



Stage 4: Tasks 4.15 – 4.23

7841 - Updated Project Design



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Purpose of document

This document has been prepared as an Updated Project Design for the [REDACTED] [REDACTED] Project Team, Historic England, and other stakeholders. The purpose of this document is to provide an updated outline of planned work, aims and objectives of the work, and methodology to be employed.

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Project summary

OASIS ID	Digventur1-349815
DV project code and type	[REDACTED] Updated Project Design
National Grid Reference	[REDACTED]
HE Project ID	7841 SURV
County	[REDACTED]
Title:	[REDACTED] Stage 4: Tasks 4.15 – 4.23 Updated Project Design
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Origination date:	01/04/2020
Circulation:	Historic England Project Team
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Acknowledgements

We would like to offer a sincere thank you to Historic England, in particular Barney Sloane and Kath Buxton, for the such an exciting commission, and to Jenni Butterworth for help and guidance throughout. We also extend sincere thanks to the landowner, [REDACTED] and in particular [REDACTED] for facilitating access and making the project possible. Particular thanks also to Toby Catchpole and Charles Parry [REDACTED] and Melanie Barge, Inspector of Ancient Monuments, and Hayley McParland, Regional Science Advisor. Thanks also to Jamie Lockhead and colleagues from Windfall production company for filming the excavation, and finally thanks to the finders, Neville and Sally Hollingworth and to Ben Garrod for the introduction that started the ball rolling.

Executive summary

This document has been prepared as an addendum to the stratigraphic and specialist assessment report on targeted field investigations at [REDACTED]. The purpose of the document is to provide an Updated Project Design on reflection of the assessment results, providing recommendations and directions for the fulfilment of the project Stage 4, Tasks 4.16 – 4.23 for Historic England. The project has delivered an assessment of previously collected materials recovered from the site (Russ et al. 2019; Review Point 3), a programme of fieldwalking and investigation of the lithostratigraphic sequence through geoarchaeological boreholes (Hogue et al. 2019, Review Point 4), and targeted field investigations, including stratigraphic assessment; multiproxy palaeoenvironmental assessment of pollens, plant macrofossils, molluscs, insects and microfauna; vertebrate assessment; and Optically Stimulated Luminescence (OSL) dating (Hogue et al 2020, Review Point 5).

The Project Team now propose to complete assessment and analysis of recovered samples, providing an essential baseline for future management of the site and for future funding bids. The Updated Project Design outlines updated key archaeological research questions, roles, procedures, stages, and outputs in compliance with MORPHE. It is submitted in association with an updated project budget [REDACTED], Gantt schedule [REDACTED], and data management plan [REDACTED]. Project completion will be achieved through the following tasks:

Geoarchaeological analysis	Laser granulometry of monolithic samples, collecting particle size data, and clast lithological analysis of bulk samples to supplement field descriptions, refine interpretations, and fully characterise the Northmoor member and palaeochannel fills.
Insect analysis	Full quantification and analysis of the insect material to aid reconstruction of past environment and reconstruct climate variation through the Mutual Climatic Range method.
Mollusc analysis	Full quantification and analysis of the molluscs to better understand and contextualise and aid interpretation of the past ecological and climatic settings of the palaeochannel.
Faunal analysis	Off-site conservation of the vertebrate remains, and full analysis of the vertebrate remains to establish minimum number of individuals, age, size and species of the mammoth remains, and full taphonomic analysis to record any evidence of animal activity or anthropogenic modification.
Publication	Supplementary analyses will contribute to the results outlined in the Stage 4 assessment report and integration and publication of the results in a peer-reviewed journal bringing the project to fruition.
Archive deposition	Consolidation and preparation of the archive ready for deposition to both digital and museum-based repositories alongside project closure.

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1 INTRODUCTION

1.1 Project summary

- 1.1.1 This document has been prepared as an addendum to the stratigraphic and specialist assessment report on target field investigations at [REDACTED]. The purpose of the document is to provide an updated project design on reflection of the assessment results, providing recommendations and directions for the fulfilment of the project Stage 4, Tasks 4.16 – 4.23 for Historic England.
- 1.1.2 The original project design was formulated in response to the 2017 discovery of a Palaeolithic handaxe, found near well-preserved vertebrate remains, within a palaeochannel at [REDACTED] (hereafter 'the Site'). A programme of non-intrusive and intrusive investigation was designed to assess the wider depositional context and taphonomic history of this and other associated material, supported by Historic England under the terms of NPPF Emergency Assistance Funding (Wilkins et al. 2018).
- 1.1.3 The project has completed an assessment of previously collected materials recovered from the site (Russ et al. 2019; Review Point 3), a programme of fieldwalking and investigation of the lithostratigraphic sequence through geoarchaeological boreholes (Hogue et al. 2019, Review Point 4), and targeted field investigations, including stratigraphic assessment; multiproxy palaeoenvironmental assessment of pollens, plant macrofossils, molluscs, insects and microfauna; vertebrate assessment; and Optically Stimulated Luminescence (OSL) dating. A summary of the early stages of work and a result of assessment can be found in Hogue et al (2020).
- 1.1.4 The site has been found to be worthy of additional investigation, especially in consideration of climatic and environmental change associated with MIS7 and MIS5. The current priority, as outlined below, is to complete the analysis of recovered samples and to provide a fully published account of the research to date. This final project execution phase (Stages 5 and 6) will therefore provide an important baseline for the future management of the site, and for future funding bids.

2 RESEARCH AIMS AND OBJECTIVES REVISITED

2.1 Project model

- 2.1.1 The aims of the project are articulated in full in the Project Design (Wilkins et al. 2018, Section 4.0, Aims 1-4, Q1-12). The project design was formulated according to the principles outlined in Historic England's *Curating the Palaeolithic* (forthcoming) and other relevant research frameworks, including Historic England's *Draft Research Strategy for Prehistory* (2010) and *Research and Conservation Framework for the British Palaeolithic* (Pettitt et al. 2008), and the *South West Archaeological Research Framework* (Grove and Croft 2012) (see Wilkins et al 2018, Section 5.0). The following reflects on the original aims of the project considering the results of assessment and recommendations for further work outlined above (Hogue et al. 2020) and is articulated as two objectives for further analysis and publication:

2.2 Objective 1. Refine our understanding of the site's geological formation processes

2.2.1 Both the non-intrusive and intrusive investigations have helped to answer questions regarding the physical extent, depositional environment, and chronological sequence at [REDACTED] in fulfilment of Aims 1-3 Q1-6 & Q7 of the Project Design (Wilkins et al. 2019; see Hogue et al. 2020, Sections 10 & 11 for discussion). However, the origins of the parent material infilling palaeochannel deposits remains unclear, and it is necessary to undertake further work to establish whether the infilling palaeochannel deposits shared a similar genesis to that of the Northmoor Member. Understanding the nature of the past river systems is of critical importance for establishing whether deposits have the potential to contain in situ and/or secondary evidence for the Palaeolithic occupation of Britain (Historic England, forthcoming), and a greater understanding of the evolution of the landscape of Britain contributes significantly to our understanding of the factors that led hominin populations to occupy, exploit, and prosper at certain times, and not at other times (e.g. Ashton 2017).

2.2.2 Through additional analysis for the existing samples, the nature and origins of the infilling river channel deposits may be ascertained. Laser granulometry of existing monolith samples and clast lithological analysis of bulk samples will provide opportunity to enrich the existing field descriptions and help fully characterise the deposits, with particular emphasis on establishing the source(s) of the palaeochannel fills and Northmoor Member. Additional fieldwork would help to clarify the nature of stratigraphic relationships where connections between deposits have so far been inferred through similarities in soil morphologies, multi-proxy assessment and OSL dating. However, whilst relevant, this work falls out of the scope of the current project.

2.3 Objective 2. Reconstruct further the site's ecological and climatic conditions

2.3.1 Excavations have provided a better understanding of the palaeoenvironmental, palaeoecological and palaeoclimatic conditions under which the palaeochannel deposits formed helping to fulfil Aims 2-3 Q4-Q10 of the Project Design (Wilkins et al. 2019; see Sections 10 & 11 for discussion). However, greater resolution could be gained through further analytical work. A better understanding of the past climate is critical for understanding how our ancestors responded to past climate and climatic fluctuations, which is especially important given the current climate crisis (Historic England, forthcoming).

2.3.2 Full analysis of the insect remains recovered during test pitting would greatly help to reconstruct the terrestrial and aquatic environments of the local ecosystem and potentially provide sufficient data to develop a model of past winter and summer temperatures using a Mutual Climatic Range (MCR) method. Continuing with full analysis of the molluscs would also permit a new level of detail to be gained with regards to the palaeoenvironmental and palaeoecological interpretations of the site. Unfortunately, the existing pollen, plant macrofossils, and macrovertebrates have relatively little to contribute beyond assessment stage due to preservation bias and/or sampling issues. However, fieldwork to identify and sample at the channel margins could provide greater clarity regarding the diversity of flora and fauna in the vicinity. Whilst additional fieldwork is beyond the scope of the current project, subsequent refinement in our understanding of the formation of the palaeochannel in line with Objective 1 may provide a basis for future excavation and sampling exercises.

- 2.3.3 An opportunity for further research into the ecology of the site pivots around the large faunal remains, principally those which appear to relate to the genus *Mammuthus*. Further analysis is necessary to establish the exact species of mammoth recovered and will help to refine biostratigraphy and potential interpretations regarding the evolutionary trajectories of *Mammuthus*. Analysis would incorporate the material from amateur collection activities. Any necessary conservation to consolidate the material should be undertaken prior to further analysis.

3 BUSINESS CASE

- 3.1.1 The Updated Research Design outlined here fits within the remit of the business case provided within the original Project Design (Wilkins et al. 2019, Section 5.0). Emphasis is placed on fulfilling the priorities articulated in the Historic England Research Strategy (2017) and Historic England Corporate Plan (2018-21), and in accomplishing the objectives of the Historic England's Curating the Palaeolithic (forthcoming), Draft Research Strategy for Prehistory (2010), and Research and Conservation Framework for the British Palaeolithic (Pettit et al. 2008).

4 STAGE 5 AND 6: TASKS

- 4.1.1 The final stages of the project will comprise fulfilment of the above objectives, contributing to the production of a final publication of the 2019 field investigations and archive submission. The task list, with allocation of staff time and team members is given in Section 9, supported with an updated Gantt chart and task list  and Project Budget supplied as a standalone file  Detailed method statement relating the specific techniques or approaches is given in the Project Design (Wilkins et al. 2019, Appendix 1).
- 4.1.2 Stage 5 (Analysis, Reporting & Conservation) includes the recommended further analysis stipulated by the project's specialist team and outlined in the Assessment Report (Hogue et al. 2020), alongside consolidation of the project archive. Individual tasks include; laser granulometry of monolithic samples, collecting particle size data, and clast lithological analysis of bulk samples to supplement field descriptions, refine interpretations, and fully characterise the Northmoor member and palaeochannel fills; full analysis of the insect material to aid reconstruction of past environment and reconstruct climate variation through the Mutual Climatic Range method; full analysis of the molluscs to better understand and contextualise and aid interpretation of the past ecological and climatic settings of the palaeochannel; off-site conservation of the vertebrate remains, and full analysis of the vertebrate remains to establish minimum number of individuals, age, size and species of the mammoth remains, and full taphonomic analysis to record any evidence of animal activity or anthropogenic modification.
- 4.1.3 These supplementary analyses will contribute to the results outlined in the Stage 4 assessment report (Hogue et al. 2020), which will be updated as a final technical report (Stage 5). The results will also be presented and published in a peer-reviewed journal (Stage 6, see Section 5). Stage 6 will also include the preparation of the archive ready for deposition to both digital and museum-based repositories.

5 PUBLICATION

- 5.1.1 Evidence of hominin occupation is lacking at [REDACTED] (see Sections 10 and 11 for discussion). Nevertheless, with its relatively well-dated sequence of palaeochannel deposits and overlying gravels dating from MIS5, it is well-positioned address questioning regarding climatic and environmental change associated with MIS7 and MIS5. This is a critical time in our understanding of the occupation of Britain; MIS9 – 7 is associated with the emergence of the Early Middle Palaeolithic (EMP), a time in which Levallois technology proliferated and became widespread, and significant shifts occurred in hominin adaptive, social and cognitive abilities (e.g. Pettit and White 2012). MIS5 by contrast is typically thought to be associated with absence of evidence for hominins in Britain (e.g. Currant and Jacobi 2001).
- 5.1.2 A peer-reviewed journal paper will provide an opportunity to highlight and disseminate the results of the work to an academic audience. Publication and dissemination will provide an important baseline for the future management of the site, and for future funding bids. Given the cross-disciplinary nature of the work its relevance for understanding climatic and environmental changes an appropriate place for publication would be *Journal of Quaternary Science*. An open access arrangement is available with the journal, ensuring dissemination to a wider audience in keeping with the principles of public archaeology adopted by DigVentures.

Proposed publication outline	Est. Words	Author(s)
Abstract	200	JH, KW
Introduction	200	JH, KW
Stratigraphy and sedimentology	1250	KW
Molluscs	500	ML
Insects	500	EA, DS
Plant remains	250	HR, KS
Vertebrates	500	DS
Artefacts	150	JH
Palaeoclimatic reconstruction	700	ML, EA, DS, HR, KS, DS
Chronology		JH, KW
• Biostratigraphy	400	TH, ML, HR, KS, DS, MPF, EA, DS
• OSL	250	KW, PT
Summary	500	JH, KW
Acknowledgements	100	JH, KW
References		JH, KW
Figures		
• Site location		JH
• Plan of test pit and sampling locations		JH
• Schematic cross-section(s) through quarry sequence		JH
• Section(s) through palaeochannel sequence		JH
• Skeletal representation of the mammoth remains		HR, KS
• Handaxe recovered from site		JH
Tables		
• Lithostratigraphic characteristics and interpretation of phases		KW, JH
• Mollusc remains recovered		ML

• Insert remains recovered		EA, DS
• Plant remains recovered		MPF, TH
• Vertebrate remains recovered		HR, KS, DS
• Vertebrate measurements		HR, KS
• Palaeotemperature estimates		EA, DS
• OSL results		PT

Table 1: Publication outline

5.1.3 Additional dissemination will involve the following, as mentioned in the Project Design (Wilkins et al. 2019, p. 26):

- Dedicated digital archive of the excavation data
- Wide circulation of the project assessment and final report, and links to the OASIS record

6 PROJECT ARCHIVE

6.1.1 The project archive will be prepared in accordance with the Bristol Museums and Art Gallery Conditions of Acceptance (2012), and in line with DigVentures guidelines for Archive Preparation, following Appendix 1, P1 of MORPHE PPN 3 (English Heritage 2011), fulfilling the Guidelines for the preparation of excavation archives for long term storage (UKIC 1990). All reports produced by the project will be openly and freely disseminated through County Council Historic Environment Record, Archaeological Data Service, OASIS portal and Scribd website.

6.1.2 Copyright on all reports submitted will reside with DigVentures, although a third party in-perpetuity licence will automatically be given for reproduction of the works by the originator, subject to agreement in writing with DigVentures. Historic England will be granted a third-party licence in perpetuity for the [REDACTED] project materials.

6.1.3 The digital archive of the project will comprise selected project documents (in Microsoft Word format), context register, sample register, photographic register, and specialist data tables (in Microsoft Excel format), a RockWorks database (in Microsoft Access format), stratigraphic profiles (as Scalable Vector Graphics), archive images (as uncompressed .tiff and lossy .jpg formats), GIS project files (in ESRI Shape formats and associated files), raw survey data (as Common Separated Values), and 3D photogrammetry models (hosted on Sketchfab). The archive will be compiled in accordance with Archaeology Data Service (2011) guidelines. A full data management plan for the project is given in supplementary document [REDACTED]

6.1.4 A needs assessment has been undertaken of local repositories (including Corinium Museum) and agreement obtained in principle from Bristol Museums, Galleries & Archives to receive transfer of title of any excavated assemblages and related archival material not already in private hands (see Wilkins et al. 2019, Appendix 4). All material retained contributes towards our understanding of the climate and environment during MIS7 in Britain. All vertebrate remains collected and any pollen, plant macrofossils, insects, molluscs, and microfauna recovered from the processed samples will be retained in the first instance by DigVentures and submitted following the completion of the project and any subsequent phase of work focused on [REDACTED]. All unprocessed bulk sedimentology and micromorphology

samples will be retained for further study and student research projects by ARCA and the University of Winchester. Following the closure of the project, processed material and unprocessed samples will be discarded.

7 PROJECT MANAGEMENT

7.1 Project oversight

7.1.1 The Project Manager will continue to produce Monthly Status Reports for the Project Executive and Project Team throughout this Execution Stage up to the review of the Assessment Report/UPD. This will present an overview of progress, list tasks completed or part completed, including any on-going work and issues affecting progress. The Project Manager will be responsible for ensuring that the project runs to schedule, keeping track of key resources (notably staff time) on the basis of weekly Work Records. The Project Team will have a project meeting at each milestone described to ensure that all major tasks are briefed/debriefed as necessary. Provision will be made for the project in 'Basecamp', which is a web-based project communication package used by DigVentures, enabling project participants to generate and record notes, tasks, milestones and other project-related communication.

7.1.2 DigVentures operates a computer-assisted project management system. Projects are undertaken under the direction of the Project Director who is responsible for the successful completion of all aspects of the project. All work is monitored and checked whilst in progress on a regular basis, and the Project Director/Managing Director checks all reports and other documents before being issued. A series of guideline documents or manuals form the basis for all work.

7.1.3 The Project Manager, Manda Forster, is a full member of the Institute for Archaeologists (MCIfA). DigVentures is an ClfA Registered Organisation (No. 102), and fully endorses the *Code of Conduct* and the Standards and Guidance documents of the Chartered Institute for Archaeologists. All DigVentures staff are employed in line with the Institute's Codes and will usually be members of the Institute.

7.2 Project review

7.2.1 The project will continue to be reviewed by the Project Executive and Project Manager, with a formal review undertaken at the end of each Stage. An updated project review matrix is given in Table 2.

Stage	Description	Review Point	Completion Date
Initiation	Consideration of Project Proposal for NPPF Assistance and issue of brief by Archaeological Service	RV1 – Historic England and Archaeological Service	Completed – October 2018
Stage 1	Project Start-up, development of project design by DigVentures in	RV2 – Sign-off on MoRPHE Project Design, and liaison with	Completed - December – January 2018

Stage	Description	Review Point	Completion Date
	consultation with wider specialist team	stakeholders and landowners	
Stage 2	Photogrammetry Survey, Field walking, Geoarchaeological boreholes and deposit modelling	RV3/RV4 - Review deposit model and identify any constraints or implications for subsequent field investigation	Completed - April 2019
Stage 3	Field Investigation, to include five targeted test pits with the location of test pits informed by the results of the borehole survey	RV5 – Assemble site archive and distribute pertinent data to specialists	Completed - May 2019
Stage 4	Assessment Report and Updated Project Design	RV6 – Recommendations for further work, analysis and publication	Completed - July 2020
Stage 5	Analysis, Reporting, and Archive Consolidation	RV7 – Technical Report	December 2020
Stage 6	Publication, archive deposition or continue to next execution stage	RV8 – Publication RV9 - Project closure	February 2021 March 2021

Table 2: Updated project review matrix

8 PROJECT TEAM

8.1.1 A full breakdown of the Project Team for the project is given in the Project Design (Wilkins et al. 2019, Table 3 & Appendix 1). The DigVentures' Project Team will be as follows (Table 3) for Stages 5 and 6.

Name	Initials	Project Role	Key Responsibility
Brendon Wilkins	BW	Project Executive	Overall project responsibility, budget responsibility and project assurance
Manda Forster	MF	Project Manager	Liaison with project team, partners and Stakeholders
Joshua Hogue	JH	Expert – Co-Lead Author	Overall responsibility for publication, lithics
Keith Wilkinson	KW	Expert – Co-Lead Author	Research, publication, geoarchaeology team
Tom Hill	TH	Expert	Pollen
Nigel Larkin	NL	Expert	Conservation
Matthew Law	MW	Expert	Mollusca
Kate Scott	KS	Expert	Large fauna
Hannah Russ	HR	Expert	Large fauna
Danielle Schreve	DS	Expert	Microvertebrates
Marta Perez Fernandez	MPF	Expert	Plant macrofossils
Enid Allison	EA	Expert	Coleoptera

Name	Initials	Project Role	Key Responsibility
David Smith	DAS	Expert	Coleoptera
Phil Toms	PT	Expert	OSL Dating

Table 3: Team and responsibilities

9 STAGES, PRODUCTS AND TASKS

9.1.1 A breakdown of completed Stages 1-5 is given in the original Project Design (Wilkins et al. 2019, Section 13). Further analysis, publication and archive forms additional Stage 5 and Stage 6 (see Section 4 – Tasks). The scope of works is set out in the table below and are set against the project updated product objectives, the products that will be produced and the tasks undertaken.

Stage	Description	Project Aims/ Questions/ Objectives	Products	Task & ID Number
Stage 5	Analysis, Reporting & Conservation	Aims 1-4 Q1-13 O1-2	11. Specialist Analysis Reports	5.1 –Specialist analysis and input 5.2 – Preparation of final technical report 5.3 – Review by Project Team 5.4 – Review Point 7
Stage 6	Publication Archive preparation	O1-2	12. Peer-review publication 13. Project Archive	6.1 - Preparation of publication 6.2 – Review by Project Team 6.3 – Consolidation of the archive (inc. conservation) 6.4 – Publication submission/review 6.5 – Updated OASIS record 6.6 – Deposit archive 6.7 – Project closure /Review Point 8

Table 4: Stages, products and task list

10 OWNERSHIP

10.1.1 The Copyright on all reports submitted will reside with DigVentures and the respective host institutions of each of the Expert team, and Historic England, although a third party in-perpetuity licence will automatically be given for reproduction of all products, subject to agreement with Historic England. The original copyright holder will retain copyright in pre-existing data, and Historic England will be granted a third-party licence in perpetuity for project materials.

11 METHOD

11.1.1 Detailed method statements relating the specific techniques or approaches can be found in original Project Design (Wilkins et al. 2019, Appendix 1). The methods relate to the task list and allocation of staff responsibilities outlined respectively in

11.1.2 Table 4 and Table 3, and visualised in the Gantt chart, setting out a provisional programme 

12 RISK LOG

Risk	Description	Probability	Impact	Counter measures	Estimated time/cost	Owner
1	Absence of core team member	Low	Medium – possible delay to programme of work.	Reallocate responsibilities or appointment of alternative resource	Minimal if addressed by reallocation / adjustment	Project Team
2	Absence of specialist team member	Low	Medium – possible delay to programme of work.	Reallocate responsibilities or appointment of alternative resource	Minimal if addressed by reallocation / adjustment	Project Team
3	COVID-19 related	Medium	Access to material for analysis	Current delivery requires specialist team travel to access material, assumes this will be possible from August 2020. Review in August 2020 and update.	Extended programme, minimal cost implications.	Project Team

Table 5: Risk log

13 PROJECT COSTS

13.1.1 Project costs relating to all stages of work can be found in the accompanying budget  Costs associated with Stage 5 are summarised in Table 6. Estimated costs for Stage 6 are included in the expanded budget sheet.

Team Member and Item Breakdown	Rate	Days	Sub Total	Cost
Direct Costs (Staff)				
Manda Forster (Project Management)	£ 200.00	1.0	£200	
Josh Hogue (Expert - Palaeolithic Field & Lithics / Reporting)	£ 147.00	6.0	£1,176	
Indie Jago (Site Assistant & Project Support)	£ 105.00	3.0	£525	
				£1,397
Direct Costs (Non Staff)				
Indirect Costs (Staff)				
Keith Wilkinson (Analysis - Clast Lithology) Additional analysis (Stage 5) cost based on per sample cost	£ 22.50	30.0	£675	
Kate Scott (Expert - Large Vertabrate) Estimate for site visits, assessment and reporting	£ 200.00	4.0	£800	
Hannah Russ (Expert - Animal Bone) Analysis for Stage 5	£ 180.00	4.0	£720	
Matt Law (Expert - Mollusca - Analysis) Additional analysis Stage 5 @ £100 per sample	£ 100.00	9.0	£900	
Nigel Larkin (Expert - Conservation - Off-Site) Estimate for off-site conservation (Stage 5) @ £250 per day	£ 250.00	8.0	£2,000	
				£5,095
Indirect Costs (Non Staff)				
Specialist Travel Costs (mileage @ £0.40 per mile; public transport @ cost)			£750	
Conservation and Sample Materials			£85	
				£835
Overhead on Direct Costs @ 25%			£ 349.25	
Handling charge on Indirect Costs @ 5%			£ 296.50	
				£ 645.75
Grand total				£7,972.75

Table 6: Stage 5 – Costs

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