS 77). This work was carried out on behalf of the then Central Excavation Unit (CEU).

Table 53: Summary of status of post-excavation work for 275 unpublished CAU/CAL events where the final report is in progress or partly complete

Publication theme	**Archaeological potential**	**Site code**	**Site name**	**Reporting status**	**Post-excavation status**
Prehistoric sites in north Cumbria	High	BON A and B (two events)	Botcherby Nurseries	Client report BON A /incomplete report BON B/ brief note in *Past* (McCarthy *et al* 1998)	No substantive work known
		CBA A and B (two events)	Carlisle airport	Incomplete client report/ note in *Past* (see above)	No substantive work known
		CBP A-C (three events)	Crosby bypass	Client reports for CBP A and C	No substantive work known palaeoenviron-mental environmental assessment for CBP B; no further work known
		CRB A (one event)	Low Crosby	No report known	Three sheets of ?publication drawings; draft
		SCR A and B (two events)	Scotby Road	Client report for SCR A/ rough draft for SCR B/ brief note in *Past* (see above)	Draft matrix for SCR B; otherwise no substantive work known
Roman fort at Stanwix and environs	High	ARC A-F (six events)	Cumbria College of Art and Design	Client reports for ARC A, D and F	Draft environmental assessment for ARC C; no further work known. Subsequent fieldwork undertaken by OA North
		BGR A and B (two events)	Beech Grove	Client report for BGR A	No substantive work known
		BNC (one event)	Barn Close	Incomplete client report	No substantive work known
		KNF A, B and X (three events)	Knowefield	Client reports for KNF A and X	Drawings of wood fragments/ Objects for KNF B; no further work known
		SRD (one event)	Scotland Road	No archive located	No information
		SRD D-F (three events)	Cumbria Park Hotel	Client reports for SRD D, E	Draft matrix for SRD D; no

Publication theme	**Archaeological potential**	**Site code**	**Site name**	**Reporting status**	**Post-excavation status**
				and F	further work known
		SXS A-H (eight events)	Stanwix School	Client reports for SXS A, B, C and D/ incomplete report for SXS E, F, G and H	No substantive work known. Subsequent fieldwork undertaken by OA North
		TAR A-D (six events)	Tarraby Lane	Client reports for TAR A and D	No substantive work known
Roman suburb at Botchergate, Carlisle	High	BGT A-F (five events)	Botchergate, Mary St-Tait St	Client reports for BGT A, B, C-D, E and F	Fine early Roman glass cremation urn conserved; no further work known. Subsequent fieldwork undertaken by OA North
		BOT A and B (two events)	Cecil St car park	Client report for BOT B	No substantive work known
		COL A and B (two events)	Collier Lane	Client reports for COL A and B	No substantive work known
Early medieval and medieval cemetery, St Michael's Church, Workington	High	SMW A-F (two events)	St Michael's Church	Client reports for SMW A and B-F	Post-excavation assessment believed to be imminent
Roman forts at Bowness-on-Solway and Drumburgh and environs	Good	BNS A-D (four events)	Bowness-on-Solway	Client reports for BNS A, B and C	Assessment report produced for BNS B and C but may not be adequate; no further work known
		DRU A (one event)	Drumburgh	Client report	No substantive work known
		GLS A (one event)	Glasson	Client report	No substantive work known
Roman fort at Burgh-by-Sands and environs	Good	AMB B-E (four events)	Amberfield	Client report for AMB B/ rough draft report for AMB C, D and E	Draft matrices for AMB B and C; no further work known. Subsequent fieldwork undertaken by Headland Archaeology

Publication theme	**Archaeological potential**	**Site code**	**Site name**	**Reporting status**	**Post-excavation status**
		BBS A-F (five events)	Burgh-by-Sands	Client reports for BBS A-B AND F/ incomplete draft for BBS B	Draft matrix for BBS A-B; no further work known
		MLH A and B (two events)	Milton House	Client report for MLH A/ incomplete draft for MLH B	No substantive work known
Medieval friary at Blackfriars St, Carlisle	Good	BLA J (one event)	Blackfriars St	Incomplete interim report	No substantive work known
Roman suburban activity, Bowling Green area, Carlisle	Good	BLG A (one event)	Bowling Green	No report known	Draft assessment reports for palaeobotanical and small finds; no further work known
		LFG A-C (one event)	Lightfoot's Garage	No report known	No substantive work known
Vicus of Roman fort at Brougham, Penrith	Good	BRM A, C, E-G (five events)	Frenchfield	Client reports for C, E, F and G	No substantive work known
Prehistoric and Roman settlement at Cumberland Infirmary, Carlisle	Good	INF A-E (five events)	Cumberland Infirmary	Interim report for INF A/ client report for INF E	Rough context phasing for INF D; no further work known
Roman and medieval urban occupation at 66-68 Scotch St, Carlisle	Good	SCO C (one event)	66-68 Scotch St	No completed report known	Draft matrix; phasing sheets; drafts of following for publication: stratigraphic text (incomplete?); Roman and post-Roman coins; some conservation undertaken; no further work known
		OTH A (one event)	Old Town Hall	No report known	
Romano-British native site and cemetery at Syke Rd, Wigton	Good	WGT A-G (seven events)	Syke Rd, Wigton	Client reports for all but WGT G	No substantive work known

Publication theme	**Archaeological potential**	**Site code**	**Site name**	**Reporting status**	**Post-excavation status**
Roman and medieval observations at Annetwell St/Abbey St, Carlisle (unrelated to principal Annetwell St excavations)	Moderate	ABB A and B (two events)	Abbey St	No report known	Some conservation work done; no further work known
		ANN C (one event)	Annetwell St	No report known	No substantive work known
Medieval activity at Beaumont	Moderate	BEM A and B (two events)	Beaumont	Client report for BEM A	No substantive work known
Observations at Carlisle Castle	Moderate	CAS C, D and E (three events)	Carlisle Castle	Client report for CAS E	No substantive work known
Roman and medieval activity on Carlisle Castle Green	Moderate	CSW A-B (one event)	Castle Green	Client report	No substantive work known
Medieval activity in Carlisle Cathedral Close	Moderate	CAT M, P-R (four events)	Carlisle Cathedral Close	Client reports for CAT Q and R	No substantive work known
Observations on Castle St, Carlisle	Moderate	CST C-G and H-K (six events)	Castle St	Rough summary report for CST G	Some conservation work done for CST C; no further work known
Roman kilns at English Damside, Carlisle	Moderate	EDS A (one event)	English Damside	No report known	No substantive work known
Roman camp at Etterby, Stanwix	Moderate	ETB A and B (two events)	Etterby	No report known	No substantive work known
Observations at Greenmarket, Carlisle	Moderate	GMK B (one event)	Greenmarket	No report known	No substantive work known
Medieval activity at Edenholme Farm, Grinsdale	Moderate	GRN B and C (two events)	Edenholme Farm	Client report for GRN C	No substantive work known
Observations at Kingmoor, Stanwix	Moderate	KGM A and B (two events)	Kingmoor	Rough summary report for KGM B	No substantive work known

Publication theme	**Archaeological potential**	**Site code**	**Site name**	**Reporting status**	**Post-excavation status**
Hadrian's Wall at Knockupworth Farm, Carlisle	Moderate	KPW A and B (two events)	Knockupworth	Client report for KPW A and B	No substantive work known Further recent evaluations by CFA
Medieval activity at Linstock	Moderate	LNS A, B and O (three events)	Linstock	Client report for LNS A and B/ draft only for LNS O	No substantive work known
Possible Roman bath house at the Market Hall, Carlisle	Moderate	MKT A, C and D (three events)	Market Hall	Draft interim report for MKT C	No substantive work known
Roman fort at Netherby Hall	Moderate	NBY A (one event)	Netherby Hall	No report known	No substantive work known
Vicus of the Roman fort at Old Penrith	Moderate	OPR (one event)	Old Penrith	No report known	No substantive work known
Observations at the Old Town Hall, Carlisle	Moderate	OTH B (one event)	Old Town Hall	Rough summary report	No substantive work known
Roman and medieval urban occupation at Paternoster Row, Carlisle	Moderate	PNR A-B (one event)	Paternoster Row	No report known	Draft small finds report; no further work known
Observations at Rickergate, Carlisle	Moderate	RKG A (one event)	Rickergate (sewer)	No report known	No substantive work known
Observations at Scotch St, Carlisle	Moderate	SCO A and B (two events)	Scotch St	Brief summaries only	No substantive work known
Post-medieval clay pipe kiln at South John St, Carlisle	Moderate	SJS A (one event)	South John St	No report known	No substantive work known
Medieval activity at Thursby	Moderate	THU A and B (two events)	Meadowcroft, Thursby	Incomplete client report	No substantive work known
Ancient alluvial deposits and post-medieval standing buildings, Theakston's Old Brewery, Carlisle	Moderate	TOB A-B (one event)	Old Brewery	Client report	No substantive work known

Publication theme	Archaeological potential	Site code	Site name	Reporting status	Post-excavation status
Roman activity at Windsor Way, Carlisle	Moderate	WIN A and B (two events)	Windsor Way	Client report for WIN A	No substantive work known

Table 54: Summary of status of post-excavation work for 141 unpublished CAU/CAL events with archaeological potential

6. RECOMMENDATIONS

6.1 INTRODUCTION

6.1.1 Following the completion of Stages 1 and 2 of the Carlisle Archives Project, the *Outline Brief and Specification* produced by English Heritage (Kerr and Perrin 2001) proposed a third phase of work. The key aim of Stage 3 will be to undertake remedial works on the documentary, artefactual and environmental archives generated by CAU/CAL, in order to supply missing elements, such as indices, and to rectify deficiencies in the current state of packaging and storage of many of the archival elements. It is envisaged that similar work will also be undertaken on the much smaller quantities of archival materials currently in Shaddon Mill that were generated by organisations other than CAU/CAL. The ultimate aim of Stage 3 is to produce an archive that is stable, internally consistent, and appropriately packaged for long-term storage, in order that the individual archives can be deposited with the appropriate receiving bodies. It is also envisaged that an online archive gazetteer of CAU/CAL excavations will be produced in order to put basic information on all the work undertaken by the unit into the public domain. Digital data will also be provided to the ADS.

6.1.2 The following represents an outline of the work programme recommended for Stage 3. Details of the methodologies and tasks required to complete the work are provided in *Sections 8* and *9* of this report, and in a task list (*Section 9.8*). Following discussions with Tullie House Museum and Art Gallery, Carlisle City Council, English Heritage, and CCCHER, it was agreed that, given the likely cost implications of the Stage 3 remedial works, two sets of recommendations should be presented in the current report. Consequently, the relevant sections, namely those dealing with recommendations for remedial works on the documentary, artefactual and environmental archives (*Sections 6.7, 6.8* and *6.9*), contain two sets of proposals. *Proposal 1* provides recommendations for a programme of remedial works to upgrade the archive to the highest standard required for the preparation of modern archaeological archives. The recommendations principally follow detailed national guidelines issued by the United Kingdom Institute of Conservation's Archaeology Section (UKIC) (Walker 1990) and by the Society of Museum Archaeologists (SMA) (Owen 1995). Where available, guidelines issued by the relevant receiving bodies have also been taken into account. *Proposal 2* provides recommendations for a work programme that would raise the archive to the *minimum* standard acceptable for deposition with the recipient bodies. This proposal still largely conforms to the national guidelines cited above and continues to take full account of any local guidelines. It is important to note, however, that the recommendations presented in these proposals are not necessarily mutually exclusive. It is clear that optimum results and maximum cost-efficiency can be achieved by a combination of certain elements from both proposals for Stage 3. It is therefore specifically proposed to adopt Proposal 1 in respect of the documentary archives, but to follow the recommendations put forward in Proposal 2 for the artefactual and environmental elements of the assemblage. This constitutes Proposal 3.

6.1.3 The recommendations set out in all other sections of this chapter (*Sections 6.2-6.6* and *6.10-17*) are for work that is considered to be essential whichever proposal is ultimately adopted. For this reason, these areas of the proposed work programme contain only a single set of recommendations.

6.2 DATABASE AND GIS ADAPTATION

6.2.1 In order to enable input of new data generated during the course of Stage 3, it will be necessary to adapt the existing project database by the addition of new tables. These tables should record the extent of the remedial works undertaken on each individual archive, the composition of the archives following completion of the remedial works, and details of the ultimate repositories. All adaptions should conform to nationally recognised standards for archaeological archives (English Heritage 2003). For further details see *Section 8.2*.

6.2.2 Since August 2004, new standards for the production of digital mapping have been established (English Heritage 2004). It will therefore be necessary to upgrade the existing mapping produced in Stages 1 and 2 of the project to meet these standards. For further details see *Section 8.2*.

6.3 TRAINING

6.3.1 It is essential to ensure that OA North personnel undertaking the Stage 3 remedial works are familiar with guidelines for archive deposition issued by the relevant receiving bodies, and with guidelines for the preparation and transfer of archaeological archives issued by national bodies, such as the UKIC (Walker 1990), English Heritage (1991), the Museums and Galleries Commission (1992), and the SMA (Owen 1995). This can best be achieved by in-house training, instruction and supervision undertaken by OA North's Finds Manager. Training in the detailed practices and procedures required for the compilation and storage of archaeological archives to modern standards will also be necessary for selected project personnel. This can be adequately undertaken by the Oxford Archaeology Archives Manager at Oxford. In addition, it would be beneficial for some personnel to attend appropriate training courses and events, such as the conservation training days organised by English Heritage.

6.4 LIAISON WITH RECEIVING MUSEUMS AND ORGANISATIONS

6.4.1 During Stage 3 of the Archives Project, it is recommended that OA North liaises regularly with the various receiving bodies that represent the ultimate repositories for the Carlisle archives. This will permit details of progress to be provided and will ensure that the requirements and concerns of each organisation are being properly addressed.

6.5 CAU/CAL ARCHIVAL MATERIALS STORED AWAY FROM SHADDON MILL

6.5.1 The Stage 2 assessment established that a considerable amount of archival material generated by CAU/CAL is currently stored away from Shaddon Mill (*Section 4.3* and *Appendices 4* and *13-16*). Enquiries undertaken during Stage 2 have established that such material is currently stored or displayed at around a dozen locations, all but three of which (Tullie House Museum and Art Gallery, Carlisle Cathedral Library, and Carlisle Cathedral Treasury) are situated outside the City and District of Carlisle. Since the academic value of any individual archive is greatly enhanced if all elements are kept together for future study (Owen 1995, 8), it is recommended that every effort should be made to facilitate the return of all archival elements to Shaddon Mill as early as possible during Stage 3. The only exceptions should be those materials that are the subject of post-excavation assessment, analysis or conservation (at the present time, the principal archives are those relating to the Millennium and Rickergate projects and the excavations at St Michael's Church, Workington), and objects currently on display in Tullie House Museum and Art Gallery and Carlisle Cathedral Treasury.

6.5.2 Appropriate documentation recording the return of archive materials to the Mill should be compiled. Following their return, items should be re-integrated into the relevant 'parent' archives and appropriate remedial works undertaken to prepare them for long-term storage and deposition (see *Sections 6.7-6.9*).

6.6 TIMING OF STAGE 3 REMEDIAL WORKS

6.6.1 At the time of compilation of this report in 2004, Shaddon Mill had recently been sold to a property developer, who had converted most of the building into flats (*Section 3.3.4*), in the process moving the CAU/CAL archives from Level 5 to Level 1. Tullie House Museum and Art Gallery subsequently negotiated a medium-term lease to retain Level 1, and intended to undertake a thorough cleaning and re-ordering of the facility to make it an acceptable repository for the Carlisle archive. Storage conditions within the Mill were far from ideal, since conversion works were going on all around (and even on the ceiling directly above) the material. This only added to the amount of dust and dirt that was already present, and it also required some parts of the archive to be moved again (within Level 1).

6.6.2 Such an environment was clearly unsatisfactory for the long-term storage of archaeological archives. It was therefore crucial to the continued integrity of the archive that the present store, if it was to continue to be used as such, was comprehensively cleaned and re-ordered prior to the commencement of Stage 3. Given that this was integral to the success of the Stage 3 works, it would have been higly unfortunate if such works were commissioned only for the archive to become dirty again and perhaps have to be moved in order to facilitate the provision of clean space.

6.6.3 A far better approach, and one that was been agreed during discussions with Tullie House Museum and Art Gallery, English Heritage and CCCHER, would be to co-ordinate the timing of the Stage 3 remedial works with the

cleaning and re-ordering of the current facilities. In this way the upgraded archive could be placed directly into a secure and stable environment from the outset. Such an approach also represents the most efficient use of resources, since it avoids the double-handling that would result if the archive were replaced on the shelves, only to be moved again a few months later.

6.6.3 It was therefore recommended that every effort be made to co-ordinate the two events. Ideally, a clean, secure storage area should be available at the beginning of Stage 3, or at an early stage in the work, so that upgraded archives can be moved directly into it as soon as they are completed. The precise start date for Stage 3 depended upon future discussions between all interested parties. Guarantees were to be needed from Tullie House Museum and Art Gallery that the conditions were suitable for clean long-term storage.

6.6.4 It is now confirmed that all of the above is in place and it is appropriate for the Stage 3 works to commence. Thus the updated version of this report can now be formally submitted.

6.7 REMEDIAL WORKS ON DOCUMENTARY ARCHIVES

6.7.1 The re-organisation of the CAU/CAL and non-CAU/CAL documentary archives in Shaddon Mill, which was undertaken during Stage 2 of the Archives Project, represented, in effect, the first of the remedial works required to bring the archive collection up to deposition standard. The work resulted in the re-integration of stray archival elements into 'parent' archives and the re-ordering of most of the archive into alphabetical order on numbered shelving racks (*Section 3.3*). The comparatively small quantities of archival material relating to events undertaken by organisations other than CAU/CAL were also re-located to their own shelving area. For both CAU/CAL and non-CAU/CAL documents, a record of key archival elements, particularly indices, which were either missing or incomplete, was made (*Sections 4.13.6-8*).

6.7.2 The assessment undertaken during Stage 2 demonstrated that, whilst the bulk of the documentary archives currently stored in Shaddon Mill are in a reasonably good condition, both general and specific problems are apparent (*Section 4.7*). Standards for the preparation of archaeological archives have advanced considerably since many of the project archives currently stored in Shaddon Mill were created. National guidelines produced during the 1990s by the UKIC (Walker 1990), English Heritage (1991), the Museums and Galleries Commission (1992), and the SMA (Owen 1995) have in turn formed the basis of guidelines issued by many museum services in England and Wales in recent years. It is clear that a considerable programme of re-organisation and remedial works will be required if standards are to be raised to a level that is both acceptable to the receiving museums and compliant with modern archival standards.

6.7.3 Two options are available, both of which apply equally to the CAU/CAL archives and the material in Shaddon Mill generated by non-CAU/CAL events. Ideally, the documentary archive should be completely re-organised and re-packaged to comply with current best practice for the production and

preparation of archaeological archives (*Proposal 1*; see *Section 6.1.2*). Failing this, the archive must be upgraded to a standard acceptable to the recipient museums/organisations (*Proposal 2; Section 6.1.2*). The latter can be regarded as the *minimum* amount of work that is required for the production of an acceptable documentary archive. Recommendations for the proposals are set out below, and are summarised in Tables 55 and 56. The most cost-effective option is, however, to combine the methdology proposed for the 'paper archive' in Proposal 1 (*Section 6.7.5-11*) with the remainder of Proposal 2 (*6.8.13-17; 6.8.13-17; 6.9.13-16*); this option is described as Proposal 3 *(Proposal 3; Section 6.1.2)*. It should be noted that several tasks require completion whatever level of remedial works is ultimately undertaken. Method statements and a task list relating to both proposals can be found in *Sections 8.7* and *9.8* of this report.

6.7.4 ***Proposal 1***: the following recommendations are for a programme of remedial works to upgrade the Carlisle documentary archive to the standard required for the preparation of modern archaeological archives. The recommendations principally follow the detailed national guidelines cited above (*Section 6.1.2*), and also take into account any existing guidelines issued by the relevant receiving bodies.

6.7.5 ***Paper archive***: in common with the rest of the Carlisle archive, the documentary archive grew organically over many years with little or no central control. Consequently, the paper records, which include primary documentation such as context sheets, indices and records of levels, and other paperwork, such as correspondence and analytical or research documentation, are currently stored in a wide variety of files and folders of many different shapes and sizes. A4 box files, magazine files, lever arch files, and A4 ring binders are all present, whilst some of the smaller archives are currently stored loose-leaf within single manila folders. There do not appear to be any particular chronological differences in the types of storage media used. Many of the files are old and in poor condition, and had clearly been well used before finding their way into the archive. In addition, many files are not particularly well labelled. As a result of the different types of storage media employed, and the condition of a significant proportion of the files, the archive as a whole has a haphazard and rather shabby appearance. The different shapes and sizes of the files also mean that the whole assemblage is awkward to store.

6.7.6 It is therefore recommended that the entire paper archive is removed from its current storage media and stored flat in labelled, acid-free cardboard archive boxes (Walker 1990, 9). Both the labels and the pens used to mark them should conform to modern archival standards. Within each box, each archival element (context sheets, photographic index, and so on) should be stored in labelled, acid-free wallets. All rubber bands, adhesive tape, uncoated paper clips, staples, and other metal items, which could decay and cause damage to the archive, should first be removed (*op cit*, 7). All records should be checked to ensure that the relevant project information (particularly the site code) and, where appropriate, contextual information, is present. Any omissions should then be rectified.

6.7.7 Key archival elements (Owen 1995, 48-9; English Heritage 1991, 30-1) that have been identified as missing, such as context, drawn, photographic, or environmental indices, should be compiled, in so far as is reasonably possible given the extent of existing information, and deposited in the archive box. The contents of each archive box should be audited and digital box-lists created. A copy of the relevant list should be placed in each box.

6.7.8 Security copying of the primary records is of the utmost importance. This could be achieved by submitting the relevant records to the National Archaeological Record (NAR) for microfilming and indexing. It is assumed that any costs associated with this process would be covered by English Heritage as part of its support in kind.

6.7.9 ***Drawn archive***: it is recommended that the bulk of the oversize field drawings (*c* A1-A2 size) and other oversize illustrations in the archive are removed from the plan cabinets in which they are currently stored and placed in rolls in appropriately labelled, acid-free cardboard plan boxes. The only exceptions should be drawings generated by archaeological events within the District of Copeland, since guidelines supplied by the relevant receiving museum (The Beacon Heritage Centre, Whitehaven) state that oversize drawings should be suitable for storage in A0/A1 plan drawers (Derbyshire Museums Service 2003, 7). A3/A4-sized drawings should be removed from their current folders and placed in labelled archive boxes. All the drawings should be checked to ensure that the relevant project information, particularly the site code, is present, and any omissions should be rectified. The contents of each archive box should be audited, digital box-lists created, and a copy of the relevant list placed in each box. As with the paper records (*Section 6.6.8*), all primary field drawings should be security copied by the NAR.

6.7.10 ***Photographic archive***: it is recommended that all photographic images stored in the Carlisle archives are scanned and copied to CD-Rom disks for security purposes. All photographic slides, prints, contact-strips and negatives should be removed from the ring-binders in which they are currently stored. All existing wallets and sleeves containing photographic materials should be replaced with new, archivally stable polyester sleeves that conform to modern archival standards. All uncoated paperclips and other unstable materials should be removed from the archive. In so far as is reasonably possible, unlabelled prints, slides, and negatives should be labelled with the relevant project and contextual information, by reference to existing photographic indices or information contained on chalkboards. Where this is not possible (for example, where indices do not exist or where no chalkboards appear in shot), each image should at the very least be labelled with the site code. Missing or incomplete photographic indices should be compiled or completed in so far as is possible given the information available in the archive. The new photographic sleeves should also be labelled appropriately and, with the exception of negatives, stored flat in labelled archive boxes. Negatives should be kept apart from the rest of the photographic collections for security purposes, and should be stored in a fire-safe filing cabinet (Walker 1990, 12). X-rays should be extracted from their current inappropriate locations within

the documentary archives and re-located in the relevant photographic archives. All x-rays should be stored within polyester or acid-free paper sleeves (*op cit*).

6.7.11 A not insignificant proportion of the Carlisle photographic archive is currently stored in mixed folders, where images relating to two or (frequently) more projects are to be found in the same file. In extreme cases, images or negatives relating to more than one project are to be found on a single contact or negative strip. In some cases it might be possible to separate out the photographs and negatives and integrate them with the rest of the archives, but in others this will be impossible. It is recommended that in such cases all relevant images are copied to allow placement with the relevant archives. The contents of each archive box should be audited, digital box-lists created, and a copy of the relevant list placed in each box. The whereabouts of negatives stored elsewhere should be recorded and a security copy of the archive should be made.

6.7.12 ***Digital archive***: all 5.25-inch and 3.5-inch floppy disks currently stored in the Carlisle archive should be read and copied onto the server at OA North's premises in Lancaster. The contents of the disks should then be assessed and all information or data that are clearly related to identifiable archaeological events should be converted to a modern format and copied to CD-Rom disks. Likewise, all files and Terramodel survey data obtained from old computers formerly used by CAU/CAL should be read and copied to CD-Rom disks, providing it can be related to known events. Ideally, a hard copy of each of the files copied to CD should be produced and placed in the relevant project archives. The digital resource should be audited and digital lists produced. A security copy of the data should be made.

Archive type	**Description of recommendations**
Paper archive	Remove all paper records and other documents from current files/folders and place in labelled, acid-free wallets within labelled archive boxes
	Extract all uncoated paper clips, metal staples, and other unstable items from the paper archive
	Ensure project and (where relevant) contextual information is present on all paper records
	Compile context indices where these are missing
	Audit contents of all boxes and create digital box lists. Insert copies of box lists in each box
	Undertake security copying of all primary records
Drawn archive	Remove all oversize drawings from plan cabinets and place in labelled, archivally stable cardboard boxes
	Remove all A3/A4 drawings from current files/folders and place in labelled, acid-free wallets within labelled archive boxes
	Ensure project information and other relevant information is present on all drawings
	Complete drawing indices where these are missing
	Audit contents of all boxes and create digital box lists. Insert copies of box lists in each box
	Undertake security copying of all primary drawings
Photographic archive	Scan all photographic images and copy to CD-Rom disks
	Remove all photographic slides, prints, contact-strips and negatives from current storage sleeves and replace with archivally stable sleeves compliant with modern archival standards
	Extract uncoated paper clips and other unstable items from the archive

Archive type	Description of recommendations
	Label as many unlabelled photographs, slides and negatives as is possible given the information available in the archive
	Compile photographic indices where these are missing, in so far as is possible given the information available in the archive
	Place re-packaged photographs and negatives in labelled, acid-free archive boxes
	Store negatives separately from the rest of the photographic archive
	Extract x-rays from documentary archives and re-locate in relevant photographic archives. Store x-rays in polythene or acid-free paper sleeves
	Split mixed folders where possible. Copy images currently stored in mixed folders as necessary
	Audit contents of all boxes and create digital box lists. Insert copies of box lists in each box
	Undertake security copying as required
Digital archive	Read all 5.25-inch and 3.5-inch floppy disks and copy to OA North Server
	Assess data derived from 5.25-inch and 3.5-inch floppy disks and copy data to CD Rom disks as necessary
	Copy all relevant files saved from old computers to CD-Rom disks
	Copy all Terramodel survey data to CD-Rom disks
	Produce hard copies of all files copied to CD-Rom disks
	Audit contents of digital archive and generate digital lists of the resource
	Undertake security copying as required

Table 55: Summary of principal recommendations for upgrading the Carlisle documentary archive to optimum standards (Proposal 1)

6.7.13 ***Proposal 2***: the following recommendations are for a programme of remedial works to upgrade the Carlisle documentary archive to the minimum standard acceptable for deposition with the recipient museums/organisations. These recommendations still largely conform to the detailed national guidelines issued by the UKIC and the SMA (*Section 6.1.2*), and continue to take account of guidelines issued by the relevant receiving museums. Additionally, the formulation of this proposal has benefited greatly from conversations with Tim Padley, Keeper of Archaeology at Tullie House Museum and Art Gallery, which is the likely ultimate repository for approximately 85% of the Carlisle archive material (*Section 5.2.33*), and Richard Hall of the Cumbria Archive Service (CAS).

6.7.14 ***Paper archive***: it is proposed that current procedures for the deposition of archaeological archives with CAS (R Hall *pers comm*) are followed with respect to all documentary archives generated by archaeological events within the City and District of Carlisle (for which Tullie House Museum and Art Gallery will have ultimate responsibility). As a minimum requirement, it is recommended that the paper archives for these events are, in the short term, retained in their current files and folders. Any damaged, dilapidated or otherwise unsuitable files should, however, be replaced, together with files that appear to be overloaded. The entire collection should also be clearly and consistently labelled using appropriate adhesive labels and marker pens, which should conform to modern archival standards. A thorough check of the archive should be made to extract uncoated paper clips, staples, rubber bands, adhesive tape, and any other materials that might decay and cause damage to the archive. Any loose sheets should be extracted, repaired and replaced. All records should be checked to ensure that the site code and other appropriate information is present, and any omissions should be rectified. The contents of

each documentary archive should be audited, digital lists created, and a copy of the relevant list placed with each archive. Security copying of the primary records should be undertaken for every event archive, in line with the proposals set out above (*Section 6.7.8*).

6.7.15 Although CAS currently accepts documentary archives from archaeological projects that are stored in ring binders and other files that are unsuitable for long-term storage, the Service ensures that records are transferred to archivally stable wallets and boxes as soon as possible after deposition. Once the Carlisle archives have been deposited, it is recommended that Tullie House Museum and Art Gallery endeavours, in the medium to long-term, to undertake a similar programme of upgrading, whereby the paper archive is removed from its current storage media and placed in archivally stable packaging.

6.7.16 For the remainder of the paper archive (*c* 15% of the total), which will be deposited with other receiving museums, the recommendations set out in *Proposal 1* (*Sections 6.7.6-8*) should be followed.

6.7.17 ***Drawn archive***: as a minimum requirement, it is recommended that all the oversize (*c* A1/A2) field drawings and other oversize illustrations that will ultimately be deposited with Tullie House Museum and Art Gallery are re-ordered within the plan cabinets in which they are presently stored. Probably the best way to store these drawings is alphabetically by site code. Digital lists of the contents of each plan cabinet should be produced and a copy placed in each cabinet. Copies of these lists should also be placed in the relevant written archives. A list of the event archives contained within each should also be attached to the outside of the cabinet by means of an adhesive label. Where drawing indices are missing, a record of the numbers of drawings in the archive should be made. Damaged or missing suspension-strips should be replaced as necessary. Oversize drawings for deposition with museums other than Tullie House Museum and Art Gallery should be extracted from the plan cabinets.

6.7.18 Folders of A3/A4 drawings for deposition with Tullie House Museum and Art Gallery should be checked and any damaged, dilapidated or overloaded examples replaced. The folders should be clearly and consistently labelled. A3/A4 drawings for deposition with other museums should be extracted from folders and placed in archive boxes, in line with the proposals set out above (*Section 6.7.9*). All drawings should be checked to ensure that the relevant project information, particularly the site code, is present, and any omissions should be rectified. The contents of each folder should be audited, digital lists created, and a copy of the relevant list placed in each archive. All primary field drawings should be security copied.

6.7.19 ***Photographic archive***: in the case of archives that are to be deposited with Tullie House Museum and Art Gallery, the slides, prints, contact prints and negatives should be retained in their present binders, although damaged or overloaded binders should be replaced and all must be clearly and consistently labelled. Where photographic indices have been stored with the images or negatives they should be extracted and integrated into the paper archive. All existing photographic wallets and sleeves should be replaced with labelled, archivally

stable polyester sleeves. Uncoated paperclips and other unstable materials should be removed from the archive. In so far as is reasonably possible, each photographic image should be labelled with the appropriate site code and a digital record of the numbers of individual images and negatives in each archive should be made. In the case of mixed folders containing images relating to two or more projects, it is recommended that images are copied to allow placement with the relevant archives, as described in *Section 6.7.11*. Negatives should be stored separately from the rest of the photographic collections for security purposes. X-rays should be extracted from inappropriate places within the documentary archive and integrated into the relevant photographic archives. All x-rays should be stored within polyester or acid-free paper sleeves. The contents of each archive should be audited and digital lists created; copies of these records should be placed in the relevant archives. A security copy of the archive should be made.

6.7.20 For the comparatively small amounts of material to be deposited with other museums (see *Section 6.7.16, c* 10% of the total), the recommendations set out in Proposal 1 above (*Section 6.7.10*) should be followed.

6.7.21 ***Digital archive***: the recommendations set out in Proposal 1 (*Section 6.7.12*) should also be implemented as part of Proposal 2. All floppy disks should be read and copied onto OA North's server in Lancaster. The data should be assessed and any relevant data copied to CD-Rom disks. Likewise, all files and survey data obtained from old computers formerly used by CAU/CAL should be read and relevant data copied to CD-Rom disks. A hard copy of each of the files copied to CD-Rom should be produced and included in the relevant project archives. The digital archive should be audited and a digital listing of the resource produced. A security copy of all digital data should also be made.

Archive type	**Description of recommendations**
Paper archive	Replace all damaged or unsuitable files/folders and clearly label all folders
	Extract loose sheets, repair and re-integrate to archive
	Extract all uncoated paper clips, metal staples, and other unstable items from the paper archive
	Ensure project and (where relevant) contextual information is present on all paper records
	Audit contents of each archive and create digital lists. Insert copies of lists in each archive
	Undertake security copying of all primary records
Drawn archive	Re-order all oversize drawings in plan cabinets, with project archives ordered alphabetically
	Generate digital lists of cabinet contents and place in cabinets
	Replace damaged or missing suspension-strips, as required
	Replace all damaged or unsuitable folders holding A3/A4-sized drawings, and clearly label all folders
	Ensure project information and other relevant information is present on all drawings and folders
	Where drawing indices are missing, ensure that at least a list of the number of drawings is produced
	Audit contents of each archive and create digital lists. Insert copies of lists in each archive
	Undertake security copying of all primary drawings

Archive type	Description of recommendations
Photographic archive	Replace all damaged, overloaded or unsuitable folders and ensure all folders are clearly and consistently labelled
	Extract photographic indices where stored with photographs or negatives, and re-integrate with the paper archive
	Replace existing photographic wallets and sleeves with labelled, archivally stable polyester sleeves
	Extract all uncoated paper clips and other unstable items from the archive
	Label unlabelled photographs, slides and negatives with site code
	Where photographic indices are missing, generate lists of numbers of individual images and negatives in each archive
	Split mixed folders where possible. Copy images currently stored in mixed folders as necessary
	Store negatives separately from the rest of the photographic archive
	Extract x-rays from documentary archives and re-locate in relevant photographic archives. Store x-rays in polythene or acid-free paper sleeves
	Audit contents of each archive and create digital lists. Insert copies of lists in each archive
	Undertake security copying as required
Digital archive	Read all 5.25-inch and 3.5-inch floppy disks and copy to OA North Server
	Assess data derived from 5.25-inch and 3.5-inch floppy disks and copy data to CD-Rom disks as necessary
	Copy all relevant files saved from old computers to CD-Roms
	Copy all Terramodel survey data to CD-Roms
	Produce hard copies of all files copied to CD
	Audit contents of digital archive and generate digital lists of the resource
	Undertake security copying as required

Table 56: Summary of principal recommendations for upgrading the Carlisle documentary archive to minimum acceptable standards (Proposal 2)

6.8 REMEDIAL WORKS ON ARTEFACTUAL ARCHIVES

6.8.1 The condition assessment undertaken during Stage 2 of the Archives Project has demonstrated (*Section 4.8*) that most of the artefactual archives currently stored in Shaddon Mill are in good condition. This is in part a serendipitous result of the nature of archaeological deposits in Carlisle (many are waterlogged, which normally enhances artefact preservation), but is also partly due to the date range of many of the excavations undertaken by the Carlisle unit, which have tended to focus on the Roman waterlogged levels. Many of the material groups, metalwork especially, emerged from the ground in an excellent and, equally importantly, stable condition, and have therefore survived prolonged storage unusually well. It is also apparent that the general storage conditions and packaging of finds are reasonably good, and that most materials are relatively stable. It is not, however, clear for how much longer this situation will pertain, as the ambient conditions of the building are bound to change as a result of its ongoing conversion to other uses.

6.8.2 Certain deficiencies in the packaging and storage of the material archive are, however, apparent. Both general and specific problems with the current levels of storage and packaging have been set out in *Section 4.8*, and it is clear that a considerable programme of re-organisation and remedial works will be required if long-term storage conditions are to be at a level compliant with modern archival standards. In addition, while it is clear that further

conservation work is required on the assemblage, it has not been possible to quantify this work even at a ballpark level, as the proposed project team was not involved in any of the excavations. This means that there will almost certainly be further conservation costs during the course of the project.

6.8.3 As with the documentary archives, two options are available. Ideally, the entire archive should be re-packaged and otherwise upgraded to comply with current best practice for the production and preparation of archaeological archives to the highest standard (*Proposal 1; Section 6.1.2*). Failing this, the storage conditions must be raised to a standard acceptable to the recipient museums/organisations and comparable to the extant collections of these bodies (*Proposal 2; Section 6.1.2*). The latter can be regarded as the *minimum* amount of work that is required for the production of an acceptable artefactual archive. Recommendations for each proposal are set out below, and are summarised in Tables 57 and 58. It should be noted that many tasks need to be completed whatever level of remedial works is ultimately undertaken. Method statements and task lists relating to both proposals can be found in *Sections 8.8* and *9.8* of this report.

6.8.4 ***Proposal 1***: the following recommendations are for a programme of remedial works to upgrade the Carlisle artefactual archive to the standard required for the preparation of modern archaeological archives. The recommendations principally follow the detailed national guidelines for archive preparation cited above (*Section 6.1.2*). Existing guidelines issued by the relevant receiving bodies have also been taken into account. It should be noted that, in practice, it may prove necessary to vary very slightly the detailed recommendations for packaging and labelling set out below, in order to comply with the specific requirements of individual receiving museums.

6.8.5 ***Bulk finds***: it is recommended that the entire bulk artefact assemblage is re-ordered so that all material categories associated with a particular event are stored together. Dust and dirt that has built up on most of the boxes should be removed. All damaged boxes (mostly standard cardboard boxes measuring 450 x 250 x 175mm) should be replaced, as should all boxes that are overloaded with heavy and/or bulky materials. For Health and Safety reasons no single box should weigh in excess of 6kg. In cases where this is unavoidable, the box must be clearly labelled to indicate excessive weight.

6.8.6 During the assessment, it was noted that in some boxes the self-seal polythene bags used for artefact storage had begun to disintegrate due to chemical decomposition or overpacking. A thorough check of the internal packaging of all boxes should therefore be undertaken and any damaged bags replaced.

6.8.7 The contents of each box should be checked, and boxes containing mixed artefactual collections (different material classes and/or multiple events) should be extracted and the contents appropriately re-boxed. Artefacts found to be in the wrong box should be re-integrated into the appropriate archive. All artefactual materials currently stored on open trays or in other unsuitable containers should be placed in labelled polythene bags and re-boxed. In the case of large individual items (for example architectural stone fragments) that

cannot be boxed, a check should be made to ensure they are adequately and securely labelled.

6.8.8 Most storage boxes currently have labels attached by masking tape, which has lost its adhesive qualities. As a consequence, many labels have become detached, or are in imminent danger of becoming so. All labels must therefore be removed and the boxes re-labelled using self-adhesive labels and indelible marker pens, which should conform to modern archival standards. In cases where receiving museums specify that adhesive labels should not be used, the information will be written directly onto the outside of each box.

6.8.9 Since none of the storage boxes currently contain box-lists, the contents of each box must be audited, digital box-lists created, and a copy of the relevant list placed in each box. The contents of the boxes should also be compared against existing written records in order to establish the extent of any losses, and records should be updated accordingly.

6.8.10 ***Individually Registered Finds (IRFs)***: all environmentally-sensitive IRFs currently stored in cardboard boxes should be re-boxed in plastic 'Stewart' boxes. Any existing cardboard or plastic boxes that are damaged should also be replaced, as should any boxes that are clearly overloaded. All existing boxes that are to be retained should be cleaned of accumulations of dust and dirt. Boxes containing mixed materials, either of different material classes or from multiple events, should be extracted and the contents separated and appropriately re-boxed. Artefacts that have been put in the wrong box will be extracted and re-integrated into the appropriate archive. As with the bulk finds, the labels on the great majority of IRF storage boxes are attached with sticky tape that has lost, or is losing, its adhesive qualities. All existing labels must therefore be removed and replaced with self-adhesive labels containing relevant project and context information marked with indelible ink. The information should also be written on Tyvek labels placed within each box. Again, both labels and pens should conform to modern archival standards.

6.8.11 A thorough check of all internal packaging should be undertaken. All manila envelopes should be replaced with self-seal polythene bags with write-on panels. Where necessary, the bags should be reinforced with corrugated foam to provide additional support for delicate or fragile objects. Existing silica gel should be removed from IRF boxes and replaced with a new, non-cobalt humidity indicator. The contents of each box must be audited, digital box-lists created, and a copy of the relevant list placed in each box. The contents should also be compared against existing records in order to establish the extent of any losses, and records should be updated accordingly. Definitive lists of all IRFs should be created digitally for each event archive.

6.8.12 ***X-rays***: all individually registered metal artefacts should be x-rayed, where this has not already been done. Where x-rays exist, digital lists cross-referencing the x-rays to the artefacts should be produced. In accordance with current best practice the large number of iron objects treated as bulk finds should also be x-rayed. It is, however, recognised that this work is unlikely to be justifiable, given the extremely high cost and the limited archaeological value of the bulk iron assemblage, most of which is likely to derive from contexts with little

potential. For this reason, it is recommended that the assemblage should be dealt with in a similar way to that from the Millennium Project (OA North 2002b, 93). The bulk iron assemblage should therefore be assessed and a percentage, comprising most items that are not obviously nails, selected for x-raying. Based on figures from the Millennium Project, it is estimated that approximately 20% of total assemblage in Shaddon Mill (40,000 items from and estimated total of 200,000) may require x-ray. For unstable materials of all kinds, supplementary conservation or curation should be arranged as necessary, in consultation with the appropriate specialists. In the case of the remaining sensitive artefacts that are currently unconserved (principally metalwork and waterlogged organic materials), criteria should be developed, in consultation with the appropriate specialists and museum personnel, to determine the proportion of material warranting conservation, and to establish the extent of any conservation works that should be undertaken. It is recommended that criteria for the disposal of unconserved wood and leather that is either in a poor state of preservation or of little archaeological potential should also be developed, again in consultation with specialists and museum personnel.

Archive type	**Description of recommendations**
Bulk artefacts	Re-order bulk artefact assemblage to ensure all material categories for each event are stored together
	Replace all damaged boxes containing bulk artefactual materials
	Eliminate over-packaging of bulk artefact boxes by re-packing in new boxes
	Clean accumulations of dust and dirt from all boxes
	Check internal packaging of bulk artefact boxes and replace damaged packaging
	Sort all boxes containing mixed material classes and materials from multiple events and re-box as appropriate
	Re-integrate artefacts found in incorrect boxes to appropriate archives
	Re-box all artefactual materials currently stored on trays, in unboxed bags, or in unconventional containers
	Check labelling of large, individual objects, and re-label as required
	Re-label all outer packaging with self-adhesive labels and indelible ink
	Audit contents of all boxes and create digital box lists. Insert copies of box lists in each box
	Compare contents of boxes to written records in order to establish extent of losses, and update records accordingly
IRFs	Re-box those IRFs currently stored in cardboard boxes, replacing existing boxes with plastic 'Stewart' boxes for all metalwork and other sensitive materials
	Clean accumulations of dirt and dust from existing boxes, both cardboard and plastic
	Sort all boxes containing mixed material classes and materials from multiple events and re-box as appropriate
	Re-integrate artefacts found in incorrect boxes to appropriate archives
	Insert Tyvek labels to IRF boxes, as required
	Re-label all outer packaging with self-adhesive labels and indelible ink
	Replace all manila envelopes with polythene self-seal bags, reinforced where necessary with corrugated foam
	Upgrade other sub-standard packaging as necessary
	Remove all silica gel and replace with a non-cobalt humidity indicator
	Audit contents of all boxes and create digital box lists. Insert copies of box lists in each box
	Compare contents of boxes to written records in order to establish extent of losses, and update records accordingly
	Produce definitive quantifications of IRFs for each event

Archive type	Description of recommendations
	X-ray all individually registered metal artefacts, where this has not already been done. Rapidly assess the bulk iron assemblage and develop criteria for the future x-raying of a proportion of the assemblage
	Arrange supplementary conservation or curation for unstable materials, as necessary, in consultation with appropriate specialists and museum personnel
	Develop criteria for the conservation of remaining vulnerable finds, especially waterlogged organic artefacts and ironwork, in consultation with appropriate specialists and museum personnel
	Develop criteria for the disposal of unconserved leather and wood, in consultation with appropriate specialists and museum personnel

Table 57: Summary of principal recommendations for upgrading the Carlisle artefactual archive to optimum standards (Proposal 1)

6.8.13 ***Proposal 2***: the following recommendations are for a programme of remedial works to upgrade the Carlisle artefactual archive to the minimum standard acceptable for deposition with the recipient museums/organisations. These recommendations do not differ greatly from those set out in *Proposal 1* above, since there are many tasks that are absolutely essential for the creation of an archive fit for deposition.

6.8.14 ***Bulk artefacts***: in the case of the bulk artefactual assemblage, all the recommendations for remedial works presented in *Proposal 1* (*Sections 6.8.5-9*), are considered to be essential for the production of an archive to minimum acceptable standards. For this reason, these recommendations apply equally to *Proposal 2*.

6.8.15 ***Individually Registered Finds (IRFs)***: in order to upgrade the IRF assemblage to a minimum acceptable standard, it is recommended that storage boxes, both plastic and cardboard, are replaced only where they are damaged or overloaded. All boxes containing mixed material classes or finds from multiple projects should be extracted and the contents separated and re-boxed. Where artefacts have been placed in the wrong box they should be extracted and re-integrated into the appropriate archives. All boxes should be re-labelled with self-adhesive labels marked with indelible ink, and Tyvek labels should be inserted in boxes where they do not already exist.

6.8.16 Internally, all manila envelopes should be replaced with self-seal polythene bags with write-on panels, and corrugated foam should be added where additional structural support is required for delicate or fragile artefacts. Silica gel should be removed from all boxes and replaced with a non-cobalt humidity indicator. The contents of each box must be audited, digital box-lists created, and a copy of the relevant list placed in each box. The contents should also be compared against existing records in order to establish the extent of any losses, and records should be updated accordingly.

6.8.17 ***X-rays***: where x-rays exist, digital lists cross-referencing the x-rays to the artefacts should be produced. Where metal artefacts have not been x-rayed, it is recommended that all individually registered objects are extracted from the archive and sent for x-ray. The bulk iron assemblage should be rapidly assessed and criteria for the future x-raying of a proportion of this material should be developed in consultation with the appropriate specialists. For

unstable materials, supplementary conservation or curation should be arranged where it is deemed to be necessary. In the case of other sensitive and unconserved artefacts (principally metalwork and waterlogged organic materials), criteria should be developed to determine the proportion warranting conservation, and to establish the extent of any conservation works that should be undertaken. Criteria for the disposal of unconserved wood and leather that are either in a poor state of preservation or of little archaeological potential should also be developed. In all cases, these tasks should involve consultation with the appropriate specialists and museum personnel.

Archive type	**Description of recommendations**
Bulk artefacts	Re-order bulk artefact assemblage to ensure all material categories for each event are stored together
	Replace all damaged cardboard boxes containing bulk artefactual materials
	Eliminate overpackaging of bulk artefact boxes by re-packing in new boxes, as required
	Clean accumulations of dust and dirt from all boxes
	Check internal packaging of bulk artefact boxes and replace damaged packaging
	Sort all mixed boxes containing material from multiple events and re-box as appropriate
	Re-integrate artefacts found in incorrect boxes to appropriate archives
	Re-box all artefactual materials currently stored on trays, in unboxed bags, or in unconventional containers
	Check labelling of large, individual objects, and re-label as required
	Re-label all outer packaging with self-adhesive labels and indelible ink
	Audit contents of all boxes and create digital box lists. Insert copies of box lists in each box
	Compare contents of boxes to written records in order to establish extent of losses, and update records accordingly
IRFs	Replace all damaged boxes containing IRFs
	Clean accumulations of dirt and dust from all boxes
	Sort all boxes containing mixed material classes and material from multiple events and re-box as appropriate
	Re-integrate artefacts found in incorrect boxes to appropriate archives
	Insert Tyvek labels, as required
	Re-label all outer packaging with self-adhesive labels and indelible ink
	Replace all manila envelopes with polythene self-seal bags reinforced where necessary with corrugated foam
	Upgrade other sub-standard packaging as necessary
	Remove all silica gel and replace with a non-cobalt humidity indicator
	Audit contents of all boxes and create digital box lists. Insert copies of box lists in each box
	Compare contents of boxes to written records in order to establish extent of losses, and update records accordingly
	X-ray all individually registered metal artefacts, where this has not already been done. Rapidly assess the bulk iron assemblage and develop criteria for the future x-raying of a proportion of the assemblage

Archive type	Description of recommendations
	Arrange supplementary conservation or curation for unstable materials, as necessary, in consultation with appropriate specialists and museum personnel
	Develop criteria for the conservation of remaining vulnerable finds, especially waterlogged organic artefacts and ironwork, in consultation with appropriate specialists and museum personnel
	Develop criteria for the disposal of unconserved leather and wood, in consultation with appropriate specialists and museum personnel

Table 58: Summary of principal recommendations for upgrading the Carlisle artefactual archive to minimum acceptable standards (Proposal 2)

6.9 REMEDIAL WORKS ON ENVIRONMENTAL ARCHIVES

6.9.1 The work undertaken during Stage 2 of the Archives Project has demonstrated that the condition of the environmental archives currently stored in Shaddon Mill is varied (*Section 4.9*). This is due in part to variations in the types of packaging and methods of storage employed by the Carlisle unit over the years (see *Sections 4.9.3-5*), and in part to the differing amounts of time the material has been in storage. As the great majority of the soil samples in the Carlisle assemblage have not been subjected to any kind of assessment or analysis, it is recommended that disposal is, at this stage, restricted to those samples that have clearly suffered contamination since collection, or which have deteriorated significantly during storage.

6.9.2 The majority of the bagged soil samples are reasonably stable, although some have dried out. The practice of stacking cardboard boxes containing heavy soil samples one on top of another has caused the distortion or collapse of many boxes. The problems with the external labelling of storage boxes (*Section 4.8.59*) apply equally to the boxes used to store environmental samples. Most of the samples stored in plastic tubs are clearly labelled and in good condition, although the majority are stacked several deep, one on top of another. Soil monolith samples are stored horizontally on shelving racks and on the floor of Shaddon Mill, in some cases in stacks several tins deep.

6.9.3 The assemblage of wood at Shaddon Mill is mostly stored in polythene bags in cardboard boxes. A few objects, mainly large timbers, are wrapped in polythene sheeting and are unboxed. Both conserved and unconserved material is present, the latter being stored damp, either in refrigerators or in large cardboard boxes. Several bags have imperfect seals, which have allowed the wood to dry out.

6.9.4 As with the documentary and artefactual archives, two options can be considered. Ideally, the entire archive should be upgraded to comply with current best practice for the production and preparation of archaeological archives (*Proposal 1; Section 6.1.2*). Failing this, the storage conditions must be raised to a standard acceptable to the recipient museums (*Proposal 2; Section 6.1.2*). The latter can be regarded as the *minimum* amount of work that is required for the production of an acceptable environmental archive. Recommendations for each proposal are set out below, and are summarised in

Tables 59 and 60. Once again, it should be noted that many tasks are not optional, but have to be completed whatever level of remedial works is ultimately undertaken. Method statements and task lists relating to both proposals can be found in *Sections 8.9* and *9.8* of this report.

6.9.5 ***Proposal 1***: the following recommendations are for a programme of remedial works to upgrade the Carlisle environmental archive to the standard required for the preparation of modern archaeological archives. The recommendations principally follow the detailed national guidelines for archive preparation issued by the UKIC (*Section 6.1.2*), although English Heritage's environmental archaeology guidelines, as applied at Fort Cumberland (English Heritage 2002), have also been consulted.

6.9.6 ***Bagged/boxed soil and wood samples***: it is recommended that the environmental archives as a whole are re-ordered so that, in so far as is practicable, all material categories for a single event are placed together. An initial check of all soil and wood samples, including those currently stored in plastic tubs, should be undertaken to identify those showing clear evidence of contamination or severe deterioration. These, together with any with missing or inadequate labelling, should be discarded following consultation with relevant specialists and museum personnel. Since most of the soil samples currently stored in Shaddon Mill have not been subjected to any form of assessment or analysis, none should be arbitrarily disposed of unless they are obviously contaminated or unprovenanced, or have deteriorated to the point where they are clearly of no archaeological value.

6.9.7 Bagged samples currently stored in cardboard boxes should be extracted and placed in labelled, airtight plastic tubs or boxes (the soil and wood should not be removed from the plastic bags, however). Samples contained in tubs should also be cleaned of their accumulation of dust and dirt, which has been caused in large part by prolonged storage in Shaddon Mill. The integrity of all sample bags should be checked and replacement undertaken as necessary. The contents of each box or tub must be audited, digital lists created, and a copy of the relevant list placed in, or attached to, each. The contents should also be compared against existing records in order to establish the extent of any losses, and records should be updated accordingly.

6.9.8 Criteria for the disposal of soil and wood samples of little archaeological potential should be developed, in consultation with appropriate specialists and museum personnel. In order to facilitate this, it is recommended that a programme of limited processing and rapid assessment of all soil samples is undertaken to determine their archaeological potential. The resulting data could be used to identify samples with little or no retention value, thereby reducing future storage requirements. A programme of disposal of low-priority samples could be undertaken, at the direction of appropriate museum personnel.

6.9.9 ***Soil monoliths (column samples)***: all soil monolith samples should be checked to ensure that wrapping and labelling are adequate. Any samples with damaged packaging and missing or inadequate labelling should be discarded, in consultation with the relevant specialists and museum personnel. The samples

should also be compared against existing records in order to establish the extent of any losses. Digital lists of the current archival holdings should be produced.

6.9.10 As with the bulk samples, consideration should be given to undertaking a programme of rapid assessment, in consultation with appropriate specialists, to determine the condition and archaeological potential of the monoliths, with a view to reducing future storage requirements.

6.9.11 ***Unboxed/oversized wood samples***: all unboxed and oversized wood samples should be checked. Following consultation with the appropriate specialists and museum personnel, those samples showing clear evidence of severe deterioration should be discarded, together with those with missing or inadequate labelling. Damaged or deteriorating packaging and labelling should also be replaced as necessary. The assemblage should be compared against existing records in order to establish the extent of any losses, and digital lists of the current archival holdings should be produced. Consideration should be given to sub-sampling of oversized wood in order to reduce storage requirements. Criteria for sub-sampling and disposal of this material should also be developed in consultation with the appropriate specialists and museum personnel.

Archive type	**Description of recommendations**
	Re-order environmental assemblage to ensure all material categories for each event are stored together, in so far as is practicable
Bagged/boxed bulk soil samples and wood samples	Check all soil and wood samples and discard those showing clear evidence of contamination or severe deterioration, and those with inadequate labelling, in consultation with appropriate specialists and museum personnel
	Extract all bagged soil and wood samples from cardboard boxes and put into labelled, airtight plastic tubs /boxes
	Clean dust and dirt from existing sample tubs, as necessary
	Check integrity of sample bags and replace as necessary
	Place all bagged samples currently without boxes in airtight plastic tubs/boxes
	Audit contents of all tubs/boxes (quantified by sample) and create digital box lists. Insert copies of lists into each tub/box
	Compare assemblage to written records in order to establish extent of losses, and update records accordingly
	Undertake limited processing and rapid assessment of soil samples to determine potential and inform development of a disposal strategy, in consultation with appropriate specialists and museum personnel
	Develop criteria and strategy for disposal of soil and wood samples of little archaeological potential, in consultation with appropriate specialists and museum personnel
	Undertake programme of disposal of low-priority soil samples, as directed by appropriate museum personnel
Soil monoliths (column samples)	Check monoliths and discard if wrapping is damaged or labelling inadequate, in consultation with appropriate specialists and museum personnel
	Compare assemblage to written records in order to establish extent of losses; create digital listings of current archival holdings
	Undertake limited processing and rapid assessment to determine potential and inform development of a disposal strategy, in consultation with appropriate specialists and museum personnel

Archive type	Description of recommendations
Unboxed and oversized wood samples	Check condition of unboxed/oversized wood samples and discard those showing clear evidence of severe deterioration, and those with inadequate labelling, in consultation with appropriate specialists and museum personnel
	Check packaging and labelling of oversized wood and replace as necessary
	Compare assemblage to written records in order to establish extent of losses; create digital listings of current archival holdings
	Develop criteria for sub-sampling and disposal of oversized wood, in consultation with appropriate specialists and museum personnel
	Undertake programme of sub-sampling of oversized wood, as directed by appropriate museum personnel

Table 59: Summary of principal recommendations for upgrading the Carlisle environmental archive to optimum standards (Proposal 1)

6.9.12 ***Proposal 2***: the following recommendations are for a programme of remedial works to upgrade the Carlisle environmental archive to the minimum standard acceptable for deposition with the recipient museums.

6.9.13 ***Bagged/boxed soil and wood samples***: it is recommended that the environmental archives as a whole are re-ordered so that, in so far as is practicable, all material categories for a single event are located together. All soil and wood samples should be checked initially and any showing clear evidence of contamination or deterioration should be discarded, as should those with missing or inadequate labelling, in consultation with appropriate specialists and museum personnel. All damaged boxes containing soil and wood samples and other environmental materials should be replaced, together with any boxes that are grossly overloaded. For Health and Safety reasons, no single box should weigh in excess of 6kg, but where this is unavoidable the box must be clearly labelled to indicate excessive weight. The accumulation of dust and dirt on the boxes should also be removed. All bagged samples that are currently unboxed should be placed in new storage boxes. Where boxes containing mixed material classes or materials from multiple events are located, the contents should be separated and appropriately re-boxed. All boxes must be re-labelled using self-adhesive labels marked with indelible ink, conforming to modern archival standards.

6.9.14 The integrity of all sample bags should be checked and replacement undertaken as necessary. The contents of each box must be audited, digital box-lists created, and a copy of the relevant box-list placed in each. The contents should also be compared against existing records in order to establish the extent of any losses, and records should be updated accordingly. Criteria for the disposal of soil and wood samples should be developed, in consultation with the appropriate specialists and museum personnel.

6.9.15 ***Soil monoliths (column samples)***: all soil monolith samples should be checked to ensure that wrapping and labelling are adequate. Any samples with damaged packaging and missing or inadequate labelling should be discarded, in consultation with appropriate specialists and museum personnel. The samples

should also be compared against existing records in order to establish the extent of any losses, and digital lists of the current archival holdings should be produced.

6.9.16 ***Unboxed/oversized wood samples***: all unboxed and oversized wood samples should be checked, and any showing clear evidence of deterioration should be discarded, together with those with missing or inadequate labelling, in consultation with appropriate specialists and museum personnel. Damaged or deteriorating packaging and labelling should also be replaced as necessary. The assemblage should be compared against existing records in order to establish the extent of any losses, and digital lists of the current archival holdings should be produced. Consideration should be given to sub-sampling in order to reduce storage requirements. Criteria for sub-sampling and disposal of this material should be developed, in consultation with the appropriate specialists and museum personnel.

Archive type	**Description of recommendations**
	Re-order environmental assemblage to ensure all material categories for each event are stored together, in so far as is practicable
Bagged/boxed bulk soil samples and wood samples	Check all soil and wood samples and discard those showing clear evidence of contamination or severe deterioration, and those with inadequate labelling, in consultation with appropriate specialists and museum personnel
	Replace all damaged boxes containing soil and wood samples and any other environmental materials
	Eliminate overpackaging of boxes by re-packing in new boxes, as necessary
	Clean accumulation of dust and dirt from all boxes
	Check internal packaging of boxes and replace damaged packaging
	Box all bagged samples currently without boxes
	Sort all mixed boxes containing different material classes or samples from multiple events and re-box as appropriate
	Re-label all outer packaging with self-adhesive labels and indelible ink
	Audit contents of all boxes (quantified by sample) and create digital box lists. Insert copies of box lists in each box
	Compare contents of boxes to written records in order to establish extent of losses, and update records accordingly
	Develop criteria and a strategy for disposal of soil and wood samples of little archaeological potential, in consultation with appropriate specialists and museum personnel
Soil monoliths (column samples)	Check monoliths and discard if wrapping is damaged or labelling inadequate, in consultation with appropriate specialists and museum personnel
	Compare assemblage to written records in order to establish extent of losses; create digital lists of current archival holdings
Unboxed and oversized wood samples	Check condition of unboxed/oversized wood samples and discard those showing clear evidence of deterioration, and those with missing or inadequate labelling, in consultation with appropriate museum personnel
	Check packaging and labelling of oversized wood and replace as necessary
	Compare assemblage to written records in order to establish extent of losses; create digital lists of current archival holdings
	Develop criteria for sub-sampling and disposal of oversized wood, in consultation with appropriate specialists and museum personnel

Table 60: Summary of principal recommendations for upgrading the Carlisle environmental archive to minimum acceptable standards (Proposal 2)

6.10 UNPROVENANCED MATERIALS

6.10.1 During the course of the Stage 2 assessment, small quantities of unprovenanced artefactual and environmental materials were located in Shaddon Mill (*Sections 4.6.4-5*). It is recommended that Tullie House Museum and Art Gallery are consulted concerning the ultimate fate of these items, and that, following these consultations, a strategy for dealing with this material is developed. It is possible that some items may be suitable for educational use, either in teaching packs or hands-on displays, whilst others may have archaeological value in their own right, regardless of provenance. In other instances, however, disposal may be considered.

6.11 MISCELLANEOUS AND NON-EVENT SPECIFIC MATERIALS

6.11.1 It is recommended that Tullie House Museum and Art Gallery and Carlisle City Council are consulted over requirements for the retention and storage of non-event specific documentation relating to CAU/CAL, and to other miscellaneous materials currently stored in Shaddon Mill. Following these consultations, it is recommended that a strategy for dealing with this material is developed. Any documentary records recommended for retention should be re-packaged in the same way as the rest of the documentary archive (*Section 6.7*). Other items should only be disposed of under the direction of appropriate museum personnel or Council officers, and a record of all discarded materials should be made. Records relating to former CAU/CAL staff or other personnel that are found to contain personal details should be shredded prior to disposal.

6.12 QUANTIFICATION OF DIGITAL INFORMATION

6.12.1 Upon completion of Stage 3 of the Archives Project, it is recommended that a final quantification is produced of the amount of digital information to be supplied to the ADS in York. This will provide the ADS with an accurate indication of the quantity of data to be received and will allow the precise cost of depositing the information to be determined. For further details see *Section 8.12*.

6.13 GAZETTEER OF CAU/CAL EVENTS

6.13.1 At the end of Stage 3, basic information relating to all field events undertaken by CAU/CAL should be provided digitally to the ADS, in order that they may host an online archive gazetteer. In this way, brief summaries of the results of all fieldwork projects carried out by the Carlisle unit between 1977 and 2001 will be placed in the public domain. It is further recommended that the gazetteer should be linked to the Tullie House Museum and Art Gallery and CCCHER web-sites, and to any other appropriate sites.

6.14 PUBLICATION STRATEGIES

6.14.1 Stages 1 and 2 of the Carlisle Archives Project have demonstrated that most of the archaeological data generated by CAU/CAL from 1977 to 2001, including information of probable regional and national importance, is not currently in the public domain (OA North 2003, 32; and *Section 5.3*). Although formal assessment of the archaeological potential of individual event archives lies outside the scope of the current project, suggestions for possible approaches to the dissemination of unpublished data, above and beyond the putative gazetteer described in *Section 6.13*, have been put forward (*op cit*, 32-9). The detailed assessment of the contents of individual event archives undertaken during Stage 2 has also produced a clearer picture of the extent to which post-excavation work had progressed prior to the demise of CAL in 2001 (Table 53). This has made it possible to differentiate between those projects where the post-excavation process is comparatively well advanced and those where little or no analytical work has been undertaken.

6.14.2 No formal archaeological assessments of the potential of the Carlisle data have been undertaken, but, although not directly relevant to the Archives Project, the need for such an assessment programme is clear. This is highlighted by the findings of the Archives Project itself, and from the *Regional Research Framework* for the North West, in which Carlisle, as one of the principal urban centres of the region, features prominently (Philpott and Brennand 2007; Newman and Newman 2007).

6.14.3 It is therefore recommended that consideration should be given, outwith the Carlisle Archives Project, to ways in which the assessment process might be progressed. Any future assessments should, of course, be undertaken with reference to the relevant *Regional Research Agendas* (Philpott and Brennand 2007; Newman and Newman 2007) and the *Regional Research Framework* (Brennand 2006; 2007). It is further recommended that the possibility of including the results of certain unpublished Carlisle events in publication programmes for excavations undertaken subsequently on the same site, or in the immediate vicinity, by other archaeological organisations (see Table 54), should be pursued.

6.15 ARCHIVE DEPOSITION

6.15.1 Basic information on the approximate size and condition of the archival holdings, together with information on the location of any archival elements not currently stored in Shaddon Mill, has been provided to the relevant receiving bodies as part of Stage 2 of the Archives Project. What is not yet clear is whether all the organisations in question are willing or able to accommodate the archives. In most cases, this is unlikely to be a problem, since only comparatively small quantities of material are involved, but it is recommended that this issue is pursued and any problems identified early in Stage 3.

6.15.2 The work undertaken during Stage 1 of the project demonstrated that no deposition agreements existed for any of the archives generated by CAU/CAL (OA North 2003, 19). The resolution of this problem lies beyond the scope of the current project, although landowner details have been obtained for as many events as possible. Clearly, this issue is of crucial importance to the relevant receiving organisations, but is outside the remit of the Archives Project.

6.15.3 In the case of events within Cumbria, it is recommended that consideration be given to depositing archives consisting entirely of documentary records (such as desk-based assessments, standing building recording events, and field events that produced no artefacts or ecofacts) with the County Archive Service (CAS), rather than with receiving museums. Whilst it is estimated that this is likely to reduce the amount of archival materials sent to the museums by little more than $0.7m^3$ (approximately 2% of the entire archival holdings), this figure does not include approximately 340 oversize plans that could also potentially be deposited with the CAS.

6.15.4 York Minster Library has indicated that it is willing to accept the small archive associated with the York Minster excavations of 1968-74 (YM 68-74) in its present condition. This is because the Library is about to commence work on an extensive programme of remedial works and analysis of the entire Minster excavation archive, which is currently in their care (L Hampson *pers comm*). It would therefore be appropriate for the material currently in Carlisle to be returned to York as soon as possible, in order to facilitate its integration into the parent archive.

6.15.5 Upon completion of the Stage 3 remedial works, the refurbished archives should be deposited with the appropriate receiving bodies, provided they are able to accept them. The small amounts of archival material for events outside Cumbria could be sent by courier to the relevant organisations. It is recommended that the larger quantities of material generated by interventions within Cumbria but outside the City and District of Carlisle should be transported by OA North personnel and deposited under the supervision of staff from the appropriate receiving organisations.

6.15.6 For the bulk of the archive, which derives from events within the City and District of Carlisle, OA North will undertake any internal movement and reorganisation of the archive that may be required, under the guidance of museum personnel. It is recommended that the archives be stored alphabetically by site code on numbered or labelled shelving racks, and that the documentary records be located in a separate part of the facility, away from the artefacts and ecofacts. Digital records of the location and contents of all the refurbished archives should be compiled to facilitate access for all future end-users.

6.16 DATABASE TRANSMISSION AND DISSEMINATION OF INFORMATION

6.16.1 At the end of Stage 3, the updated project database should be transmitted to all interested parties, including English Heritage and Tullie House Museum and

Art Gallery. The NMR and AIP should be contacted and the data provided if required.

6.17 STAGE 3 ANALYSIS AND REPORTING

6.17.1 It is recommended that a report is produced at the end of Stage 3 presenting and analysing the results of the work, and providing a summary and overview of the entire Carlisle Archives Project.

7. UPDATED AIMS AND OBJECTIVES

7.1 INTRODUCTION

7.1.1 This section follows the guidance of English Heritage regarding the formulation of updated project aims (English Heritage nd, 2-3). This recommends that it is helpful to treat *aims* as major themes or goals to which specific *objectives* contribute.

7.2 AIM 1

7.2.1 ***To adapt the project database to receive additional data generated by the Stage 3 remedial works.***

7.2.2 ***Objective 1.1***: to adapt the database in accordance with nationally recognised standards for archaeological archives and to ensure compatibility with all potential end-users.

7.2.3 ***Objective 1.2***: to adapt the structure and content of the database, incorporating new tables and fields so that it can adequately receive and record new information generated by the Stage 3 remedial works.

7.3 AIM 2

7.3.1 ***To receive training in guidelines and procedures for archive deposition.***

7.3.2 ***Objective 2.1***: to ensure that project personnel are familiar with national guidelines for the deposition of archaeological archives, and with guidelines issued by the relevant receiving bodies.

7.3.3 ***Objective 2.2***: to ensure that appropriate project personnel receive training in the practices and procedures required for the compilation of archaeological archives to modern standards.

7.4 AIM 3

7.4.1 ***To liaise with Tullie House Museum and Art Gallery and other receiving bodies.***

7.4.2 ***Objective 3.1***: to maintain regular contact with all potential receiving organisations, in order to ensure that the requirements of all interested parties are adequately addressed.

7.5 AIM 4

7.5.1 ***To co-ordinate the return to Shaddon Mill of Carlisle archive materials currently stored elsewhere.***

7.5.2 ***Objective 4.1***: to contact all specialists and other organisations known to be holding Carlisle archival materials, formally requesting their return to Shaddon Mill (excepting materials currently undergoing conservation, assessment or analysis, or objects on display).

7.5.3 ***Objective 4.2***: to co-ordinate and facilitate the return of archival materials to Shaddon Mill, and to make a record of all archival elements returned.

7.6 AIM 5

7.6.1 ***To co-ordinate the commencement of the Stage 3 remedial works with the upgrading of the present facilities.***

7.6.2 ***Objective 5.1***: to liaise with Tullie House Museum and Art Gallery regarding the likely timing of the cleaning and re-organisation of the present store.

7.6.3 ***Objective 5.2***: to co-ordinate, in so far as is possible, the commencement of the Stage 3 remedial works with the above works, to prevent double-handling and to ensure cost-effective use of resources.

7.7 AIM 6

7.7.1 ***To undertake remedial works on the Carlisle documentary archive in order to raise its condition to an acceptable standard for deposition.***

7.7.2 ***Objective 6.1***: to follow national and local guidelines for the preparation and deposition of archaeological documentary archives, in order to ensure the archives are upgraded to an appropriate standard.

7.7.3 ***Objective 6.2***: to re-package and re-order all written archives as required, to a standard acceptable to all receiving museums.

7.7.4 ***Objective 6.3***: to ensure that key missing or incomplete archival elements, particularly drawn, photographic, environmental and artefactual indices, are completed wherever possible (*Proposal 1* only).

7.7.5 ***Objective 6.4***: to ensure that all elements of the drawn archive are appropriately re-packaged and/or re-ordered to a standard acceptable to all receiving museums.

7.7.6 ***Objective 6.5***: to re-package and re-order all elements of the photographic archive to a standard acceptable to all receiving museums.

7.7.7 ***Objective 6.6***: to ensure, in so far as is possible, that all photographic images and negatives are adequately labelled.

7.7.8 ***Objective 6.7***: to extract all existing x-rays from their present locations in the archive and to re-locate and re-package within the relevant photographic archives.

7.7.9 ***Objective 6.8***: to ensure that all floppy disks, computer files and other digital data are read and copied to OA North's server, that the data are assessed and relevant information copied to CD-Roms, and that a hard copy is printed and lodged with the relevant archive.

7.7.10 ***Objective 6.9***: to ensure that all written, drawn, photographic, and digital archives are clearly and adequately labelled, and to undertake re-labelling as required.

7.7.11 ***Objective 6.10***: to remove all uncoated paper clips, metal staples and other unstable materials from the documentary archive, in order to minimise the risk of future damage to the records.

7.7.12 ***Objective 6.11***: to ensure that all written, drawn, photographic, and digital records contain the relevant project information and (where appropriate) contextual data, and to rectify omissions.

7.7.13 ***Objective 6.12***: to compile a detailed digital audit of each of the re-packaged/re-ordered documentary archives, and to ensure that a copy of the audit is placed with each archive.

7.7.14 ***Objective 6.13***: to undertake adequate and appropriate security copying of all primary written, drawn, photographic, and digital records.

7.8 AIM 7

7.8.1 ***To undertake remedial works on the Carlisle artefactual archive in order to raise its condition to an acceptable standard for deposition.***

7.8.2 ***Objective 7.1***: to follow national and local guidelines for the preparation and deposition of archaeological artefactual archives, in order to ensure the archives are upgraded to an appropriate standard.

7.8.3 ***Objective 7.2***: to re-order the bulk artefactual archives, as required, to ensure that all material categories for each event are located together in the store.

7.8.4 ***Objective 7.3***: to re-package the bulk artefactual archives, as necessary, to a standard acceptable to all receiving museums.

7.8.5 ***Objective 7.4***: to re-box all bulk artefactual materials currently stored on trays or in other unsuitable containers.

7.8.6 ***Objective 7.5***: to ensure that all oversized (unboxed) artefacts are adequately and securely labelled.

7.8.7 ***Objective 7.6***: to replace all cardboard boxes currently holding environmentally-sensitive IRFs with airtight plastic boxes (*Proposal 1* only), and to replace all existing boxes that are damaged or overloaded.

7.8.8 ***Objective 7.7***: to undertake a thorough check of the internal packaging of all IRF containers and to replace unsuitable materials with new packaging, as required.

7.8.9 ***Objective 7.8***: to replace existing silica gel in all IRF storage boxes with a non-cobalt humidity indicator, in order to maintain an optimum microclimate and to conform to current Health and Safety standards.

7.8.10 ***Objective 7.9***: to separate the contents of mixed artefactual boxes and re-box appropriately.

7.8.11 ***Objective 7.10***: to ensure all artefactual storage boxes are cleaned of accumulations of dust and dirt prior to deposition.

7.8.12 ***Objective 7.11***: to ensure that the artefactual archives are clearly, adequately, and securely labelled, and to undertake re-labelling where necessary.

7.8.13 ***Objective 7.12***: to undertake a detailed digital audit of each re-packaged artefactual archive, through the compilation of box-lists, and to ensure that lists are placed in each storage box.

7.8.14 ***Objective 7.13***: to compare box-lists with existing records to establish the extent of any losses, and to update records accordingly.

7.8.15 ***Objective 7.14***: to create definitive digital lists of all IRFs for each event archive (*Proposal 1* only).

7.8.16 ***Objective 7.15***: to develop criteria for the x-raying of metal artefacts, to facilitate x-raying of selected artefacts and to ensure that lists cross-referencing x-rays to artefacts are produced.

7.8.17 ***Objective 7.16***: to undertake supplementary conservation or curation of unstable artefactual materials, as required, in consultation with appropriate specialists and museum personnel.

7.8.18 ***Objective 7.17***: to develop criteria for the conservation of unconserved sensitive materials, in consultation with appropriate specialist and museum personnel.

7.8.19 ***Objective 7.18***: to develop criteria and a strategy for the disposal of unconserved wood and leather of little archaeological potential, in consultation with appropriate museum personnel.

7.9 AIM 8

7.9.1 ***To undertake remedial works on the Carlisle environmental archive in order to raise its condition to an acceptable standard for deposition.***

7.9.2 ***Objective 8.1***: to follow national and local guidelines for the preparation and deposition of archaeological environmental archives, in order to ensure the archives are upgraded to an appropriate standard.

7.9.3 ***Objective 8.2***: to re-order the environmental archives, as required, to ensure that all materials for each event are located together in the store.

7.9.4 ***Objective 8.3***: to undertake a check of all environmental materials, and to discard those that have suffered severe deterioration or contamination, or those where labelling is missing or inadequate, in consultation with appropriate specialists and museum personnel.

7.9.5 ***Objective 8.4***: to undertake limited processing and rapid assessment of all soil samples to assess potential and aid the development of a disposal strategy, in consultation with appropriate museum personnel (*Proposal 1* only).

7.9.6 ***Objective 8.5***: to develop criteria and a strategy for the disposal of soil samples of little archaeological potential, in consultation with appropriate specialists and museum personnel.

7.9.7 ***Objective 8.6***: to undertake a programme of disposal of low-priority soil samples, as directed by appropriate museum personnel (*Proposal 1* only).

7.9.8 ***Objective 8.7***: to develop measures to enhance storage and extend the storage life of unconserved wood and other sensitive environmental materials with good archaeological potential, in consultation with appropriate specialists and museum personnel.

7.9.9 ***Objective 8.8***: to develop criteria for the possible future conservation of wood and other sensitive environmental items deemed worthy of preservation, in consultation with appropriate specialists and museum personnel.

7.9.10 ***Objective 8.9***: to develop criteria for the sub-sampling and disposal of oversized wood samples, in consultation with appropriate specialists and museum personnel.

7.9.11 ***Objective 8.10***: to undertake a programme of sub-sampling and disposal of oversized wood samples, as directed by appropriate museum personnel (*Proposal 1* only).

7.9.12 ***Objective 8.11***: to re-package and re-label soil and wood samples currently stored in cardboard boxes into airtight plastic tubs, and to re-package and re-label appropriately other environmental samples, as necessary.

7.9.13 ***Objective 8.12***: to clean existing sample tubs and to check all internal packaging and replace as necessary.

7.9.14 ***Objective 8.13***: to undertake a detailed digital audit of each of the re-packaged/re-ordered environmental archives, through the compilation of box-lists and other lists, as required, and to ensure that lists are placed in boxes.

7.9.15 ***Objective 8.14***: to compare box-lists and other lists with existing records to establish the extent of any losses, and to update records accordingly.

7.10 AIM 9

7.10.1 ***To deal appropriately with all unprovenanced artefactual and environmental materials currently in Shaddon Mill.***

7.10.2 ***Objective 9.1***: to consult Tullie House Museum and Art Gallery with regard to strategies for dealing with unprovenanced materials.

7.10.3 ***Objective 9.2***: to develop criteria, with Tullie House Museum and Art Gallery, for the retention or disposal of unprovenanced artefacts and ecofacts, or their dispersal for educational or other purposes.

7.11 AIM 10

7.11.1 ***To deal appropriately with all miscellaneous and non-event specific documents and other materials currently stored in Shaddon Mill.***

7.11.2 ***Objective 10.1***: to consult with Tullie House Museum and Art Gallery and Carlisle City Council over requirements for the retention and storage of non-event specific documentation relating to CAU/CAL, and other miscellaneous materials in Shaddon Mill.

7.11.3 ***Objective 10.2***: to develop a strategy, in consultation with Tullie House Museum and Art Gallery and Carlisle City Council, for the retention or disposal of non-event specific and miscellaneous materials.

7.11.4 ***Objective 10.3***: to re-package all non-event specific documentation recommended for retention to a standard acceptable to Tullie House Museum and Art Gallery and Carlisle City Council.

7.11.5 ***Objective 10.4***: to undertake disposal or dispersal of non-event specific and miscellaneous materials, as directed by appropriate Tullie House Museum and Art Gallery personnel or officers of Carlisle City Council.

7.12 AIM 11

7.12.1 ***To provide a final quantification of the amount of digital information to be supplied to the ADS, and to determine the cost of depositing the information.***

7.12.2 ***Objective 11.1***: to provide a final quantification of the amount of digital information to be supplied to the ADS in York.

7.12.3 ***Objective 11.2***: to consult with the ADS in order to determine the cost of depositing the digital data.

7.13 AIM 12

7.13.1 ***To facilitate the production of an online gazetteer of all CAU/CAL field events.***

7.13.2 ***Objective 12.1***: to provide the ADS with digital information relating to all field events undertaken by CAU/CAL, in order to facilitate the production of an online gazetteer that will place basic details of these projects in the public domain.

7.13.3 ***Objective 12.2***: to ensure that the gazetteer is accessible to the maximum number of end-users through the provision of links from the Tullie House Museum and Art Gallery and CCCHER web-sites, and from other appropriate sites.

7.14 AIM 13

7.14.1 ***To ensure that all archives are deposited with the appropriate receiving bodies.***

7.14.2 ***Objective 13.1***: to consult with all relevant receiving bodies concerning the amounts of archival materials to be deposited, and to ensure that sufficient storage space is available.

7.14.3 ***Objective 13.2***: to consult with the relevant receiving bodies and the CAS, to determine the feasibility of depositing document-only archives from Cumbrian events with the CAS.

7.14.4 ***Objective 13.3***: to dispatch archival materials relating to the York Minster excavations of 1968-74 to the York Minster Library at the earliest opportunity, in order to facilitate the integration of this material into the Minster excavation archive.

7.14.5 ***Objective 13.4***: to dispatch archival materials relating to events outside Cumbria to the relevant receiving organisations.

7.14.6 ***Objective 13.5***: to transport archival materials relating to Cumbrian events outside the City and District of Carlisle to the relevant receiving bodies, providing they are able to accept them, and to deposit the archives under the supervision of personnel from those organisations.

7.14.7 ***Objective 13.6***: to re-locate the archives relating to events within the City and District of Carlisle, together with miscellaneous and non-event specific materials selected for retention, and to deposit the archives under the supervision of appropriate personnel from Tullie House Museum and Art Gallery.

7.14.8 ***Objective 13.7***: to compile digital records of the contents and location of all archives, to facilitate access for all future end-users.

7.15 AIM 14

7.15.1 ***To disseminate the information on the updated Archives Project database to all relevant organisations.***

7.15.2 ***Objective 14.1***: to copy the revised Archives Project database and dispatch it to English Heritage, Tullie House Museum and Art Gallery, and Carlisle City Council and their archaeological advisors.

7.15.3 ***Objective 14.2***: to provide copies of the Archives Project database to all other relevant organisations that require it, such as the NMR and AIP.

7.16 AIM 15

7.16.1 ***To report on Stage 3 of the Archives Project.***

7.16.2 ***Objective 15.1***: to prepare an assessment report presenting and analysing the results of Stage 3 of the Archives Project, and providing a summary and overview of the entire project.

8. METHOD STATEMENT

8.1 INTRODUCTION

8.1.1 The recommendations set out in *Section 7* of this report present two options for the extent of the remedial works required prior to final deposition of the Carlisle archives. *Proposal 1* represents a comprehensive programme of works intended to raise the archive to the highest standard required for the preparation of modern archaeological archives. *Proposal 2* sets out a more limited, although still extensive, work programme that will be needed to upgrade the archive to the *minimum* standard acceptable for deposition with the various receiving bodies. As a consequence of this approach, it has been necessary, in certain sections of this method statement (namely *Sections 8.7*, *8.8* and *8.9*), to put forward two methodologies, one applicable to *Proposal 1*, the other to *Proposal 2*. The task numbers referred to below correspond to those in the Task List presented in *Section 9.8* of this report. It will be noted that many tasks require completion whatever level of remedial works is undertaken. It should also be stressed that all the methodologies set out below apply equally to both the CAU/CAL archives and to the material in Shaddon Mill generated by non-CAU/CAL events.

8.1.2 The methodologies outlined in other parts of this section (*Sections 8.2-6* and *8.10-16*) are for work that is considered essential whichever proposal is ultimately adopted. For this reason, these sections contain only a single method statement.

8.1.3 ***Tasks 1-4***: ***to meet all objectives:*** management, both of the project, and of day-to-day supervision of the staff at Shaddon Mill, will be ongoing (see *Section 9.2*).

8.2 DATABASE AND GIS ADAPTATION

8.2.1 ***Task 5; Objective 1.1***: at the beginning of Stage 3, English Heritage staff at Fort Cumberland, Tullie House Museum and Art Gallery, and the CCCHES will be consulted to ensure that the proposed adaptations to the project database described below (*Section 8.2.2-5*) meet both national standards and the requirements of all end-users.

8.2.2 ***Task 6; Objective 1.2***: in order to record the changes that will be made to the packaging, storage, and composition of the Carlisle archive during the course of the Stage 3 remedial works, it will be necessary to adapt the project database to accommodate new types of data. This will be achieved by the addition of two new tables, and modification of the existing archive quantification table.

8.2.3 A new table will be created to record changes in packaging and to hold detailed data on the contents of each box or other storage container. This will enable digital box-lists to be generated for each individual archive. It is envisaged that the new table will be similar in structure to the existing archive

quantification table that was used during Stage 2 (Table 1). Further lookup tables will also be added to allow for controlled data entry of individual find types. These will be consistent with Monument Inventory Data Standard (MIDAS) standards (English Heritage 2003). A free-text memo field will be added for extended notes and details. This table will use the EventID field to provide a link to both the main Events Table and the Stage 2 archival quantification table, as required.

8.2.4 The second new data table will provide a record of the processes through which each archival element has gone in order to be brought up to an acceptable standard (for example, re-packaging, x-radiography, or dispatch for conservation). Lookup tables will be developed as required to control data entry. Fields for recording the date and originator of each new entry will be included, together with a flag (tick-box) to indicate requirements for any follow-up action and space for a link to subsequent entries. For example, if an object is sent for conservation, its subsequent return will represent a follow-up action. Once the object has been returned, a second entry will be created in the table to record the fact, and the identification number of this entry will be appended to the original entry. It will therefore be possible to track the location and status of archival components as the remedial works develop. This table will also use the EventID field to link to other tables in the database as required.

8.2.5 Finally, alterations will be made to the archival quantification table created in Stage 2 to include a 'quick-glance' record of what has happened to a particular archive component (for example, re-boxing, conservation, or discard). Here, too, a lookup table will be used to ensure consistency in data entry.

8.2.6 ***Task 7; Objective 1.2***: new MIDAS standards relating to the production of digital mapping and the level of attribute data recorded with each GIS layer were put in place in August 2004 (English Heritage 2004). In order to ensure that the existing mapping produced during Stages 1 and 2 of the Archives Project conforms to these new standards, the attribute data for the trench location shape file will be altered at the beginning of Stage 3.

8.3 TRAINING

8.3.1 ***Task 8 (Proposal 1) or 11 (Proposal 2); Objective 2.1***: prior to the commencement of the Stage 3 remedial works, the project team will be made familiar with guidelines for the deposition of archaeological archives issued both by national bodies and the relevant receiving museums/organisations. This will be achieved through in-house training and instruction provided by Christine Howard-Davis, OA North's Finds Manager. The number of staff receiving training will depend upon which of the two proposals for the Stage 3 works is ultimately adopted, since this directly affects proposed staffing levels (see Task List, *Section 9.8*).

8.3.2 ***Tasks 9-10 (Proposal 1) or 12-13 (Proposal 2); Objective 2.2***: selected project personnel will also receive training in the detailed procedures involved in the compilation of archaeological archives to modern standards. This training,

which will take up to two days, will be undertaken at Oxford by the Oxford Archaeology Archives Manager. The trainees will compile a number of genuine archives at OA in Oxford, under supervision, in order to obtain practical experience of compiling archaeological archives to modern standards. It will be necessary for the team members to be based in Oxford for the duration of the training. Again, the number of staff requiring this level of training will depend upon which proposal is adopted for Stage 3 (*Section 9.8*).

8.4 LIAISON WITH TULLIE HOUSE MUSEUM AND ART GALLERY AND OTHER RECEIVING BODIES

8.4.1 ***Task 14; Objective 3.1***: throughout Stage 3, of the Archives Project, the project team will liaise regularly with personnel from the relevant receiving museums, in order to ensure that the requirements of each organisation are being properly addressed.

8.5 RETURN OF ARCHIVAL MATERIALS TO SHADDON MILL

8.5.1 ***Task 15; Objective 4.1***: at the beginning of Stage 3, all specialists and other organisations who are known to hold Carlisle archival materials will be contacted with a view to facilitating the return of all archival elements to Shaddon Mill as soon as possible. No attempt will, however, be made to secure the return of archives or archival elements currently undergoing post-excavation assessment, analysis, or conservation.

8.5.2 ***Tasks 16-18; Objective 4.2***: OA North shall co-ordinate the return of these archival materials to Shaddon Mill, and appropriate documentation recording their return will be compiled. The items will then be re-integrated into the relevant event archives.

8.6 TIMING OF STAGE 3 REMEDIAL WORKS

8.6.1 ***Tasks 19-20; Objectives 5.1-5.2***: OA North shall seek to co-ordinate the commencement of the Stage 3 remedial works with the cleaning and re-ordering of the current store. It is crucial that project personnel liaise with Tullie House Museum and Art Gallery, Carlisle City Council, the CCCHES, and English Heritage at the earliest opportunity, in order to ensure that a concordance of the two events can be effected if at all possible. This approach will ensure the most cost-effective use of resources, since it precludes double handling of the material and will mean that the refurbished archives can be placed directly into a clean, secure, and archivally stable environment.

8.7 REMEDIAL WORKS ON DOCUMENTARY ARCHIVES

8.7.1 ***Proposal 1***: the following methods are for a programme of remedial works to upgrade the Carlisle documentary archive to the standard required for the preparation of modern archaeological archives (Owen 1995; Walker 1990), following the recommendations set out in *Sections 6.7.4-12*. It should be noted

that the methodologies set out here do not relate to the miscellaneous and non-event specific documents currently stored in Shaddon Mill, which are considered elsewhere (*Section 8.11*).

8.7.2 ***Task 21; Objective 6.1***: prior to the commencement of the remedial works, the relevant project personnel will be made familiar with both national and local guidelines for the preparation and deposition of archaeological documentary archives. This will be done in order to ensure that the archives are upgraded to the highest standard for the preparation of modern archaeological archives.

8.7.3 ***Task 22; Objective 6.2***: the entire paper archive, including all documentation relating to CAU/CAL events and non-CAU/CAL projects, will be removed from existing files and folders, and will be re-packaged in labelled, acid-free card wallets within labelled, acid-free cardboard archive boxes. It is estimated that this will involve the replacement of approximately 1456 files with *c* 761 archive boxes (each box measuring *c* 400 x 270 x 80mm and holding around 500 A4 sheets). Approximately five acid-free card wallets will also be required within each box (*c* 3805 wallets in total). These figures do not include any boxes and wallets that may be required for re-packaging the non-event specific and miscellaneous documents currently stored in the Carlisle archive (see *Section 8.11*).

8.7.4 ***Task 23; Objective 6.3***: the 456 key archival elements that are either missing or incomplete, including context, drawn, photographic, and environmental indices, will be compiled in so far as is reasonably possible, and deposited in the archive boxes.

8.7.5 ***Tasks 24-25; Objective 6.4***: the 8922 oversize field drawings (*c* A1-A2 size) and other oversize illustrations in the Carlisle archive will be removed from the plan cabinets in which they are currently stored and placed in rolls in labelled, cardboard plan boxes. The only exceptions will be the small number of drawings generated by archaeological events within the District of Copeland, where drawings will be submitted for storage in lay-flat plan drawers, in accordance with guidelines provided by the Beacon Heritage Centre, Whitehaven. It is estimated that approximately 370 plan boxes will be required. A3/A4-sized drawings will be removed from their current folders and placed in labelled, A3-sized cardboard archive boxes. It is estimated that approximately 25 boxes may be required. These figures do not include any plan and archive boxes that may be required for re-packaging non-event specific and miscellaneous drawings, maps and other oversized illustrations currently stored in the Carlisle archive (see *Section 8.11*).

8.7.6 ***Tasks 26-32; Objective 6.5***: all slides, prints, contact-strips, and negatives will be removed from their existing wallets and sleeves, and will be placed in archivally stable polyester sleeves conforming to modern archival standards. The sleeves will be labelled with the appropriate photographic and project information. Sleeves containing slides, prints, and contact-strips will be placed in labelled, acid-free archive boxes. It is estimated that approximately 250 archive boxes, 3320 slide sleeves, 6225 print sleeves and 12,450 negative sleeves will be required for this purpose. Negatives will be kept apart from the rest of the photographic collections for security purposes, and will be stored in

a fire-safe cabinet. The whereabouts of negatives stored elsewhere will be recorded in the main section of each event archive. Where possible, photographic images and negatives will be extracted from mixed folders containing material from multiple events and will be integrated with the relevant parent archives. Where images or negatives cannot be separated, they will be copied to allow placement with the relevant archives.

8.7.7 ***Task 33; Objective 6.6***: in so far as is reasonably possible, given the extent of available information, unlabelled prints, slides, and negatives will be labelled with the relevant project and contextual information, by reference to existing photographic indices or information contained on chalkboards. This should be achievable for approximately 40 of the 90 archives concerned. In the case of the 50 archives where this is not possible, each image will be labelled with the site code.

8.7.8 ***Tasks 34-35; Objective 6.7***: x-rays will be extracted from the written or artefactual archives where they are currently stored and will be placed with the relevant photographic archives. They will be stored within adequately labelled polyester or acid-free paper sleeves.

8.7.9 ***Tasks 36-41; Objective 6.8***: all 5.25-inch and 3.5-inch floppy disks currently stored in the Carlisle archive (thought to number approximately 500 and 100 respectively) will be read, using facilities available at OA North's offices in Lancaster, and the data copied to OA North's server. The data will be assessed and any information clearly related to identifiable archaeological events will be copied to CD-Rom disks. All computer files and Terramodel survey data obtained from old computers formerly in Shaddon Mill (in excess of 1000 files) will be read and copied to CD-Rom disks, providing they can be related to known events. It is estimated that approximately 250 disks will be required for this purpose. A hard copy of each of these files will be generated and placed in the relevant project archives. It is estimated that storage of these paper records will necessitate the purchase of an additional 300 archive boxes. The old floppy disks themselves will be labelled and placed in appropriate storage containers suitable for long-term storage.

8.7.10 ***Tasks 42-44; Objectives 6.9-6.11***: all archive sleeves, boxes and other storage media will be clearly and appropriately labelled, using labels and marker pens that conform to modern archive standards. The entire documentary archive will be checked prior to deposition in archive boxes, and all uncoated paper clips, metal staples, rubber bands, adhesive tape, and other unstable materials that could decay and cause damage will be removed. A check of all records will also be made to ensure that the site code, contextual data, and other relevant project information are present, and any omissions will be rectified.

8.7.11 ***Tasks 45-46: Objective 6.12***: the contents of each archive box and all other storage media will be audited and digital box-lists created. A copy of the relevant list will be placed in each box.

8.7.12 ***Tasks 47-50; Objective 6.13***: all primary written records, including context sheets and indices, and all primary field drawings, will be extracted from the event archives and sent to the National Archaeological Record (NAR), where

they will undergo microforming and indexing for security purposes. All primary photographic images (slides, contact-strips, and prints) stored in the Carlisle archives will be scanned and copied to CD-Rom disks for security purposes at OA North's premises in Lancaster. All relevant data recovered from old floppy disks and CAU/CAL computers will also be security copied to CD-Rom disks in Lancaster (see *Section 8.7.8*). On completion of the remedial works, each refurbished documentary archive will be deposited with the appropriate receiving body (*Section 8.14*).

8.7.13 ***Proposal 2***: the following methods are for a programme of remedial works to upgrade the Carlisle documentary archive to the minimum standard acceptable for deposition with the recipient museums/organisations (Owen 1995; Walker 1990), following the recommendations set out in *Sections 6.7.13-21*. The methodologies set out here do not relate to the miscellaneous and non-event specific documents currently stored in Shaddon Mill, which are considered elsewhere (*Section 8.11*); nor do they apply to those archives that are to be deposited with receiving bodies other than Tullie House Museum and Art Gallery, which will be upgraded to the standards outlined in *Proposal 1* (***Tasks 21-50***).

8.7.14 ***Task 51; Objective 6.1***: at the beginning of the remedial works, steps will be taken to ensure that the project personnel undertaking the work are familiar with both national and local guidelines for the preparation and deposition of archaeological documentary archives.

8.7.15 ***Tasks 52-53; Objective 6.2***: the written archives relating to events undertaken within the City and District of Carlisle (which will most probably be deposited with Tullie House Museum and Art Gallery) will be retained in their current files and folders. Any damaged, dilapidated or otherwise unsuitable files will, however, be replaced, as will files that appear to be overloaded. Any loose sheets will be extracted, repaired and replaced. It is estimated that approximately 200 new box files will be required for this purpose. It should be noted that this procedure is likely to be more time consuming than that required for *Proposal 1*, where records will be put directly into archive boxes, obviating the need for repair of loose sheets.

8.7.16 ***Tasks 54-56; Objectives 6.4***: folders containing A3/A4 drawings for deposition with Tullie House Museum and Art Gallery will likewise be checked and any damaged, dilapidated or overloaded examples replaced. Estimates suggest approximately 30 new files may be required. Oversize (*c* A1/A2) field drawings and other oversize illustrations that will ultimately be deposited with Tullie House Museum and Art Gallery will be re-ordered alphabetically within the plan cabinets in which they are presently stored. Damaged or missing suspension-strips will be replaced as necessary. It is possible that approximately 1400 suspension strips may be required.

8.7.17 ***Tasks 57-61; Objective 6.5***: photographic archives that are to be deposited with Tullie House Museum and Art Gallery will be retained in their current binders, although damaged or overloaded binders, perhaps totalling approximately 40, will be replaced. All existing photographic wallets and sleeves will be replaced with archivally stable polyester sleeves (see *Section*

8.7.6). Where photographic indices have been stored with the images or negatives, they will be extracted and integrated into the paper archive. Where mixed folders containing images and negatives from two or more projects are present, images will be copied to allow placement with the relevant archives. Negatives will be stored separately from the rest of the photographic collections for security purposes.

8.7.18 ***Tasks 62-64; Objectives 6.6-6.7***: in so far as is reasonably possible, each photographic image will be labelled with the appropriate site code. X-rays will be extracted from their present location in the archive and re-located within the photographic archive, where they will be stored within polyester or acid-free paper sleeves.

8.7.19 ***Tasks 65-70; Objective 6.8***: for the digital archive, the methodology set out in respect of *Proposal 1* (*Section 8.7.8*) will also be implemented as part of *Proposal 2*. All floppy disks will therefore be read and copied to OA North's server in Lancaster. The data will be assessed and any relevant information will be copied to CD-Rom disks. Likewise, all files and survey data obtained from old computers formerly used by CAU/CAL will be read and relevant data copied to CD-Rom disks. A hard copy of each of the files copied to CD-Rom will be produced and included in the relevant project archives.

8.7.20 ***Tasks 71-73; Objectives 6.9-6.11***: the entire documentary archive (written, drawn and photographic) will be clearly and consistently labelled using adhesive labels and marker pens that conform to modern archival standards. A thorough check of the archive will be made to extract uncoated paper clips, staples, rubber bands, adhesive tape and any other materials that might decay and cause damage to the archive. All elements of the archive will be checked to ensure that the site code and other appropriate information is present, and any omissions will be rectified.

8.7.21 ***Tasks 74-77; Objectives 6.12-6.13***: a digital audit of each documentary archive will be compiled. Where drawing or photographic indices are missing, a record of the numbers of drawings or photographic images/negatives in the archive will be made. In the case of oversized drawings, a list of the event archives contained within each drawing cabinet will be attached to the outside of the cabinet by means of an adhesive label. Security copying of all primary written records, drawings and photographs will be undertaken for every event archive.

8.7.22 For those elements of the documentary archive that are to be deposited with organisations other than Tullie House Museum and Art Gallery (*c* 15% of the total), the methodologies adopted for *Proposal 1* (*Sections 8.7.1-12*) will be followed. It is estimated that this will require approximately 100 documentary archive boxes. On completion of the remedial works, each refurbished documentary archive will be deposited with the appropriate receiving body (*Section 8.14*).

8.8 REMEDIAL WORKS ON ARTEFACTUAL ARCHIVES

8.8.1 ***Proposal 1***: the following methods are for a programme of remedial works to upgrade the Carlisle artefactual archive to the standard required for the preparation of modern archaeological archives (Museums and Galleries Commission 1992; Owen 1995; Walker 1990), following the recommendations set out in *Sections 6.8.4-12*.

8.8.2 ***Task 78; Objective 7.1***: prior to the commencement of the remedial works, the relevant project personnel will be made familiar with both national and local guidelines for the preparation and deposition of archaeological artefactual archives. This will be done in order to ensure that the artefactual archives are upgraded to the highest standard for the preparation of modern archaeological archives.

8.8.3 ***Task 79; Objective 7.2***: the bulk artefactual assemblage of approximately 2750 boxes will be re-ordered to ensure that, for each event archive, all material categories are located together in the same part of the new store.

8.8.4 ***Tasks 80-83; Objective 7.3***: all cardboard boxes that are either damaged or overloaded (estimated to be approximately 150) will be replaced. For Health and Safety reasons, the boxes will be weighed to ensure that no single box exceeds approximately 6kg in weight. In cases where this is unavoidable, boxes will be clearly labelled to indicate the potential hazard. A thorough check of the internal packaging of all bulk artefact boxes will be undertaken to identify and replace any damaged internal packaging.

8.8.5 ***Tasks 84-85; Objectives 7.4-7.5***: all bulk artefactual materials currently stored on open trays, in unboxed bags, or in other unsuitable containers, will be placed in labelled self-seal polythene bags and re-boxed. This will require the use of up to 100 new standard cardboard storage boxes. Large individual items that cannot be boxed will be checked to ensure adequate and secure labelling, and any inadequate labels will be replaced.

8.8.6 ***Tasks 86-87; Objective 7.6***: all environmentally-sensitive IRFs currently stored in cardboard boxes, and all stored in non-standard containers, will be re-boxed in airtight, plastic 'Stewart' boxes, and any existing plastic boxes that are damaged or overloaded will be replaced. Using these criteria, it is estimated that, of the 1093 boxes of sensitive IRFs assessed during Stage 2 (*Section 4.8*), approximately 750-800 (*c* 68-73%) will need to be replaced. In addition, perhaps 100 boxes containing stable IRFs such as glass, which were not subjected to the same detailed level of assessment, may also require replacement, giving a total of approximately 850-900.

8.8.7 ***Tasks 88-91; Objectives 7.7-7.8***: a thorough check of the internal packaging of all IRF boxes will be undertaken. Manila artefact envelopes will be replaced with perforated, self-seal polythene bags with write-on panels. Of the estimated 17,866 envelopes containing sensitive artefacts that were quantified during the Stage 2 assessment (*Section 4.8*), it is thought that as many as 9371 (52%) may have to be replaced. A similar proportion of envelopes containing

stable IRFs, such as glass, which were not subjected to the same detailed assessment as the sensitive materials, may also require replacement. It is therefore possible that somewhere in the region of 11,000 new bags will be required for re-packaging. The bags will be reinforced with corrugated foam to provide additional support to delicate or fragile objects, as required. All silica gel will be removed and replaced with a non-cobalt humidity indicator (non-cobalt silica gel). Ideally, approximately 400g of this material should be placed in each box containing sensitive IRFs (J Jones *pers comm*). If this procedure were adopted across the entire Carlisle archive, which is estimated to contain 1093 boxes of sensitive materials, approximately 437kg of new silica gel would be required.

8.8.8 ***Tasks 92-93; Objective 7.9***: the contents of bulk artefact and IRF boxes containing mixed artefactual collections will be separated and appropriately re-boxed. Where artefacts are found to have been stored in the wrong box, they will be extracted and re-integrated into the correct archives.

8.8.9 ***Tasks 94-96; Objectives 7.10-7.11***: all existing boxes that are to be retained in the archive will be cleaned of accumulations of dust and dirt prior to deposition in the new store. All labels currently attached to artefact boxes with adhesive tape will be removed and the boxes re-labelled with self-adhesive labels and marker pens conforming to modern archival standards. Where receiving museums specify adhesive labels should not be used, the information will be written directly onto the outside of each box. In the case of plastic 'Stewart' boxes, Tyvek labels containing the relevant information will be placed inside each box.

8.8.10 ***Tasks 97-100: Objectives 7.12-7.14***: the contents of each box of artefacts will be audited, and the data recorded on digital box-lists. A copy of the relevant list will be placed in each box of material. Box contents will also be compared against existing written records to establish the extent of any losses, and the records will be updated accordingly. Definitive lists of all IRFs will be created digitally for each event archive.

8.8.11 ***Tasks 101-103; Objective 7.15***: all individually registered metal artefacts will be x-rayed, where this has not already been done. It is estimated that up to 10,000 items may require this procedure. The assemblage of bulk iron, estimated at 200,000 items, will be assessed and a proportion will be x-rayed. Based on figures obtained from the Millennium Project, where a similar process was carried out, it is estimated that approximately 20% of the assemblage (approximately 40,000 items) may require x-ray. Where x-rays exist, digital lists cross-referencing the x-rays to the artefacts will be created. If the number of x-rays required rises above the estimates given above, the additional work will be costed at the same rate.

8.8.12 ***Tasks 104-107; Objectives 7.16-7.18***: supplementary conservation or curation will be arranged as necessary for any unstable materials. Where sensitive artefacts remain unconserved, criteria will be developed, in consultation with Tullie House Museum and Art Gallery and Jennifer Jones of Durham University, to determine the proportion of material warranting conservation, and to establish the extent of any conservation works required. It is imperative

to stress that given the legacy nature of the project these tasks remains uncosted. Criteria for the disposal of unconserved wood and leather with little archaeological potential will also be developed in consultation with Tullie House Museum and Art Gallery.

8.8.13 On completion of the remedial works, each refurbished artefactual archive will be deposited with the appropriate receiving body (*Section 8.14*,).

8.8.14 ***Proposal 2***: the following methods are for a programme of remedial works to upgrade the Carlisle artefactual archive to the minimum standard acceptable for deposition with the recipient museums/organisations (Museums and Galleries Commission 1992; Owen 1995; Walker 1990), following the recommendations set out in *Sections 6.8.13-17*.

8.8.15 ***Task 108; Objective 7.1***: at the beginning of the remedial works, steps will be taken to ensure that the project personnel undertaking the work are familiar with both national and local guidelines for the preparation and deposition of archaeological artefactual archives.

8.8.16 ***Tasks 109-115; Objectives 7.2-7.5***; in the case of the bulk artefactual assemblage, the methodology presented in *Proposal 1* (*Sections 8.8.3-5*) also applies equally to *Proposal 2*.

8.8.17 ***Tasks 116-122; Objectives 7.6-7.10***: in order to upgrade the IRF assemblage to the minimum acceptable standard, damaged or overloaded storage boxes will be replaced. It is estimated that approximately 200 new 'Stewart'-type boxes may be required for this purpose. Internally, all manila envelopes will be replaced with self-seal polythene bags with write-on panels (see *Section 8.8.7*), and corrugated foam will be added where additional structural support is required for delicate or fragile artefacts. Silica gel will be removed from all boxes and replaced with a non-cobalt humidity indicator (*Section 8.8.7*). The contents of all boxes containing mixed material classes or finds from multiple projects will be separated and re-boxed. Where artefacts have been placed in the wrong box, they will be extracted and re-integrated into the appropriate archives. All boxes will be cleaned of accumulations of dust and dirt.

8.8.18 ***Tasks 123-127; Objectives 7.11-7.13***: the packaging of the entire artefactual assemblage will be re-labelled with self-adhesive labels marked with indelible ink, and Tyvek labels will be inserted in IRF boxes where they do not already exist. The contents of each box will be audited, digital box-lists created, and a copy of the relevant list placed in each box. The contents will also be compared against existing records in order to establish the extent of any losses, and records will be updated accordingly.

8.8.19 ***Tasks 128-130; Objective 7.15***: all individually registered metal artefacts will be x-rayed, where this has not already been done. It is estimated that up to 10,000 items may require this procedure. If the number of x-rays required rises above estimates given above, the additional work will be costed at the same rate. Where x-rays exist, digital lists cross-referencing the x-rays to the artefacts will be produced. The assemblage of bulk iron, estimated to comprise up to 200,000 items, will be rapidly assessed and criteria for the selection of

artefacts for x-raying will be developed, although no x-radiography of this material will be undertaken at this stage. It is imperative to stress that given the legacy nature of the project these tasks remains uncosted

8.8.20 ***Tasks 131-134; Objectives 7.16-7.18***: for unstable materials, supplementary conservation or curation will be arranged as necessary. In the case of other sensitive and unconserved artefacts, criteria will be developed to determine the proportion warranting conservation, and to establish the extent of any conservation works that should be undertaken. It is imperative to stress that given the legacy nature of the project these tasks remains uncosted. Criteria for the disposal of unconserved wood and leather that is either in a poor state of preservation or of little archaeological potential will also be developed. In all cases, these tasks will be undertaken in consultation with the appropriate specialists and museum personnel.

8.8.21 On completion of the remedial works, each refurbished artefactual archive will be deposited with the appropriate receiving body (*Section 8.14*).

8.9 REMEDIAL WORKS ON ENVIRONMENTAL ARCHIVES

8.9.1 ***Proposal 1***: the following methods are for a programme of remedial works to upgrade the Carlisle environmental archive to the standard required for the preparation of modern archaeological archives (Owen 1995; Walker 1990) following the recommendations set out in *Sections 6.9.5-11*.

8.9.2 ***Task 135; Objective 8.1***: prior to the commencement of the remedial works, the relevant project personnel will be made familiar with both national and local guidelines for the preparation and deposition of archaeological environmental archives. This will be done in order to ensure that the archives are upgraded to the highest standard for the preparation of modern archaeological archives.

8.9.3 ***Tasks 136-140; Objectives 8.2-8.3***: the environmental assemblage will be re-ordered to ensure that materials relating to each individual event archive are located together in the same part of the new store. Initially, a check of all bulk soil and wood samples, including those currently stored in plastic tubs, will be undertaken to identify and extract those showing clear evidence of contamination or severe deterioration. These will then be discarded, following consultation with appropriate specialists and museum personnel, together with any samples with missing or inadequate labelling. Similarly, all soil monolith samples (column samples) will be checked, and any with damaged packaging, which would lead to the onset of decay, and missing or inadequate labelling will be discarded following consultation. Tullie House Museum and Art Gallery has agreed to cover the costs of the skips required for the disposal of this material. The oversized wood samples will be checked and any damaged or deteriorating packaging and labelling will be replaced.

8.9.4 ***Tasks 141-146; Objectives 8.4-8.6***: a programme of limited processing and rapid assessment of all bulk soil samples and soil monolith samples will be undertaken in order to determine their archaeological potential. The resulting

data will inform the production of criteria and a strategy for the disposal of soil samples with little archaeological potential, which will be developed in consultation with appropriate specialists and museum personnel. A programme of disposal of such samples will be undertaken if requested by the relevant receiving bodies, in order to reduce future storage requirements.

8.9.5 ***Tasks 147-151; Objectives 8.7-8.10***: criteria for the conservation of unconserved wood and other sensitive environmental materials with good archaeological potential will be developed, in consultation with Jennifer Jones of Durham University and appropriate museum personnel. A programme of conservation will be initiated for those items identified as being worthy of preservation. Criteria will also be developed for the sub-sampling and disposal of oversized wood samples, in consultation with the appropriate specialists and museum personnel. A programme of sub-sampling will be undertaken if requested by the appropriate receiving bodies, in order to reduce storage requirements.

8.9.6 ***Tasks 152-155; Objective 8.11***: following the programme of disposal, processing, and assessment described in *Sections 8.9.3-5*, bagged soil and wood samples stored in cardboard boxes, which are estimated currently to occupy approximately 750 standard boxes, will be extracted and placed in labelled, airtight plastic tubs. The soil and wood will not, however, be removed from the plastic bags. It is not known how many samples might be discarded early in Stage 3, as a result of their deterioration and/or contamination, or the extent to which the number of bulk soil samples may be reduced as a result of the proposed programme of processing and assessment. It is, however, possible that up to 1500 10-litre tubs may be required for the re-packaging of the remaining samples. Any other environmental samples that have been identified as having damaged, inadequate, or inappropriate packaging and labelling will be appropriately re-packaged or re-labelled, as required. For Health and Safety reasons, all storage containers will be weighed to ensure that no single container exceeds approximately 6kg in weight. In cases where this is unavoidable, boxes will be clearly labelled to indicate the potential hazard.

8.9.7 ***Tasks 156-157; Objective 8.12***: existing sample tubs will be cleaned of any accumulations of dust and dirt. A thorough check of the internal packaging of all sample bags and other internal packaging will be undertaken, and any damaged items will be identified and replaced.

8.9.8 ***Tasks 158-161; Objectives 8.13-8.14***: the contents of each storage container will be audited, digital box-lists created, and a copy of the relevant list placed in each container. The contents will also be compared against existing records in order to establish the extent of any losses, and records will be updated accordingly. Soil monoliths and oversized wood samples will be compared against existing records in the same way, and the records will be similarly updated.

8.9.9 On completion of the remedial works, the refurbished environmental archives will be deposited with the appropriate receiving body (*Section 8.14*).

8.9.10 ***Proposal 2***: the following methods are for a programme of remedial works to upgrade the Carlisle environmental archive to the minimum standard acceptable for deposition with the recipient museums/organisations (Owen 1995; Walker 1990), following the recommendations set out in *Sections 6.9.12-16*.

8.9.11 ***Task 162; Objective 8.1***: at the beginning of the remedial works, steps will be taken to ensure that the project personnel undertaking the work are familiar with both national and local guidelines for the preparation and deposition of archaeological environmental archives.

8.9.12 ***Tasks 163-167; Objective 8.2-8.3***: the environmental archive as a whole will be re-ordered so that, in so far as is practicable, all material categories for a single event are stored together. All soil and wood samples will be checked and any showing clear evidence of contamination or deterioration will be discarded, together with those with missing or inadequate labelling, in consultation with appropriate specialists and museum personnel. Similarly, all soil monolith samples (column samples) will be checked, and any with damaged packaging, which compromises the integrity of the sample, and missing or inadequate labelling will be discarded following consultation. The oversized wood samples will be checked and any damaged or deteriorating packaging and labelling will be replaced.

8.9.13 ***Tasks 168-170; Objectives 8.5, 8.7, 8.8 and 8.9***: in consultation with the appropriate specialists and museum personnel, criteria and strategies for the disposal of soil samples of little archaeological potential, the sampling of unconserved wood and other environmental materials with good potential, and the sub-sampling and disposal of oversized wood samples will be developed.

8.9.14 ***Tasks 171-180; Objectives 8.11-8.12***: all damaged boxes containing soil and wood samples and other environmental materials will be replaced, together with any boxes that are grossly overloaded. It is estimated that approximately 100 new 'standard'-sized cardboard boxes may be required. Damaged or deteriorating packaging and labelling on oversized wood samples will also be replaced as necessary. For Health and Safety reasons, no single box should weigh in excess of 6kg, but where this is unavoidable the box will be clearly labelled to indicate excessive weight. All bagged samples that are currently unboxed will be placed in new storage boxes. This procedure may require a further 50 'standard' boxes. Where boxes containing mixed material classes or materials from multiple events are located, the contents will be separated and appropriately re-boxed. All boxes will be re-labelled using self-adhesive labels marked with indelible ink. The accumulation of dust and dirt on most boxes will also be removed, and the integrity of all bags and other internal packaging will be checked and replacement undertaken as necessary.

8.9.15 ***Tasks 181-184; Objectives 8.13-8.14***: the contents of each container will be audited, digital box-lists created, and a copy of the relevant box-list placed in each container. The entire environmental archive, including soil samples, wood samples and soil monoliths, will be compared against existing records in order to establish the extent of any losses, and the records will be updated accordingly.

8.9.16 On completion of the remedial works, each refurbished artefactual archive will be deposited with the appropriate receiving body (*Section 8.14*).

8.10 UNPROVENANCED MATERIALS

8.10.1 ***Tasks 185-186; Objectives 9.1-9.2***: Tullie House Museum and Art Gallery will be consulted regarding the small quantities of unprovenanced artefactual and environmental materials that are currently stored in Shaddon Mill. A strategy for dealing with this material will be developed, following guidance from appropriate museum personnel, and enacted as appropriate.

8.11 MISCELLANEOUS AND NON-EVENT SPECIFIC MATERIALS

8.11.1 ***Tasks 187-188; Objectives 10.1-10.2***: Tullie House Museum and Art Gallery and Carlisle City Council will be consulted concerning requirements for the retention or disposal of all non-event specific documentation relating to CAU/CAL that is currently stored in Shaddon Mill, and for other miscellaneous materials in the Mill. Following these consultations, a strategy for dealing with this material will be developed with Tullie House Museum and Art Gallery and Carlisle City Council.

8.11.2 ***Tasks 189-190; Objectives 10.3-10.4***: all documentary records recommended for retention will be re-packaged in the same way as the rest of the documentary archive (*Section 8.7*). The material will be deposited in the new storage facility in Shaddon Mill, and a record of its location within the store will be made, to facilitate access for all end-users (*Section 8.14*). Any materials recommended for discard will be disposed of under the direction of appropriate museum personnel or City Council officers, and a record of all discarded items will be made. Records of any personal details relating to former CAU/CAL staff or other personnel will be shredded. At present it is not possible to know what proportion of the miscellaneous documentation, plans, maps and so on might be retained. If, however, it is assumed that the majority will be kept, it is estimated that re-packaging of this material may require a further 151 documentary archive boxes, 755 acid-free cardboard wallets and ten plan boxes.

8.12 ESTIMATION OF DIGITAL INFORMATION

8.12.1 ***Tasks 191-192; Objectives 11.1-11.2***: upon completion of Stage 3 of the Archives Project, the amount of digital information to be supplied to the Archaeological Data Service (ADS) in York will be estimated, in order to provide the ADS with an indication of the quantity of data to be received. Discussions with the ADS will be initiated so that the cost of depositing the information can be determined.

8.13 GAZETTEER OF CAU/CAL EVENTS

8.13.1 ***Tasks 193-194; Objectives 12.1-12.2***: at the end of Stage 3, basic information relating to all field events undertaken by CAU/CAL will be provided digitally to the ADS, in order that an online archive gazetteer hosted by the ADS can be created. This will permit a brief summary of the results of all fieldwork projects carried out by the Carlisle unit to be placed in the public domain. The gazetteer will be linked to the Tullie House Museum and Art Gallery and CCCHER web-sites, and to any other appropriate sites, in order to facilitate access for all end-users.

8.14 ARCHIVE DEPOSITION

8.14.1 ***Tasks 195-197; Objectives 13.1-13.3***: at the beginning of Stage 3, representatives of all the relevant receiving bodies will be contacted concerning the amounts of archival materials to be deposited, in order to determine that these bodies are able to receive the material. The receiving museums in Cumbria will also be consulted, together with appropriate personnel from the CAS, to determine the feasibility of depositing document-only archives from Cumbrian events with the CAS. As early as possible in Stage 3 (or possibly before the commencement of the Stage 3 works), the small amount of material relating to the York Minster excavations of 1968-74 will be dispatched, in its current condition, to the York Minister Library. This will ensure that the material is integrated into the Library's ongoing programme of remedial works and analysis of the entire Minster archive.

8.14.2 ***Tasks 198-199; Objectives 13.4-13.5***: once the remedial works set out in *Sections 8.7-8.9* have been completed, the upgraded archives will be dispatched to the relevant receiving bodies for deposition, provided that these organisations have indicated their ability to accept the material. The small amounts of archival materials relating to events undertaken beyond Cumbria will be sent by courier to the appropriate organisations. The somewhat larger quantities of material generated by interventions within Cumbria but outside the City and District of Carlisle will be transported to the appropriate receiving bodies by OA North personnel, and deposited under the supervision of staff from the receiving organisations.

8.14.3 ***Tasks 200-201; Objectives 13.6-13.7***: the great bulk of the archive, deriving from events within the City and District of Carlisle, will be re-ordered within the current store, under the supervision of appropriate museum personnel. This will also be done for any miscellaneous and non-event specific materials that have been recommended for retention (*Section 8.11*). The documentary archives will be stored alphabetically by site code on numbered or labelled shelving racks. The artefactual and environmental archives will be stored in the same way, but in a separate part of the store from the documentary records. Digital records of the contents of all the archives will be compiled to facilitate access for all future end-users.

8.15 DISSEMINATION OF INFORMATION

8.15.1 ***Tasks 202-203; Objectives 14.1-14.2***: at the end of Stage 3, the updated project database will be copied and transmitted to all interested parties, including Tullie House Museum and Art Gallery, Carlisle City Council, Cumbria County Council's HER at Kendal, and English Heritage at Fort Cumberland. The NMR at Swindon and the AIP in Bournemouth will be contacted and copies of the data provided if required.

8.16 STAGE 3 REPORTING

8.16.1 ***Tasks 204-206; Objective 15.1***: a report will be produced at the end of Stage 3, presenting and analysing the results of the work. A summary and overview of the entire Carlisle Archives Project will also be provided.

9. RESOURCES, MANAGEMENT AND PROGRAMMING

9.1 PROGRAMMING

9.1.1 A task list and gantt chart are provided below (*Section 9.8*), giving information on Stage 3 of the project. Now that Tullie House Museum and Art Gallery have secured a medium-term lease on Level 1 at Shaddon Mill, the Museum personnel are keen to see the work start as soon as possible.

9.2 MANAGEMENT (COMMUNICATIONS AND PROJECT REVIEW)

9.2.1 OA North would undertake the Stage 3 work as agent for Carlisle City Council, grant-aided by English Heritage. Highlight Reports on the progress of the work will be provided to English Heritage and Carlisle City Council at regular intervals during the course of the project. To this end, a small advisory group would be convened at quarterly intervals. Membership would comprise representatives of Carlisle City Council and its archaeological advisors in Cumbria County Council, Tullie House Museum and Art Gallery, English Heritage and the OA North project team. The minutes of these meetings will form the contents of the Highlight Reports.

9.2.2 OA North places importance on the tight and effective management of projects in order to deliver best value to our clients. An element of managerial time will be dedicated to on-going quality assurance and internal monitoring. This is part of our internal quality assurance system and ensures the prompt delivery of the agreed report or other deliverables on time and budget. The management team for Stage 3 of the Carlisle Archives Project is detailed below (*Section 9.3*).

9.2.3 OA North has considerable experience of excavation and post-excavation projects of all periods and is an Institute of Field Archaeologists (IFA) registered organisation (RAO 17). All members of staff operate to the IFA Code of Conduct.

9.3 PROJECT TEAM

9.3.1 The project will be undertaken mainly by the same OA North team who worked on Stages 1 and 2. The personnel have been selected for their knowledge and experience of post-excavation projects, research, and of the archaeology of Carlisle and its District, thereby providing both good value and good quality for this project.

9.3.2 The Project Executive will be ***Rachel Newman BA, FSA***, Senior Executive Officer, Research and Publications. Rachel has worked in the North West for over 20 years, with an extensive knowledge of Roman, early medieval and medieval archaeology in the region. She maintains an overview on all post-excavation projects in the office and is a Vice-President of the Cumberland and Westmorland Antiquarian and Archaeological Society.

9.3.3 The project will be managed by ***Murray Cook, MA, MIFA, FSA Scot***, Post-Excavation Programme Manager with OA North. Murray was previously a Director at AOC Archaeology Group and over ten years of experience Project Managing heritage projects from cradle to grave.

9.3.3 ***John Zant, BA, MIFA***, will be responsible for supervising and co-ordinating the remedial works on the documentary archives, and will oversee much of the day-to-day work undertaken during Stage 3 of the Archives Project. He will also liaise with specialists and staff from the relevant receiving bodies, as required, and will be responsible for the production of the Stage 3 report. John has over ten years experience of dealing with excavation and post-excavation projects in Carlisle, and is thoroughly familiar with the archaeology of the city and with the former CAL premises at Shaddon Mill, Carlisle, where most of the archival material is currently stored. John compiled the gazetteer and accompanying report for Stage 1 of the Archives Project and was a key member of the team that undertook the Stage 2 Archives Project. He was also responsible for the production of the greater part of the present report.

9.3.4 ***Christine Howard-Davis, BA, MIFA***, Finds Manager with OA North, will supervise and co-ordinate the remedial works on the artefactual archives, and will liaise with museum personnel, conservators, and other appropriate specialists as required. Chris has extensive experience in the assessment, analysis and management of material archives from many excavations in north-west England, including the assessment of large quantities of material from the Millennium and Rickergate (Lanes extension) excavations in Carlisle. Chris was responsible for the detailed assessment of the artefactual archive during Stage 2 of the Archives Project and contributed substantially to the production of the present report.

9.3.5 ***Elizabeth Huckerby, BA, MSc, MIFA***, Environmental Manager with OA North, will supervise and co-ordinate the remedial works required for the environmental archives currently stored in Shaddon Mill, and will liaise with museum personnel and other appropriate specialists, as required. Elizabeth has worked in the North West for many years and has extensive knowledge of the palaeoenvironmental record, having acted as palaeoecologist on the English Heritage-funded North West Wetlands Survey. She also undertook the analysis of the pollen from the Carlisle Millennium Project.

9.3.6 ***Joanne Cook, BSc, MLitt, PIFA***, OA North's IT Co-ordinator, will adapt the project database to receive new data generated by the remedial works, and will liaise with the ADS and other appropriate organisations over matters relating to the production and supply of digital data relating to the Carlisle archive. Jo will also supervise and co-ordinate remedial works, on the digital records that are currently in Shaddon Mill. Jo was responsible for the creation of the Archives Project database at the beginning of Stage 1, and the enlargement and adaption of the database to take the large quantities of additional data generated by Stage 2. Jo has also contributed to the production of both the Stage 1 and Stage 2 assessment reports.

9.3.7 The day-to-day work on the project will be undertaken by a small, coherent team of OA North Supervisors and Assistants, picked for their interest and

knowledge of this type of work. Whilst a small team will necessarily extend the timetable for this project, both Tullie House Museum and Art Gallery and OA North believe that a limited yet experienced team will be the most cost-effective method of producing a high-quality end product.

9.4 EQUIPMENT AND SOFTWARE

9.4.1 The laptop computer purchased for Stage 1 of the project and also used during Stage 2 will be utilised again during Stage 3 to input new information into the adapted project database. Likewise, the printer and A3 scanner purchased for Stage 2 of the project will also be available for use during Stage 3.

9.4.2 It may be necessary during the extensive re-ordering and re-packaging of the archive documentation to copy some materials at Shaddon Mill. The second-hand desktop photocopier purchased for Stage 2 and extensively used during that stage of the project will be available for this purpose. The only additional piece of computer equipment required for Stage 3 is a 5.25-inch floppy disk drive, which can be obtained second-hand for only a few pounds (see *Section 11*). The purchase of this item will allow the many 5.25-inch disks present in the Carlisle archive to be read by OA North personnel in Lancaster, obviating the need to send them to OA's premises in Oxford.

9.4.3 For *Proposal 1*, it is recommended that a fire-proof negative cabinet of a suitable size is purchased in order to provide safe and secure storage for the large number of photographic negatives present in the Carlisle archive (Table 61). Digital data copied onto CD-Rom disks could also be stored in this cabinet.

9.5 CONSUMABLES

9.5.1 In view of the scale of re-packaging and re-labelling that is envisaged for Stage 3, it is inevitable that large amounts of consumables, particularly packaging materials, will be required during this stage of the project. *Proposal 1*, which envisages upgrading the entire Carlisle archive to the highest modern standards, would, if adopted, require more materials than *Proposal 2*, which would see the archive raised to a minimum acceptable standard. *Proposal 3* is a hybrid of the two programmes, aimed at achieving manximum effectives and efficiency. Many of the consumables would, however, be needed whichever proposal was adopted, as can be seen in Tables 61, 62 and 63, where estimates of the likely quantities and costs of the materials required to complete remedial works on the documentary, artefactual and environmental archives are presented.

Archive	**Consumables**	**No required**	**Unit price (£)**	**Cost (£)**
Documentary Archive				
i) Written records	Archive boxes	912	5.65	5152.80
	Cardboard wallets	4560	0.07	319.20
ii) Drawn records	Long archive boxes (large)	230	4.25	977.5
	Long archive boxes (small)	150	3.93	589.50
	A3 archive boxes	25	6.35	158.75
iii) Photographic records	Archive boxes	250	5.65	1412.5
	Slide sleeves	3320	0.56	1859.20
	Print sleeves	6225	0.56	3486.00
	Negative sleeves	12,450	0.23	2863.50
	Fire-safe cabinet for negative storage	1	2500.00	2500.00
iv) Digital records	CD-Rom disks	250	0.405	112.50
	Archive boxes to store hard copies of digital data	300	5.65	1695.00
Sub-total				*21126.45*
			VAT @ 17.5%	3697.13
Artefactual Archive				
i) Bulk artefacts	Cardboard 'standard' boxes	250	2.38	595.00
	Self-seal polythene bags (large)	2000	400 @ 6.19 for packs of 200 800 @ 8.95 for packs of 200 800 @ 18.21 for packs of 200	12.38 35.80 72.80
ii) IRFs	Plastic 'Stewart' boxes	900	450 @ 5.49 450 @ 2.78	2470.50 1251.00
	Self-seal polythene bags (small-medium)	11,000	5000 @ 24.76 per 1000 6000 @ 25.89 per 1000	123.80 155.34
	Non-cobalt silica gel	437kg	33.76 for 7kg	2107.59
	Corrugated foam	1 roll	66.41 (1 x 70m)	66.41
	Bubble wrap	1 roll	31.51 (0.75 x 60m)	31.51
Sub-total				*6922.17*
			VAT @ 17.5%	1211.38
Environmental Archive				
i) Soil samples (including monoliths)	10-litre plastic sample tubs	1500	2.02	3030.00
	5-litre polythene sample bags	400	200 @ 18.2	36.40
ii) Wood samples	Polythene sheeting for wrapping	1 roll	45.00 (2 x 100m @ 60 microns thickness or 2 x 50m @ 120 microns)	45.00
Sub-total				*3111.40*
			VAT @ 17.5%	*544.95*

Archive	Consumables	No required	Unit price (£)	Cost (£)
Miscellaneous (required for all remedial works)	Self-adhesive labels	10,600	3600 @ 92.00 (63 x 72mm) 3000 @ 141.00 (93 x 99mm) 4000 @ 282.00 (99 x 139mm)	92.00 141.00 282.00
	Indelible marker pens	50	20 @ 0.79 30 @ 1.12	15.80 33.60
	Tyvek labels	3000	1000 @ 68.00	204.00
	Archive-quality photocopy paper for box-lists, etc.	15,000	5000 sheets @ 93.00	279.00
	Coated paperclips, clip files, staple removers, printer cartridges and other miscellaneous items			113.00
Sub-total				*1160.40*
			VAT @ 17.5%	203.07
Total				**37,976.50**
			Delivery Charge	113.00
Total				**38,089.50**

Table 61: estimate of consumables required for Proposal 1

Archive	Consumables	No required	Unit price (£)	Cost (£)
Documentary Archive				
i) Written records	Archive boxes	100	5.02	565.00
	A4 box-files	200	2.00	450.00
	Cardboard wallets	1000	0.06	70.00
Ii) Drawn records	A3 drawing folders	30	7.00	236.40
	Suspension strips	1430	0.26	414.70
iii) Photographic records	Photographic binders	40	8.00	360.00
	Slide sleeves	3320	0.50	1859.20
	Print sleeves	6225	0.50	3486.00
	Negative sleeves	12,450	0.20	2863.50
iv) Digital records	CD-Rom discs	250	0.40	112.50
	Archive boxes to store hard copies of digital data	300	5.02	1695.00
Sub-total				*12112.3*
			VAT @ 17.5%	2119.65
Artefactual Archive				
i) Bulk artefacts	Cardboard 'standard' boxes	250	2.12	595.00
	Self-seal polythene bags (large)	2000	400 @ 5.50 for packs of 200 800 @ 7.95 for packs of 200 800 @ 16.18 for packs of 200	12.38 35.80 72.84

Archive	Consumables	No required	Unit price (£)	Cost (£)
ii) IRFs	Plastic 'Stewart' boxes	200	100 @ 4.88 100 @2.47	549.00 278.00
	Self-seal polythene bags (small-medium)	11000	5000 @ 22.00 per 1000 6000 @ 23.00 per 1000	123.80 155.34
	Non-cobalt humidity indicator	437kg	30.00 for 7 kg	2107.59
	Corrugated foam	1 roll	59.00 (1 x 70m)	66.41
	Bubble wrap	1 roll	16.00 (0.75 x 60m)	31.51
Sub-total				*4027.67*
			VAT @ 17.5%	704.84
Environmental Archive				
i) Soil samples	Cardboard 'standard' boxes	100	2.12	238.00
	5-litre polythene sample bags	400	200 @ 16.18	36.40
ii) Wood samples	Polythene sheeting for wrapping	1 roll	37.00 (2 x 100m @ 60 microns thickness or 2 x 50m @ 120 microns)	45.00
Sub-total				*319.40*
			VAT @ 17.5%	55.90
Miscellaneous (required for all remedial works)	Self-adhesive labels	10,600	3600 @ 81.00 (63 x 72mm) 3000 @ 125.00 (93 x 99mm) 4000 @ 250.00 (99 x 139mm)	92.00 141.00 282.00
	Indelible marker pens	50	20 @ 0.70 30 @ 1.00	15.80 33.60
	Tyvek labels	3000	1000 @ 60.00	240.00
	Archive-quality photocopy paper for box-lists, etc.	15,000	5000 sheets @ 83.00	280.23
	Coated paperclips, clip files, staple removers, printer cartridges and other miscellaneous items			113.00
Sub-total				1161.63
			VAT @ 17.5%	203.29
Total				**20,704.29**
			Delivery charge	56.27
Total				**20,760.94**

Table 62: Estimate of consumables required for Proposal 2

Archive	Consumables	No required	Unit price (£)	Cost (£)
Documentary Archive				
i) Written records	Archive boxes	912	5.65	5152.80
	Cardboard wallets	4560	0.07	319.20
ii) Drawn records	Long archive boxes (large)	230	4.25	977.5
	Long archive boxes (small)	150	3.93	589.50
	A3 archive boxes	25	6.35	158.75
iii) Photographic records	Archive boxes	250	5.65	1412.5
	Slide sleeves	3320	0.56	1859.20
	Print sleeves	6225	0.56	3486.00
	Negative sleeves	12,450	0.23	2863.50
	Fire-safe cabinet for negative storage	1	2500.00	2500.00
iv) Digital records	CD-Rom disks	250	0.405	112.50
	Archive boxes to store hard copies of digital data	300	5.65	1695.00
Sub-total				*21126.45*
Artefactual Archive				
i) Bulk artefacts	Cardboard 'standard' boxes	250	2.12	595.00
	Self-seal polythene bags (large)	2000	400 @ 5.50 for packs of 200 800 @ 7.95 for packs of 200 800 @ 16.18 for packs of 200	12.38 35.80 72.84
ii) IRFs	Plastic 'Stewart' boxes	200	100 @ 4.88 100 @2.47	549.00 278.00
	Self-seal polythene bags (small-medium)	11000	5000 @ 22.00 per 1000 6000 @ 23.00 per 1000	123.80 155.34
	Non-cobalt humidity indicator	437kg	30.00 for 7 kg	2107.59
	Corrugated foam	1 roll	59.00 (1 x 70m)	66.41
	Bubble wrap	1 roll	16.00 (0.75 x 60m)	31.51
Sub-total				*4027.67*
			VAT @ 17.5%	704.84
Environmental Archive				
i) Soil samples	Cardboard 'standard' boxes	100	2.12	238.00
	5-litre polythene sample bags	400	200 @ 16.18	36.40
ii) Wood samples	Polythene sheeting for wrapping	1 roll	37.00 (2 x 100m @ 60 microns thickness or 2 x 50m @ 120 microns)	45.00
Sub-total				*319.40*
			VAT @ 17.5%	55.90

Archive	Consumables	No required	Unit price (£)	Cost (£)
Miscellaneous (required for all remedial works)	Self-adhesive labels	10,600	3600 @ 81.00 (63 x 72mm) 3000 @ 125.00 (93 x 99mm) 4000 @ 250.00 (99 x 139mm)	92.00 141.00 282.00
	Indelible marker pens	50	20 @ 0.70 30 @ 1.00	15.80 33.60
	Tyvek labels	3000	1000 @ 60.00	240.00
	Archive-quality photocopy paper for box-lists, etc.	15,000	5000 sheets @ 83.00	280.23
	Coated paperclips, clip files, staple removers, printer cartridges and other miscellaneous items			113.00
Sub-total				1161.63
			VAT @ 17.5%	203.29
Total				**20,704.29**
			Delivery charge	56.27
Total				**20,760.56**

Table 63: Estimate of consumables required for Proposal 3

9.6 ACCOMMODATION AND FACILITIES

9.6.1 Much of the Stage 3 work will of necessity be undertaken at Shaddon Mill, Carlisle, where the bulk of the CAU/CAL archive is currently stored. This will require essential staff to travel to Carlisle from Lancaster for the duration of the work. Appropriate transport will also be required for the movement of re-furbished archives from Shaddon Mill to their ultimate repositories, both within Carlisle and elsewhere in Cumbria. Travel and accommodation in Oxford will also be required for the training described in *Section 6.3*.

9.6.2 The office space on Level 1 of Shaddon Mill, which was used by OA North personnel during the Stage 2 assessment, will act as a base for the project team during Stage 3.

9.7 HEALTH AND SAFETY STATEMENT

9.7.1 All OA North post-excavation work will be carried out under relevant Health and Safety legislation, including the Health and Safety at Work Act (1974). A copy of the Oxford Archaeology Health and Safety Policy can be supplied. The nature of the work means that the requirements of the following legislation are particularly relevant*:*

Workplace (Health, Safety and Welfare) Regulations (1992);

Health and Safety (Display Screen Equipment) Regulations (1992).

9.8 TASK LIST

Task	Objectives	Method	Task description	Performed by	Days
1	All	All	Management/meetings	Rachel Newman/ Murra Cook	12
2	All	All	Documentary archives supervision	John Zant	18
3	All	All	Finds and environmental archives supervision	Christine Howard-Davis Elizabeth Huckerby	18 5
4	All	All	Monitoring	Murray Cook	3
			Database and GIS adaption		
5	1.1	8.2	Consult with appropriate organisations	Jo Cook	1
6	1.2	8.2	Adapt database to take Stage 3 data	Jo Cook	5
7	1.3	8.2	Alter attribute data for trench location shape file to conform to new MIDAS standards	Jo Cook	5
			Training		
			Proposal 1 or 3		
8	2.1	8.3	Ensure familiarity with guidelines for deposition of archaeological archives	Christine Howard-Davis PS PA	1 6 5
9	2.2	8.3	Receive training in archive preparation at OA, Oxford	PS	4
10	2.2	8.3	Conduct training in archive preparation at OA, Oxford	Nicola Scott	2
			Proposal 2		
11	2.1	8.3	Ensure familiarity with guidelines for deposition of archaeological archives	Christine Howard-Davis PS PA	1 6 4
12	2.2	8.3	Receive training in archive preparation at OA, Oxford	PS	4
13	2.2	8.3	Conduct training in archive preparation at OA, Oxford	Nicola Scott	2
			Liaison with receiving museums		
14	3.1	8.4	Liaise with receiving museums to ensure the requirements of each are addressed	John Zant	2
			Return of material to Shaddon Mill		
15	4.1	8.5	Contact specialists and organisations holding Carlisle archival materials to facilitate return to Shaddon Mill	John Zant	2
16	4.2	8.5	Co-ordinate return of archival materials to Shaddon Mill, in consultation with Tullie House Museum and Art Gallery personnel	John Zant	1
17	4.2	8.5	Compile documentation recording return of archival materials	John Zant PS	1 2
18	4.2	8.5	Re-integrate returned materials into appropriate archives	PS PA	2 2

Task	Objectives	Method	Task description	Performed by	Days
			Timing of the Stage 3 remedial works		
19	5.1	8.6	Consult with appropriate organisations	John Zant	1
20	5.2	8.6	Co-ordination of Stage 3 work and movement/re-organisation of Carlisle archive, in consultation with Tullie House Museum and Art Gallery personnel	John Zant	2
			Remedial works on documentary archives		
			Proposal 1 or 3		
21	6.1	8.7	Ensure familiarity with national and local guidelines for preparation and deposition of archaeological documentary archives	John Zant PS PA	1 1 2
22	6.2	8.7	Re-package paper archive for all events into archive boxes	PA	25
23	6.3	8.7	Compile/complete missing key archival elements, including indices	PS PA	20 35
24	6.4	8.7	Re-package all oversize drawings for each event into archive boxes	PA	25
25	6.4	8.7	Re-package all A3/A4 drawings for all events into archive boxes	PA	7
26	6.5	8.7	Replace all photographic sleeves in each event archive	PA	30
27	6.5	8.7	Label all new sleeves with appropriate information	PA	20
28	6.5	8.7	Re-package all sleeves containing slides, prints, and contact-prints to archive boxes	PA	5
29	6.5	8.7	Re-package all sleeves containing negatives to fire-safe filing cabinets	PA	1
30	6.5	8.7	Record whereabouts of negatives stored away from rest of archives	PS	5
31	6.5	8.7	Separate images and negatives in mixed event folders, where possible, and integrate with rest of archives	PS PA	10 10
32	6.5	8.7	Copy images and negatives in mixed event folders in cases where they cannot be separated	PS	25
33	6.6	8.7	Label all unlabelled photographic images and negatives, in so far as is reasonably possible	PS PA	10 20
34	6.7	8.7	Extract x-rays from inappropriate locations within the present archives and integrate into the relevant photographic archives	PA	2
35	6.7	8.7	Ensure x-rays are adequately stored and labelled	PS	3
36	6.8	8.7	Copy 5.25-inch and 3.5-inch floppy disks in the Carlisle archive onto server at OA North, Lancaster	Jo Cook PA	2 3
37	6.8	8.7	Assess contents of 5.25-inch and 3.5-inch floppy disks and convert those containing relevant data to modern format	John Zant Jo Cook	1 6
38	6.8	8.7	Read all computer files saved from old CAU/CAL computers	PS	1
39	6.8	8.7	Copy all relevant information from floppy disks and old computer files to CD-Rom disks	PS	2
40	6.8	8.7	Generate hard copies of all relevant information from floppy disks and old computer files, and place with the appropriate documentary archives	PA	20
41	6.8	8.7	Label and re-package all old floppy disks	PA	2

Task	Objectives	Method	Task description	Performed by	Days
42	6.9	8.7	Ensure all storage media are clearly and adequately labelled	PS	2
43	6.10	8.7	Remove all uncoated paper clips, staples, and other unstable materials from the documentary archives	PA	30
44	6.11	8.7	Check all documentary records to ensure presence of site code and other relevant data, and rectify omissions	PA	10
45	6.12	8.7	Audit contents of each archive box and create digital box-lists	PS PA	55 90
46	6.12	8.7	Place copies of box-lists in appropriate archive boxes	PA	3
47	6.13	8.7	Extract all primary records from the written and drawn archive for microforming and indexing at the NAR	PS PA	5 30
48	6.13	8.7	Dispatch primary records to the NAR for microforming and indexing	PS PA	4 15
49	6.13	8.7	Scan all primary photographic images held in the Carlisle archive	PA	35
50	6.13	8.7	Copy all scanned photographs to CD-Rom disks	PS	2
			Proposal 2		
			i) Archives for deposition with bodies other than Tullie House Museum and Art Gallery		
21-50	6.1-6.13	8.7	Tasks as *Proposal 1* above	PS PA	15 45
			ii) Archives for deposition with Tullie House Museum and Art Gallery only		
51	6.1	8.7	Ensure familiarity with national and local guidelines for preparation and deposition of archaeological documentary archives	John Zant PS PA	1 1 2
52	6.2	8.7	Replace damaged, dilapidated, or overloaded files and folders in the archive of written records to be deposited with Tullie House Museum and Art Gallery	PS PA	15 75
53	6.2	8.7	Extract, repair, and replace loose record sheets	PA	155
54	6.4	8.7	Replace damaged, dilapidated, or overloaded files in the archive of drawings to be deposited with Tullie House Museum and Art Gallery	PS PA	10 35
55	6.4	8.7	Re-order oversize drawings to be deposited with Tullie House Museum and Art Gallery, alphabetically within each plan cabinet	PA	20
56	6.4	8.7	Replace damaged or missing suspension strips for oversize drawings, as required	PA	40
57	6.5	8.7	Replace damaged, dilapidated, or overloaded files in the photographic archive to be deposited with Tullie House Museum and Art Gallery	PS PA	10 35
58	6.5	8.7	Replace all existing photographic sleeves and wallets with archivally stable polyester sleeves	PA	90
59	6.5	8.7	Extract photographic indices from folders also containing photographic images, and store indices in new folders	PA	15
60	6.5	8.7	Copy photographs in mixed folders containing images from two or more projects, to allow placement in the relevant archives	PS	25

Task	Objectives	Method	Task description	Performed by	Days
61	6.5	8.7	Ensure negatives are stored separately from the rest of the photographic archive for security reasons	PS	1
62	6.6	8.7	Label each photographic image with appropriate site code, in so far as is reasonably possible	PS PA	10 20
63	6.7	8.7	Extract x-rays from inappropriate locations within the present archives and integrate into the relevant photographic archives	PA	2
64	6.7	8.7	Ensure x-rays are adequately stored and labelled	PS	3
65	6.8	8.7	Copy 5.25-inch and 3.5-inch floppy disks in the Carlisle archive onto server at OA North, Lancaster	Jo Cook PA	2 3
66	6.8	8.7	Assess contents of 5.25-inch and 3.5-inch floppy disks and convert those containing relevant data to modern format	John Zant Jo Cook	1 6
67	6.8	8.7	Read all computer files saved from old CAU/CAL computers	PS	1
68	6.8	8.7	Copy all relevant information from floppy disks and old computer files to CD-Rom disks	PS	2
69	6.8	8.7	Generate hard copies of all relevant information from floppy disks and old computer files, and place with the appropriate documentary archives	PA	20
70	6.8	8.7	Label and re-package all old floppy disks	PA	2
71	6.9	8.7	Ensure all storage media are clearly and adequately labelled	PS	2
72	6.10	8.7	Remove all uncoated paper clips, staples, and other unstable materials from the documentary archives	PA	30
73	6.11	8.7	Check all documentary records to ensure presence of site code and other relevant data, and rectify omissions	PA	10
74	6.12	8.7	Audit contents of each archive and create digital lists	PS PA	60 100
75	6.12	8.7	Place copies of lists in appropriate archives	PA	3
76	6.13	8.7	Extract all primary records from the written and drawn archive for microforming and indexing at the NAR	PS PA	5 30
77	6.13	8.7	Dispatch primary records to the NAR for microforming and indexing	PS PA	4 15
			Remedial works on artefactual archives		
			Proposal 1		
78	7.1	8.8	Ensure familiarity with national and local guidelines for preparation and deposition of artefactual archives	Christine Howard-Davis PS PA	1 1 2
79	7.2	8.8	Re-order bulk artefact assemblage to ensure materials for each event are located together	PS PA	3 3
80	7.3	8.8	Replace damaged and overloaded bulk artefact boxes	PA	10
81	7.3	8.8	Weigh bulk artefact boxes to avoid overloading, in accordance with Health and Safety requirements	PA	10
82	7.3	8.8	Clearly label excessively heavy bulk artefact boxes to indicate potential hazard	PA	1

Task	Objectives	Method	Task description	Performed by	Days
83	7.3	8.8	Check condition of internal packaging of bulk artefact boxes and replace as required	PS PA	10 10
84	7.4	8.8	Re-package all bulk artefactual materials stored on trays and in other unsuitable containers	PA	10
85	7.5	8.8	Ensure secure and adequate labelling of individual oversized items that cannot be boxed	PA	5
86	7.6	8.8	Re-package all environmentally-sensitive IRFs currently stored in cardboard boxes into airtight plastic boxes	PS PA	15 15
87	7.6	8.8	Replace any damaged cardboard or plastic boxes containing IRFs	PA	3
88	7.7	8.8	Undertake thorough check of all internal packaging of IRF boxes and replace any damaged items	PS PA	10 25
89	7.7	8.8	Replace all manila envelopes containing IRFs with perforated, self-seal polythene bags	PA	65
90	7.7	8.8	Reinforce bags holding fragile or delicate IRFs with corrugated foam, as required	PA	45
91	7.8	8.8	Remove all silica gel from IRF boxes and replace with non-cobalt humidity regulator	PS PA	10 10
92	7.9	8.8	Separate contents of all mixed artefact boxes and re-box appropriately	PS PA	10 10
93	7.9	8.8	Extract artefacts stored in wrong boxes and re-integrate into the correct artefactual archive	PS PA	3 3
94	7.10	8.8	Clean all existing artefact boxes to be retained in the archive	PA	5
95	7.11	8.8	Remove all labels currently attached to artefact boxes and replace with appropriately marked self-adhesive labels	PA	8
96	7.11	8.8	Insert appropriately marked Tyvek labels into all plastic boxes containing artefacts	PA	2
97	7.12	8.8	Audit contents of all artefact boxes and create digital box-lists	PS PA	70 80
98	7.12	8.8	Place copies of box-lists in appropriate archive boxes	PA	5
99	7.13	8.8	Compare box contents against existing records to establish extent of losses, and update records as necessary	PS PA	70 80
100	7.14	8.8	Compile definitive digital lists of all IRFs for each event archive	PS PA	5 7
101	7.15	8.8	Ensure that every individually registered metal artefact in the Carlisle archive is x-rayed (this taks has been estimated and may require more time)	PS PA	3 4
102	7.15	8.8	Undertake rapid assessment of the bulk iron assemblage and select a proportion for x-ray	Christine Howard-Davis PS	1 10
103	7.15	8.8	Create digital lists cross-referencing existing x-rays to artefacts	PS PA	15 15
104	7.16	8.8	Arrange supplementary conservation for unstable artefacts, as required; the full extent of this task is presently unknown	Christine Howard-Davis	1
105	7.17	8.8	Develop criteria to determine the numbers of unconserved artefacts warranting conservation	Christine Howard-Davis	1

Task	Objectives	Method	Task description	Performed by	Days
106	7.18	8.8	Develop criteria for the disposal of unconserved wood and leather with little potential	Christine Howard-Davis	1
107	7.17-7.18	8.8	Consult with appropriate specialists and museum personnel	Christine Howard-Davis Specialist	1 1
			Proposal 2 or 3		
108	7.1	8.8	Ensure familiarity with national and local guidelines for preparation and deposition of artefactual archives	Christine Howard-Davis PS PA	1 1 1
109	7.2	8.8	Re-order bulk artefact assemblage to ensure materials for each event are located together	PS PA	3 3
110	7.3	8.8	Replace damaged and overloaded bulk artefact boxes	PA	10
111	7.3	8.8	Weigh bulk artefact boxes to avoid overloading, in accordance with Health and Safety requirements	PA	10
112	7.3	8.8	Clearly label excessively heavy bulk artefact boxes to indicate potential hazard	PA	1
113	7.3	8.8	Check condition of internal packaging of bulk artefact boxes and replace as required	PS PA	10 10
114	7.4	8.8	Re-package all bulk artefactual materials stored on trays and in other unsuitable containers	PA	10
115	7.5	8.8	Ensure secure and adequate labelling of individual oversized items that cannot be boxed	PA	5
116	7.6	8.8	Replace damaged or overloaded IRF storage boxes	PS PA	2 3
117	7.7	8.8	Replace all manila envelopes containing IRFs with perforated, self-seal polythene bags	PA	55
118	7.7	8.8	Reinforce bags holding fragile or delicate IRFs with corrugated foam, as required	PA	45
119	7.8	8.8	Remove all silica gel from IRF boxes and replace with non-cobalt humidity regulator	PS PA	10 10
120	7.9	8.8	Separate contents of all mixed artefact boxes and re-box appropriately	PS PA	10 10
121	7.9	8.8	Extract artefacts stored in wrong boxes and re-integrate into the correct artefactual archive	PS PA	3 3
122	7.10	8.8	Clean all existing artefact boxes to be retained in the archive	PA	5
123	7.11	8.8	Remove all labels currently attached to artefact boxes and replace with appropriately marked self-adhesive labels	PA	8
124	7.11	8.8	Insert appropriately marked Tyvek labels into all plastic boxes containing artefacts	PA	2
125	7.12	8.8	Audit contents of all artefact boxes and create digital box-lists	PS PA	70 75
126	7.12	8.8	Place copies of box-lists in appropriate archive boxes	PA	5
127	7.13	8.8	Compare box contents against existing records to establish extent of losses, and update records as necessary	PS PA	70 75
128	7.15	8.8	Create digital lists cross-referencing existing x-rays to artefacts	PS PA	15 15
129	7.15	8.8	Ensure that every individually registered metal artefact in the Carlisle archive is x-rayed (this taks has been estimated and may require more time)	PS PA	3 4

Task	Objectives	Method	Task description	Performed by	Days
130	7.15	8.8	Rapidly assess bulk iron assemblage and develop criteria for future x-raying of a proportion of the assemblage; the full extent of this task is presently unknown	Christine Howard-Davis PS	2 15
131	7.16	8.8	Arrange supplementary conservation for unstable artefacts, as required; the full extent of this task is presently unknown	Christine Howard-Davis	1
132	7.17	8.8	Develop criteria to determine the numbers of unconserved artefacts warranting conservation	Christine Howard-Davis Specialist	1 1
133	7.18	8.8	Develop criteria for the disposal of unconserved wood and leather with little potential	Christine Howard-Davis	1
134	7.17-7.18	8.8	Consult with appropriate specialists and museum personnel	Christine Howard-Davis Specialist	1 1
			Remedial works on environmental archives		
			Proposal 1		
135	8.1	8.9	Ensure familiarity with national and local guidelines for preparation and deposition of archaeological environmental archives	Elizabeth Huckerby PO PS PA	1 1 1 2
136	8.2	8.9	Re-order environmental assemblage to ensure materials for each event are located together	PS PA	2 3
137	8.3	8.9	Check condition of all bulk soil samples and wood samples and extract those that are contaminated or inadequately labelled, or which show severe deterioration	PS PA	5 5
138	8.3	8.9	Discard extracted samples, in consultation with appropriate specialists and museum personnel	PS PA	2 2
139	8.3	8.9	Check all monolith samples and discard those with damaged packaging or inadequate labelling, in consultation with appropriate specialists and museum personnel	PS PA	1 2
140	8.3	8.9	Check oversized (unboxed) wood samples and replace damaged or deteriorating packaging and labelling	PS PA	1 2
141	8.4	8.9	Undertake programme of limited processing and rapid assessment of bulk soil samples to determine potential	Elizabeth Huckerby PO PS PA	93 100 150 400
142	8.4	8.9	Collate data and compile results of assessment of bulk soil samples	Elizabeth Huckerby PS	3 2
143	8.4	8.9	Undertake programme of limited processing and rapid assessment of soil monolith samples to determine potential	Elizabeth Huckerby PO PS	20 20 6
144	8.4	8.9	Collate data and compile results of assessment of soil monolith samples	Elizabeth Huckerby PS	3 2
145	8.5	8.9	Develop criteria and strategy for the disposal of soil samples with little potential	Elizabeth Huckerby	2
146	8.6	8.9	Undertake disposal of low-potential soil samples, as directed by appropriate museum personnel	PS PA	1 3

Task	Objectives	Method	Task description	Performed by	Days
147	8.7	8.9	Develop measures to enhance storage and extend life of wood and other sensitive environmental materials with good potential, in consultation with appropriate specialist	Christine Howard-Davis Specialist	2 2
148	8.8	8.9	Develop criteria for possible future conservation of wood and other sensitive environmental materials with good potential	Christine Howard-Davis Specialist	1 1
149	8.9	8.9	Develop criteria for sub-sampling and disposal of oversized wood samples	Christine Howard-Davis Specialist	1 1
150	8.10	8.9	Undertake sub-sampling, as directed by receiving museums	Christine Howard-Davis PS	2 10
151	8.3-8.10	8.9	Consult with appropriate specialists and museum personnel	Christine Howard-Davis Elizabeth Huckerby	1 1
152	8.11	8.9	Re-package bagged soil samples currently in cardboard boxes to airtight plastic boxes/tubs	PS PA	10 10
153	8.11	8.9	Appropriately re-package any other environmental samples, as required	PS PA	5 5
154	8.11	8.9	Weigh all containers containing environmental samples to avoid overloading, in accordance with Health and Safety requirements	PA	5
155	8.11	8.9	Clearly label excessively heavy containers to indicate potential hazard	PA	2
156	8.12	8.9	Clean all existing sample tubs to be retained in the archive	PA	3
157	8.12	8.9	Check condition of internal packaging of all environmental sample containers and replace as required	PS PA	3 5
158	8.13	8.9	Audit contents of all environmental sample containers and create digital box-lists	PS PA	15 50
159	8.13	8.9	Place copies of box-lists in appropriate environmental sample containers	PA	2
160	8.14	8.9	Compare contents of environmental sample containers against existing records to establish extent of losses, and update records as necessary	PS PA	15 50
161	8.14	8.9	Compare lists of soil monolith samples and oversized wood samples against existing records to establish extent of losses, and update records as necessary	PS PA	5 10
			Proposal 2 or 3		
162	8.1	8.9	Ensure familiarity with national and local guidelines for preparation and deposition of archaeological environmental archives	Elizabeth Huckerby PS PA	1 1 1
163	8.2	8.9	Re-order environmental assemblage to ensure materials for each event are located together	PS PA	2 3
164	8.3	8.9	Check condition of all bulk soil samples and wood samples and extract those that are contaminated or inadequately labelled, or which show severe deterioration	PS PA	5 5
165	8.3	8.9	Discard extracted samples, in consultation with appropriate specialists and museum personnel	PS PA	2 2

Task	Objectives	Method	Task description	Performed by	Days
166	8.3	8.9	Check all monolith samples and discard those with damaged packaging or inadequate labelling, in consultation with appropriate specialists and museum personnel	PS PA	1 2
167	8.3	8.9	Check oversized (unboxed) wood samples and replace damaged or deteriorating packaging and labelling	PS PA	1 2
168	8.5	8.9	Develop criteria and a strategy for disposal of soil samples with little potential, in consultation with appropriate museum personnel	Elizabeth Huckerby	2
169	8.7, 8,8	8.9	Develop criteria and a strategy for sampling of unconserved wood and other environmental materials with good potential, in consultation with appropriate specialists and museum personnel	Christine Howard-Davis Specialist	2 2
170	8.9	8.9	Develop criteria and a strategy for sub-sampling and disposal of oversized wood samples, in consultation with appropriate specialists and museum personnel	Christine Howard-Davis Specialist	2 2
171	8.11	8.9	Replace all damaged storage boxes containing environmental samples	PS PA	2 7
172	8.11	8.9	Replace damaged or deteriorating packaging and labelling on oversized wood samples	PS PA	1 2
173	8.11	8.9	Weigh all containers containing environmental samples to avoid overloading, in accordance with Health and Safety requirements	PA	5
174	8.11	8.9	Clearly label excessively heavy containers to indicate potential hazard	PA	2
175	8.11	8.9	Place bagged samples that are currently unboxed into new storage boxes	PA	2
176	8.11	8.9	Separate contents of storage boxes containing mixed materials and re-box, as required	PS PA	2 5
177	8.11	8.9	Remove existing labels from all storage boxes and replace with appropriate self-adhesive labels marked with indelible ink	PA	7
178	8.11	8.9	Insert appropriately marked Tyvek labels into all storage boxes	PA	2
179	8.12	8.9	Clean all storage containers of accumulations of dust and dirt	PA	5
180	8.12	8.9	Check condition of internal packaging of all environmental sample containers and replace as required	PS PA	3 5
181	8.13	8.9	Audit contents of all environmental sample containers and create digital box-lists	PS PA	15 50
182	8.13	8.9	Place copies of box-lists in appropriate environmental sample containers	PA	2
183	8.14	8.9	Compare contents of environmental sample containers against existing records to establish extent of losses, and update records as necessary	PS PA	15 40
184	8.14	8.9	Compare lists of soil monolith samples and oversized wood samples against existing records to establish extent of losses, and update records as necessary	PS PA	5 10

Task	Objectives	Method	Task description	Performed by	Days
			Unprovenanced materials		
185	9.1	8.10	Discuss unprovenanced artefactual and environmental materials currently in Shaddon Mill with appropriate Tullie House Museum and Art Gallery personnel	Christine Howard-Davis	1
186	9.2	8.10	Develop strategy, with appropriate museum personnel, for dealing with unprovenanced materials	Christine Howard-Davis	1
			Non-event specific documents and other miscellaneous materials		
187	10.1	8.11	Discuss non-event specific documents and other miscellaneous materials in Shaddon Mill with appropriate personnel from Tullie House Museum and Art Gallery and Carlisle City Council	John Zant	2
188	10.2	8.11	Develop strategy, with appropriate museum and City Council personnel, for dealing with non-event specific documents and miscellaneous materials	John Zant	2
189	10.3	8.11	Re-package non-event specific documents selected for retention	PS PA	2 3
190	10.4	8.11	Discard miscellaneous materials recommended for disposal, as directed by appropriate Tullie House Museum and Art Gallery or Carlisle City Council personnel	PS PA	2 3
			Estimation of digital information		
191	11.1	8.12	Estimate amount of digital information to be supplied to the ADS	Jo Cook	1
192	11.2	8.12	Discuss cost of deposition of digital information with the ADS	Jo Cook	1
			Gazetteer of CAU/CAL events		
193	12.1	8.13	Provide ADS with appropriate digital data to facilitate production and hosting of online gazetteer	Jo Cook	1
194	12.2	8.13	Ensure links to relevant section of ADS web-site from Tullie House Museum and Art Gallery and CCCHER web-sites, and any other appropriate sites	Jo Cook	2
			Archive deposition		
195	13.1	8.14	Consult with relevant receiving museums concerning archival materials to be deposited	John Zant	2
196	13.2	8.14	Consult with the CAS and relevant receiving museums to assess feasibility of depositing document-only archives with the CAS	John Zant	2
197	13.3	8.14	Dispatch archival materials relating to York Minster excavations to York Minster Library	PS	1
198	13.4	8.14	Dispatch archival materials relating to all events outside Cumbria to the relevant receiving bodies	John Zant PS PA	2 2 2
199	13.5	8.14	Undertake transportation and deposition of archival materials relating to Cumbrian events outside Carlisle to the relevant receiving bodies, under supervision of appropriate personnel	PS PA	4 4

Task	Objectives	Method	Task description	Performed by	Days
200	13.6	8.14	Undertake deposition and, if required, transportation of all archives from the City and District of Carlisle, under supervision of personnel from Tullie House Museum and Art Gallery	PS PA	10 20
201	13.7	8.14	Compile digital records of the location and contents of all archives, including retained miscellaneous and non-event specific materials	PS PA	5 25
			Dissemination of information		
202	14.1	8.15	Copy and transmit updated Archives Project database to all interested parties	Jo Cook	2
203	14.2	8.15	Contact NMR and AIP and supply copies of updated database if required	Jo Cook	1
			Stage 3 reporting		
204	15.1	8.16	Prepare assessment report and analysis of results	John Zant Christine Howard-Davis Elizabeth Huckerby	25 5 5/1*
205	15.1	8.16	Data presentation	Jo Cook	2
206	15.1	8.16	Editing/Quality Assurance	Rachel Newman	3

* Elizabeth Huckerby will require five days of reporting time in Proposal 1, but only one day in Proposals 2 and 3

10. BIBLIOGRAPHY

Brennand, M (ed), 2006 *The archaeology of North West England: an archaeological research framework for North West England: Volume 1, Resource Assessment*, Archaeology North West, **8**, Manchester

Brennand, M (ed), 2007 *Research and archaeology in North West England: an archaeological research framework for North West England: Volume 2, Research agenda and strategy*, Archaeology North West, **9**, Manchester

Brennand, M, Chitty, G, and Newman, R, 2007 Research Strategy, in Brennand 2007, 159-97

Brown, A, and Perrin, K, 2000 *A model for the description of archaeological archives*, English Heritage, London

Cambridgeshire County Council, 2004 *Deposition of archaeological archives in the Cambridgeshire County Council archaeology store: Guidelines*, HER **2004/1**, unpubl doc

Chitty, G, and Brennand, M, 2007 Research Agenda introduction, in Brennand 2007, 7-30

Cumbria County Council, 2004 *Brief for the compilation of a project design for an Urban Archaeological Database for Carlisle*, unpubl doc

Derbyshire Museums Service, 2003 *Procedures for the transfer of archaeological archives*, unpubl doc

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

English Heritage, 2002 *Environmental archaeology: A guide to the theory and practice of methods, from sampling and recovery to post-excavation*, London

English Heritage, 2003 *MIDAS: a manual and data standard for monument inventories*, 3rd Repr, London

English Heritage, 2004 *Map depiction - an annex for MIDAS*, London English

Heritage, 2005 *Making the past part of our future: English Heritage strategy 2005-2010*, London

English Heritage, 2006 *Management of research projects in the historic environment (MoRPHE)*, London

English Heritage, 2008 *SHAPE 2008: a strategic framework for historic environment activities and programmes in English Heritage*, London

English Heritage, nd *Minimum standards for MAP2 project designs and assessments: Supplementary guidance to MAP2, draft notes*, London

Flynn, P, 1994 A watching brief at 46-52 Lowther Street, Carlisle, *Trans Cumberland Westmorland Antiq Archael Soc*, new ser, **94**, 289-91

Gloucester City Museum, nd *Guidelines on the deposition of archaeological archives at Gloucester City Museum and Art Gallery (draft)*, unpubl doc

Heritage and Arts Unit, Allerdale Borough Council, 2001 *Collecting Management plan 2001/4*, unpubl rep

Institute for Archaeologists 2008 *Setting Standards In Archaeology* Standard and Guidance for the Collection, Documentation, Conservation and Research of Archaeological Materials: http://www.archaeologists.net/modules/icontent/inPages/docs/codes/finds%20standard%202001.pdf

Kerr, B, and Perrin, K, 2001 *Carlisle Archives Project, outline brief and specification*, English Heritage, unpubl doc

McCarthy, MR, 2000 *Roman and medieval Carlisle: The southern Lanes, excavations 1981-2*, Univ Bradford Res Rep, **1**, Carlisle

McCarthy, MR, Flynn, P, Hirst, K, and Barkle, R, 1998 Recent excavations in north Cumbria, *Past*, **29**, 3-5

Miller, P, 1996 *An application of Dublin Core from the Archaeology Data Service: draft*, http//intarch.ac.uk/ahds/project/metadata/dublin.html

Museums and Galleries Commission, 1992 *Standards in the museum care of archaeological collections*, London

Newman, C, and Newman, R, 2007 *The medieval period: research agenda*, in Brennand 2007, 95-132

Owen, J (ed), 1995 *Towards an accessible archaeological archive*, Soc Mus Archaeol, London

Oxford Archaeology North, 2001 *Carlisle Archives Project, proposals*, unpubl doc

Oxford Archaeology North, 2002a *Carlisle Archives Project Stage 1, revised project design*, unpubl doc

Oxford Archaeology North, 2002b *Carlisle Millennium Project, post-excavation assessment report, **2**, the appendices*, unpubl rep

Oxford Archaeology North, 2003 *Carlisle Archives Project Stage 1, Stage 1 report and project design for Stage 2*, unpubl rep

Oxford Archaeology North, 2007 *Carlisle Urban Archaeology Database: Method Statement*, unpubl rep

OA North, 2009 *The Lanes, Carlisle, Volume 2: project design for completion of the publication programme*, unpubl rep

Philpott, R, and Brennand, M, 2007 *The Romano-British period: research agenda*, in Brennand 2007, 55-72

Smith, GH, 1978 Excavations near Hadrian's Wall at Tarraby Lane, 1976, *Britannia*, **9**, 19-56

Tullie House Museum, nd *Guidelines for excavators for the deposition of archaeological archives (draft)*, unpubl doc

Walker, K, 1990 *Guidelines for the preparation of excavation archives for long-term storage*, UKIC, London

Zant, J M, 2009 *The Carlisle Millennium Project: excavations in Carlisle, 1998-2001. Volume 1: the stratigraphy*, Lancaster Imprints, **14**, Lancaster

Zant, J M, Miller, I, and Mould, Q, forthcoming *The northern defences of medieval Carlisle: excavations at Rickergate, 1998-99*

11. COSTS

Cost Breakdown for Proposal 1

Task	**Personnel**	**No days**	**Cost per day (£)**	**Total cost**
Management, meetings etc.	RN	3	281.00	843.00
	MC	12	211.00	2532.00
	CH-D	18	170.00	3060.00
	JZ	18	154.00	2772.00
	EH	5	154.00	770.00
Sub-total				*9977.00*
Database/GIS	JC	11	108.00	1188.00
Sub-total				*1188.00*
TRAINING	CH-D	1	170.00	170.00
	Nicki Scott	2	108.00	216.00
	PS	10	108.00	1080.00
	PA	5	90.00	450.00
Sub-total				*1916.00*
Liaison with museums	JZ	2	154.00	308.00
Sub-total				*308.00*
Return of materials to Shaddon	JZ	4	154.00	616.00
	PS	4	108.00	432.00
	PA	2	90.00	180.00
Sub-total				*1228.00*
Timing of Stage 3	JZ	3	154.00	462.00
Sub-total				*462.00*
Remedial works, documentary archives	JZ	2	154.00	308.00
	JC	8	108.00	864.00
	PS	145	108.00	15,660.00
	PA	420	90.00	37,800.00
Sub-total				*54,632.00*
Remedial works, artefactual archives	Specialist	1	256.25	256.25
	CH-D	6	170.00	1020.00
	PS	235	108.00	25,380.00
	PA	433	90.00	38,970.00
Sub-total				*65,626.25*
Remedial works, environmental archives	Specialist	4	256.25	1025.00
	CH-D	7	170.00	1190.00
	EH	123	154.00	18,942.00
	PO	121	154.00	18,634.00
	PS	236	108.00	25,488.00
	PA	561	90.00	50,490.00
Sub-total				*115,769.00*

Unprovenanced materials	CH-D	2	170.00	340.00
Sub-total				*340.00*
Miscellaneous documents	JZ	4	154.00	616.00
	PS	4	108.00	432.00
	PA	6	90.00	540.00
Sub-total				*1588.00*
Estimation of digital information	JC	2	108.00	216.00
Sub-total				*216.00*
Gazetteer	JC	3	108.00	324.00
Sub-total				*324.00*
Archive deposition & digital lists	JZ	6	154.00	924.00
	PS	22	108.00	2376.00
	PA	51	90.00	4590.00
Sub-total				*7890.00*
Dissemination of information	JC	3	154.00	462.00
Sub-total				*462.00*
Reporting	RN	3	281.00	843.00
	CH-D	5	170.00	850.00
	JZ	25	154.00	3850.00
	JC	2	108.00	216.00
	EH	5	154.00	770.00
Sub-total				*6529.00*
Staff Sub-total				*268,455.25*
Overheads (25%)				67,113.81
Overheads (10%)				128.13
Sub-total				*67,241.94*
X-radiography				
x-ray *c* 10,000 sensitive IRFs				14,241.00
x-ray *c* 20% of estimated 200,000 bulk iron objects				56,964.00
Sub-total				*71,205.00*
Transport				
Van hire (Luton for up to 15 days)				1238.06
Personnel transport				10,804.88
Fuel				900.00
Sub-total				*12,942.94*
Travel expenses				
Rail fares (RN/JZ)				950.00
Car hire (CH-D)				486.22
Sub-total				*1436.22*
Accommodation, inc. bills				
Rent				16,882.63
Council Tax				2000.00

Bills				2900.00
Sub-total				*21,782.63*
Stay-away allowance				32,296.48
Sub-total				*32,296.48*
Consumables				38,089.50
Sub-total				*38,089.50*
Total				**513,450.00**
Additional conservation as required				Presently uncosted
Costs of skips required for sample disposal	Provided by Tullie House Museum and Art Gallery			N/A
NAR copying costs				Support in kind from English Heritage

Year	***2009-2010***	***2010-2011***	***2011-2012***
Staff *Estimated Expenditure @ 2009/10 costs*	£53,447.32	£264,163.42	£198,764.26
Inflation	-	2.5%	2.5%+2.5%
Yearly Total	£53,447.32	£267,769.38	£208,826.70
Cumulative Total	£53,447.32	£321,216.70	£530,043.40

Cost Breakdown for Proposal 2

Task	**Personnel**	**No days**	**Cost per day (£)**	**Total cost**
Management, meetings etc.	RN	3	281.00	843.00
	MC	12	211.00	2532.00
	CH-D	18	170.00	3060.00
	JZ	18	154.00	2772.00
	EH	5	154.00	770.00
Sub-total				*9977.00*
Database/GIS	JC	11	108.00	1188.00
Sub-total				*1188.00*
TRAINING	CH-D	1	170.00	170.00
	Nicki Scott	2	154.00	308.00
	PS	10	108.00	1080.00
	PA	4	90.00	360.00
Sub-total				*1918.00*
Liaison with museums	JZ	2	154.00	308.00
Sub-total				*308.00*

Return of materials to Shaddon	JZ	4	154.00	616.00
	PS	4	108.00	432.00
	PA	2	90.00	180.00
Sub-total				*1228.00*
Timing of Stage 3	JZ	3	154.00	462.00
Sub-total				*462.00*
Remedial works on documentary archives	JZ	2	154.00	308.00
	JC	8	108.00	864.00
	PS	164	108.00	17,712.00
	PA	747	90.00	67,230.00
Sub-total				*86,114.00*
Remedial works on artefactual archives	Specialist	2	256.25	512.50
	CH-D	7	170.00	1190.00
	PS	212	108.00	22,896.00
	PA	365	90.00	32,850.00
Sub-total				*57,448.50*
Remedial works on environmental archives	Specialist	4	256.25	1025.00
	CH-D	4	170.00	680.00
	EH	3	154.00	462.00
	PS	55	108.00	5940.00
	PA	159	90.00	14,310.00
Sub-total				*22,417.00*
Unprovenanced materials	CH-D	2	170.00	340.00
Sub-total				*340.00*
Miscellaneous/ non-event specific documents	JZ	4	154.00	616.00
	PS	4	108.00	432.00
	PA	6	90.00	540.00
Sub-total				*1588.00*
Estimation of digital information	JC	2	108.00	216.00
Sub-total				*216.00*
Gazetteer	JC	3	108.00	324.00
Sub-total				*324.00*
Archive deposition	JZ	6	154.00	924.00
	PS	22	108.00	2376.00
	PA	51	90.00	4590.00
Sub-total				*7890.00*
Dissemination of information	JC	3	108.00	324.00
Sub-total				*324.00*
Reporting	RN	3	281.00	843.00
	CH-D	5	170.00	850.00
	EH	1	154	154.00
	JZ	25	154.00	3850.00
	JC	2	108.00	216.00

Sub-total				*5913.00*
Staff Sub-total				*197,655.50*
Overheads (25%)				49,413.88
Overheads (10%)				153.75
Sub-total				*49,567.63*
X-radiography of c 10,000 sensitive IRFs				14,241.00
Sub-total				*14,241.00*
Transport				
Van hire (Luton for up to 15 days)				1238.00
Personnel transport				5400.00
Fuel				450.00
Sub-total				*7088.00*
Travel expenses				
Rail fares (RN/JZ)				950.00
Car hire (CH-D)				486.00
Sub-total				*1436.00*
Accommodation, inc. bills				
Rent				12,380.00
Council Tax				1400.00
Bills				2200.00
Sub-total				*15,980.00*
Stay-away allowance				24,766.00
Sub-total				*24,766.00*
Consumables				20,760.94
Sub-total				*20,760.94*
Total				**331,495.10**
Costs of skips required for sample disposal	Provided by Tullie House Museum and Art Gallery			**N/A**
Potential costs of x-ray of proportion of estimated 200,000 bulk iron objects				Presently uncosted
Additional conservation as required				Presently uncosted

Year	***2009-2010***	***2010-2011***	***2011-2012***
Staff *Estimated Expenditure @ 2009/10 costs*	£58,579.37	£187,841.95	£85,073.75
Inflation	-	2.5%	2.5%+2.5%
Yearly Total	£58,579.37	£192,537.99	£89,380.61
Cumulative Total	£58,579.37	£251,117.37	£340,497.97

Cost Breakdown for Proposal 3

Task	**Personnel**	**No days**	**Cost per day (£)**	**Total cost**
Management, meetings etc.	RN	3	281.00	843.00
	MC	12	211.00	2532.00
	CH-D	18	170.00	3060.00
	JZ	18	154.00	2772.00
	EH	5	154.00	770.00
Sub-total				*9977.00*
Database/GIS	JC	11	108.00	1188.00
Sub-total				*1188.00*
Training	CH-D	1	170.00	170.00
	Nicki Scott	2	108.00	216.00
	PS	10	108.00	1080.00
	PA	5	90.00	450.00
Sub-total				*1916.00*
Liaison with museums	JZ	2	154.00	308.00
Sub-total				*308.00*
Return of materials to Shaddon	JZ	4	154.00	616.00
	PS	4	108.00	432.00
	PA	2	90.00	180.00
Sub-total				*1228.00*
Timing of Stage 3	JZ	3	154.00	462.00
Sub-total				*462.00*
Remedial works, documentary archives	JZ	2	154.00	308.00
	JC	8	108.00	864.00
	PS	145	108.00	15,660.00
	PA	420	90.00	37,800.00
Sub-total				*54,632.00*
Remedial works on artefactual archives	Specialist	2	256.25	512.50
	CH-D	7	170.00	1190.00
	PS	212	108.00	22,896.00
	PA	365	90.00	32,850.00
Sub-total				*57,448.50*
Remedial works on environmental archives	Specialist	4	256.25	1025.00
	CH-D	4	170.00	680.00
	EH	3	154.00	462.00
	PS	55	108.00	5940.00
	PA	164	90.00	14,310.00
Sub-total				*22,417.00*
Unprovenanced materials	CH-D	2	170.00	340.00
Sub-total				*340.00*

Miscellaneous/ non-event specific documents	JZ	4	154.00	616.00
	PS	4	108.00	432.00
	PA	6	90.00	540.00
Sub-total				*1588.00*
Estimation of digital information	JC	2	108.00	216.00
Sub-total				*216.00*
Gazetteer	JC	3	108.00	324.00
Sub-total				*324.00*
Archive deposition	JZ	6	154.00	924.00
	PS	22	108.00	2376.00
	PA	51	90.00	4590.00
Sub-total				*7890.00*
Dissemination of information	JC	3	108.00	324.00
Sub-total				*324.00*
Reporting	RN	3	281.00	843.00
	CH-D	5	170.00	850.00
	EH	1	154	154
	JZ	25	154.00	3850.00
	JC	2	108.00	216.00
Sub-total				*5913.00*
Staff Sub-total				*166,171.50*
Overheads (25%)				41,542.88
Overheads (10%)				153.75
Sub-total				*41,696.63*
X-radiography of c 10,000 sensitive IRFs				14,241.00
Sub-total				*14,241.00*
Transport				
Van hire (Luton for up to 15 days)				1238.00
Personnel transport				5400.00
Fuel				450.00
Sub-total				*7088.00*
Travel expenses				
Rail fares (RN/JZ)				950.00
Car hire (CH-D)				486.00
Sub-total				*1436.00*
Accommodation, inc. bills				
Rent				12,380.00
Council Tax				1400.00
Bills				2200.00
Sub-total				*15,980.00*
Stay-away allowance				24,766.00
Sub-total				*24,766.00*

Consumables				20,760.94
Sub-total				*20,760.94*
Total				**292,140.10**
Additional conservation as required				Presently uncosted
Costs of skips required for sample disposal	Provided by Tullie House Museum and Art Gallery			**N/A**
Potential costs of x-ray of proportion of estimated 200,000 bulk iron objects				
NAR copying costs				Support in kind from English Heritage

Year	***2009-2010***	***2010-2011***	***2011-2012***
Staff *Estimated Expenditure @ 2009/10 costs*	£45,613.34	£189,235.17	£57,291.58
Inflation	-	2.5%	2.5%+2.5%
Yearly Total	£45,613.34	£193,966.05	£60,191.97
Cumulative Total	£45,613.34	£239,579.39	£299,771.36

12. MORPHE AND SHAPE

12.1 INTRODUCTION

12.1.1 This report was produced at the request of English Heritage. It was originally written in 2005, prior to publication of *Management of Research Projects in the Historic Environment* (*MoRPHE*) (English Heritage 2006) and *Strategic Framework for Historical Environment Activities and Programmes in English Heritage* (*SHAPE*) (English Heritage 2008). However, the report has been redrafted in the spirit of both *MoRPHE* and *SHAPE*, and a Business Case, SHAPE Number, outline Product Description, details of Ownership and Risk Log have been created and are presented below.

12.1.2 ***Summary Description***: when CAU/CAL ceased trading, in August 2001, basic archaeological information for most projects had not been placed in the public domain, nor was there a coherent overview of the unit's work or the archive that it generated. This project seeks to remedy this situation.

12.2 BUSINESS CASE

12.2.1 At the time of writing, of the 586 projects undertaken by CAU/CAL from 1977 to 2001, only one had been accessioned, and 17 (*c* 3%) are regarded as having been published. This situation is constantly improving, with ongoing work on the Lanes Project (OA North), the publication of the Millennium Project (Zant 2009), and Rickergate (Zant *et al* forthcoming). Despite this, there remains a significant volume of material (paper records, ecofacts, artefacts and digital material) that exists in an unsatisfactory state. This presents both an ethical question and a financial one. The archaeological sequences from which this material derived have been destroyed, and this material is the only extant record. To leave the material in its current state is entirely unethical and contrary to several sets of guidelines from English Heritage's own (English Heritage 1991, appendix 6), to that of the Museums and Galleries Commission, (1992) and the Institute for Archaeologists standards (2008). In addition, the archive represents the product of a considerable financial investment, one that has not been exploited fully. The Carlisle Archives Project proposes to address these ethical and financial issues, by seeking to organise, stabilise, digitise and disseminate this significant academic resource in as cost-effective a manner as possible.

12.2.2 The recent publication of the *Research Agenda* for the North West (Brennand 2007) identifies a number of areas which the proposed works would help to address. Specifically, the Carlisle Archives Project is extremely pertinent to proposals to maximise the benefit to be derived from existing datasets (Brennand *et al* 2007, 176-8). The organisation and stabilisation of the Carlisle Archive is of course a necessary prerequisite to the publication of the unpublished material which is considered a very high priority within the *Research Agenda* (Chitty and Brennand 2007, 18). In addition, the *Research Agenda* identifies the threat to inadequately stored and curated archives (*ibid*),

of which the Carlisle material is very prominent, and indeed is a cautionary example. It also highlights the need to promote best practice in conservation standards and practices (*op cit*, 17), which again the Carlisle Archives Project does. Finally, the digitisation of existing local Sites and Monuments Records as part of their conversion to Historical Environment Records is explicitly commented on (*op cit* 16).

12.2.3 The Carlisle Archives Project proposes to resolve a significant ethical and academic problem, in a cost-effective manner. The proposed works meet a number of regional priorities and initiatives and clearly represent good value for money.

12.3 SHAPE

12.3.1 With reference to English Heritage's own agendas and research programmes, the *Strategic Framework for Historical Environment Activities and Programmes in English Heritage* (*SHAPE*; English Heritage 2008) established the principle that all projects implemented or commissioned by English Heritage must have a *Primary Driver* that corresponds to at least one of the organisation's corporate aims and objectives (*op cit*, 9), as set out in *Making the Past Part of Our Future*, English Heritage's corporate strategy for 2005-2010 (English Heritage 2005). The proposed Carlisle Archives Project has significant potential to address Corporate Objective 1A (English Heritage 2005; 2008), which seeks to ensure that research addresses the most important and urgent needs of the historic environment. More specifically (since each Corporate Objective is sub-divided into a number of more specific Research Programmes and Sub-Programmes (English Heritage 2008)), the project has the potential to provide a significant contribution to Research Programme A3 (*Unlocking the riches: realising the potential of the research dividend*), and particularly Sub-Programme 11113.110 (*Realising the research dividend from past unpublished historic environment investigations*; *op cit*, 26), which seeks to ensure that past resources are not wasted, through the assessment, analysis and dissemination of old excavation archives (*ibid*). The principal *Activity Type* required to deliver the project, as defined by *SHAPE* (*op cit*, 9), is Research.

12.4 PRODUCT DESCRIPTION

12.4.1 The outcome of the proposed programme of work at the end of Stage 3 will be a well-ordered archive of all the material of the former CAU/CAL lodged in Shaddon Mill, Carlisle, together with a report presenting and analysing the results of the work. A summary and overview of the entire Carlisle Archives Project will also be provided. This will facilitate the dissemination of the various works undertaken by CAU/CAL into the public domain, and ensure their stability for future generations. The product will be called *Carlisle Archives Project Stage 3*, and the English Heritage Report Number will be 3683 ARCV2.

12.4.2 ***Purpose of the Product***: the project is designed to order the contents of the CAU/CAL archive, and ensure that it is stabilised and repacked to enable its long-term stability, with sufficient information to allow formal transfer of property from current landowners to Tullie House Museum and Art Gallery.

12.4.3 ***Composition***: the main product will be a stable, organised archive; in addition, any reporting or associated digital archive will be hosted by the Archaeology Data Service to ensure both its long-term stability, and as wide dissemination of its contents as possible.

12.4.4 ***Derived From*:** paper records, environmental samples, artefacts, and digital records, in short the contents of a working unit's stores.

12.4.5 ***Format and Presentation*:** the presentation and format of the archive and any associated reports will be in keeping with the standards and approaches outlined within *Section 8* of this report.

12.4.6 ***Quality Criteria and Method***: day-to-day quality control will derive from the experienced project management team proposed by OA North (*Section 9.3*). In addition, more high-level supervision will be provided by the Project Advisory Group (*Section 9.2.1*). The methodologies for all the proposed work have been prepared in accordance with the various local, national and international guidelines available (*Section 3*).

12.4.7 ***Person responsible for approval***: Rachel Newman as the Project Executive will be responsible for signing off the product prior to its submission to English Heritage,

12.4.8 ***Planned completion date***: depending upon which Proposal is commissioned, the completion date will vary from January 2010 (Proposal 3) to January 2012 (Proposal 1).

12.5 OWNERSHIP

12.5.1 OA North will retain the intellectual-property rights over the products produced, while ownership of the archive resides with Carlisle City Council.

12.6 RISK LOG

Risk	Description	Probability	Impact	Countermeasures	Owner
1	Loss of existing data (mostly non-digital), limiting understanding of site and potential for analysis and reporting during any putative future works	Medium	High	Digitise all non-digital data at an early stage in the project; back-up digital material regularly	John Zant
2	Loss, damage to, or disorganisation of artefactual and environmental materials limiting understanding of site and potential for analysis and reporting during any putative future works	Medium	High	Ensure organised working environment, with materials clearly labelled and supporting documentation completed, including forms for removal, receipt and return of material for specialist examination; limit access to the site, as per Tullie House Museum and Gallery security system	Christine Howard-Davis
3	Reference material for publication report not obtainable within project timetable, leading to report being delayed/compromised	Low	Medium	Undertake literature search at early stage of project, focusing on key texts	John Zant
4	Hardware/software failure, leading to loss of data and/or set-back to timetable	Medium	High	OA North employs robust data back-up systems; OA North IT personnel will repair or replace hardware and software as required	Jo Cook
5	Illness of key team members/specialists, leading to set-back of timetable	High	Medium	Leave sufficient time in schedule to allow for reasonable periods of sickness	John Zant
6	Competition with other projects, leading to set-back of timetable	Medium	Medium	Post-excavation Programme manager to timetable staff appropriately	Project Manager

