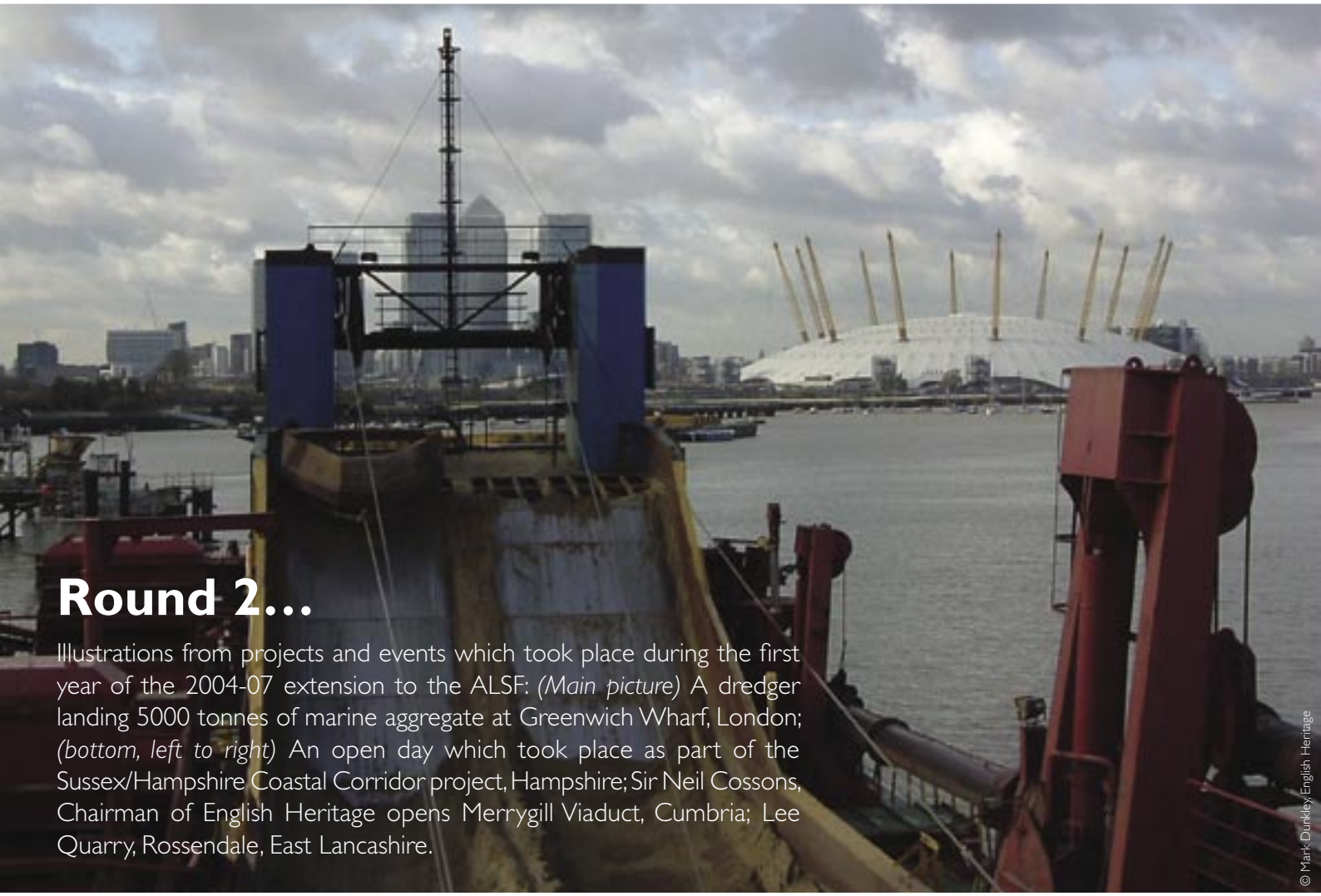
EXTRACT

THE ALSF ANNUAL REPORT



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Round 2...

Illustrations from projects and events which took place during the first year of the 2004-07 extension to the ALSF: *(Main picture)* A dredger landing 5000 tonnes of marine aggregate at Greenwich Wharf, London; *(bottom, left to right)* An open day which took place as part of the Sussex/Hampshire Coastal Corridor project, Hampshire; Sir Neil Cossons, Chairman of English Heritage opens Merrygill Viaduct, Cumbria; Lee Quarry, Rossendale, East Lancashire.

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ENGLISH HERITAGE

defra
Department for Environment Food and Rural Affairs

AGGREGATES LEVY SUSTAINABILITY FUND
ANNUAL REPORT
2004-2005

FOREWORD

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During the two year ALSF pilot scheme, which came to an end in March 2004, English Heritage distributed over £9 million in grants to more than 100 projects. We were therefore delighted when the Department for Environment, Food and Rural Affairs (Defra) invited us to continue distributing funds for the next three years.

The first two years of the scheme saw the completion of some exciting and innovative projects which will help us all to understand, manage, and enjoy the historic environment in aggregate-producing areas. The continuation of the scheme provides a great opportunity to build on this foundation work and ensure that historical resources in these areas are managed, protected and developed in the most appropriate and sustainable manner both for industry and public.

One of the most significant outcomes of the ALSF has been the building and reinforcing of partnerships. We have been able to strengthen our ties with our sponsors Defra and with our partner distribution bodies, leading to more efficient joint-working at every level. We have also had the pleasure of working very closely with the quarrying industry both at a national level through its trade associations and on a local level with individual companies.

We are most keen to acknowledge the commitment, enthusiasm and sheer hard work of all those responsible for delivering these projects; commercial and contracting organisations, universities, museums, voluntary and community bodies and the independent sector, local government, the aggregates industry itself, and internal colleagues. We very much look forward to enhancing these links in the future with new partnerships and projects.

Edward Impey
Director of Research and Standards
English Heritage

CONTENTS

INTRODUCTION

The extraction of aggregates represents over 80% by tonnage of all non-fossil fuel minerals extracted from the land and sea in the UK. The Aggregates Levy Sustainability Fund (ALSF) was introduced as a two year pilot scheme in April 2002 to provide funds to help address the environmental costs of aggregate extraction. The 2004 budget report confirmed that the scheme would be extended for three years until March 2007. English Heritage is a major distributor of the fund on behalf of the Department for Environment, Food and Rural Affairs (Defra).

In 2004/05 the ALSF in England had the following objectives set by Defra:

1. Minimising the demand for primary aggregates

2. Promoting environmentally friendly extraction and transport

3. Reducing the local effects of aggregates extraction (becoming in April 2005 Addressing the environmental impacts of past aggregates extraction)

English Heritage supports projects which deliver against Objectives 2 and 3, the goal of the English Heritage scheme being to reduce the impact of aggregate extraction on the historic environment, both terrestrial and marine. We can support a wide range of project which focuses on the following areas:

- *developing the capacity to manage aggregate extraction landscapes in the future*
- *delivering to public and professional audiences the full benefits of knowledge gained through past work in advance of aggregates extraction*
- *reducing the physical impacts of current extraction where these lie beyond current planning controls and the normal obligations placed on minerals operators*
- *addressing the effects of old mineral planning permissions*
- *promoting understanding of the conservation issues arising from the impacts of aggregates extraction on the historic environment*

In 2004/05 English Heritage distributed £800,000 of ALSF grants to marine projects and over £3m to terrestrial projects, a number of which have been joint funding ventures with other distributing bodies.

In the terrestrial sphere, we have commissioned projects which assess and define the potential impact of extraction on the historic environment and improve our understanding of these areas; which enhance, supplement, and make more readily available data held by mineral planners and archaeological curators; and which develop, promote and disseminate new approaches, techniques and best practice. We have also worked in partnership with town, borough and county councils, civic societies, aggregates companies, and local voluntary groups to conserve monuments and landscapes associated with or damaged by extraction.

The management of the marine historic environment has benefited enormously from the implementation of the ALSF. We have supported projects which advance the baseline understanding of this valuable asset, and funded ground breaking work which will improve the tools and methods available to us to predict, survey, evaluate, monitor and mitigate the impact of dredging on historic assets beneath the sea, and, as with the terrestrial work, have funded outreach work based on information gained through previous extraction.

In this report we have selected a number of case studies which highlight the extraordinary range of projects being undertaken and demonstrate how these are directly reducing the impact of aggregate extraction on the environment. A full list of projects can be found at the end of this report.

Details of the current English Heritage ALSF programme, application procedures, guidance and all projects can be found on the English Heritage website (www.english-heritage.org.uk/ALSF). Project details can also be found on the Defra database (http://alsf.defra.gov.uk).

Kath Buxton
Programme Manager (ALSF)
Historic Environment Commissions
English Heritage

Hillhead International Quarry Show

UNDERSTANDING THE HISTORIC ENVIRONMENT OF AGGREGATES LANDSCAPES

Defining, characterising and analysing the historic environment.

In order to understand the nature and magnitude of potential impacts resulting from aggregate extraction, research is needed to define the character, scale and distribution of the historic environment in advance of development.

While sites, monuments and buildings of national significance are protected by designation, the available information may not always be sufficient to inform decisions regarding minerals planning and extraction. Supplementary data on the historic environment may be gained from archaeological interventions undertaken in accordance with PPG16, although the strategies and methods employed may vary, as will the ease of access to the results. This can be remedied by synthesising these various strands of data with a local or regional theme and presenting them in an easily accessible format. These syntheses will greatly improve our understanding of the historic environment in areas with geological deposits suitable for aggregate production, and allow management and mitigation issues to be properly understood and considered at an early stage by planners, developers and curators. Three projects illustrate the range of activities that are being undertaken to advance this approach, one in an area of solid geology and two in river valleys with sand and gravel resources.

Moss Carr Wood, Methley, West Yorkshire

The **Archaeological Cropmark Landscapes of the Magnesian Limestone of South and West Yorkshire** project, being undertaken by the West Yorkshire Archaeology Service, was devised to collate the existing archaeological evidence for the Magnesian Limestone belt, compare it with the evidence for adjacent areas, and examine its relationship to past, present and future aggregate extraction sites. There are fifty active aggregate extraction sites in the study area, making it one of largest production areas in the UK. Intensive past human activity is attested to by cropmarks visible from aerial photographs that show evidence of settlement and land division both on the limestone and along its margins. As well as identifying the overall impact that the aggregate industry has had upon the archaeology of the area, the project aims to refine baseline knowledge regarding the nature, distribution and chronology of the archaeology. The results will also enable a more focused and consistent approach to be developed for archaeological mitigation associated with future aggregate production, as well as informing the review process for Minerals Local Plans and Unitary Development Plans.

Another area that has experienced significant and long-term impacts from aggregates production is being examined through the **Nene Valley: Archaeological and Environmental Synthesis** project being undertaken by Northamptonshire Archaeology. Here the quarried resource is fluvial sand and gravel where investigations undertaken during past extraction have resulted in the collection of a large body of archaeological and palaeoenvironmental information. Aerial photographs, excavation reports and palaeoecological data are being collated and synthesised in order to improve our understanding of the archaeological resource and associated palaeoenvironmental change. The project will bring together data relating to past river activity, water tables, vegetation cover, settlement activity and evidence relating to the land-use and

economic activities of past populations in the study area. The results will enable specific archaeological and environmental research questions to be framed that will assist in the targeting of future resources not only in the local area but in others with similar geology, while the analysis of past hydrological conditions will be used to improve the curation of the remaining waterlogged deposits.

In contrast, the character, preservation and extent of archaeological deposits is still poorly understood in some areas. The **Aggregate Extraction in the Ribble Valley** project being undertaken by Liverpool University and Oxford Archaeology North arose from an earlier ALSF funded project (Aggregate Extraction Related Archaeology in England: A Survey) which identified the area as lacking in the breadth of information on the historic environment that could improve effective minerals planning and mitigation. The initial project by the University of Exeter identified the perceived paucity of historic environment information for the area in relation to its known aggregate production history. The Ribble Valley project will first collate existing archaeological and palaeoenvironmental data, setting this against geological data and current aggregates permissions and plans. Then using multiple lines of evidence, including remote sensing, field survey and absolute dating, (including radiocarbon and optically stimulated luminescence (OSL)), the age and environmental associations of deposits identified as suitable for aggregate production will be modelled. All information will be collated in a Geographical Information System (GIS) with an accompanying report that will set out the framework for understanding the broader context of individual archaeological interventions in the area. The results of this work will primarily provide valuable data for future management and provide the basis for a popular publication, but will additionally be able to feed into the European water directive.

What these projects show is that in order to achieve meaningful results, it is often necessary to work at a landscape, rather than site-specific scale, and to define the study area by the extent of the exploitable geological resources rather than by present-day administrative boundaries. Such projects require analysis of information drawn from a variety of disciplines; including planning, geography, geology and archaeology; and thus collaboration between local authorities, commercial archaeological units, national organisations and the academic community is essential to their success.

Left: *A 19th century limekiln at Langcliffe in the Upper Ribble Valley*

Right: *The largest hoard of Norse silver discovered in the UK, the Cuerdale Hoard, located in the Lower Ribble Valley*

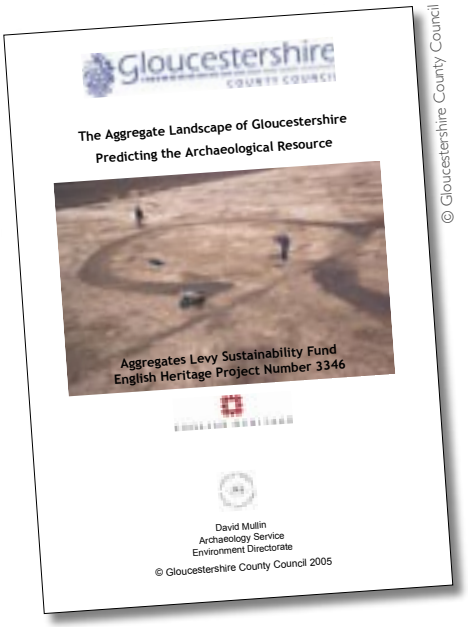
A palimpsest of Roman features revealed during excavation at Walton le Dale in the Ribble Valley

RESOURCE MANAGEMENT

Development of resource assessments to improve the management and conservation of aggregate areas.

One of the main ways we can mitigate against the impact of future extraction is by making data on the location and importance of Historic Environment Assets within extraction areas available to minerals planners and archaeological curators, so that they can make informed decisions regarding aggregate apportionment and licence conditions.

The **Gloucestershire Assessment of Archaeological Resources in Aggregate Areas** project by Gloucestershire County Council Archaeology Service was the first in a series of projects to follow a similar methodology. Using information supplied by the British Geological Survey and local minerals planners, stages 1 and 2 of the project defined the resource area by locating past and present quarries, and identifying the geological formations (both hard rock and soft aggregate) of areas either currently being worked, or likely to be worked in the next 25 to 30 years. This data was added to the Gloucestershire Sites and Monuments Record (SMR), the Local Authority maintained database of Historic Environment Assets. During stage 3 of the work, monuments identified from air photographs were added to the SMR (to National Mapping Programme standards) and an archaeological summary and resource assessment was written for the extraction areas of the county. This led to stage 4 in which a research strategy for the extraction areas of the county was produced.



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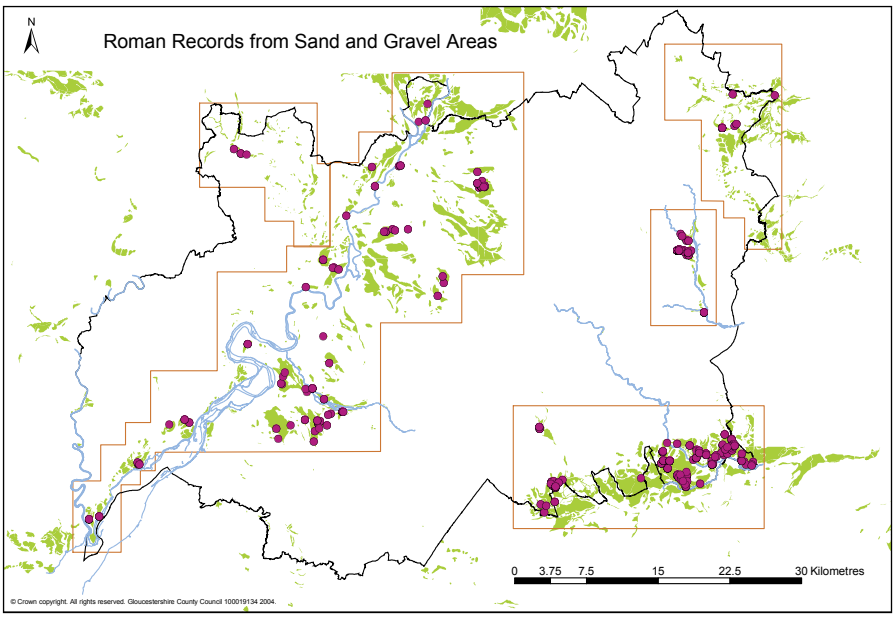
Right: *The title page of the Gloucestershire Assessment Report*

The Gloucestershire Assessment has improved the understanding between mineral planners and archaeological curators. As well as providing a resource assessment and archaeological summary for the aggregate areas of the county, it has identified many gaps and inconsistencies in our knowledge, for example a lower than expected density of prehistoric sites in the Severn Valley. This project will provide planners and the aggregate industry with the information they need to apply the appropriate mitigation strategies in advance of extraction and direct resources towards answering the academic questions identified in the Research Framework.

Similar surveys have already started in Somerset, Worcestershire and Suffolk and more are under discussion. Each of these projects has been adapted to meet local conditions and, like the original Gloucestershire assessment, reduce the risks associated with extraction to both the historic environment and the aggregate industry.



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Below: *Roman sites in sand ands gravel areas plotted as part of the Gloucestershire Assessment project*

UNDERSTANDING THE MARINE HISTORIC ENVIRONMENT

Improving understanding and management.

Although approximately 10% of British aggregate is extracted from the seabed, the baseline information for effective management of the marine historic environment is relatively poor. English Heritage is therefore supporting a series of projects which seek to improve this situation by providing government, industry, curators and contractors with both management tools and baseline information that characterises the resource.

Areas suitable for marine aggregate extraction often contain shipwrecks within their boundaries, which (in all their forms) are considered in the course of the Environmental Assessments that accompany applications to dredge. Various existing datasets, secondary sources and geophysical surveys can be used to gauge their likely presence, extent, character and period. These sources, however, cannot in themselves establish the relative or absolute importance of known or potential wrecks because the 'importance' of a wreck arises from a context that is far wider than the aggregates area under consideration. The **Importance of Shipwrecks** project being run by Wessex Archaeology seeks to develop and trial a framework for gauging the importance of shipwrecks. This will draw on schema developed specifically for managing and researching ships and shipwrecks and build on the current non-statutory designation criteria adopted by the Advisory Committee on the Historic Wreck Sites for gauging the importance of shipwrecks in the context of their statutory protection under the Protection of Wrecks Act 1973. The project will also review other statutory and non-statutory heritage initiatives such as the Monuments Protection Programme, and the criteria for determining structures to be listed under the Planning (Listed Buildings and Conservation Areas) Act 1990, in order to align elements of the marine historic environment with terrestrial designation practices.

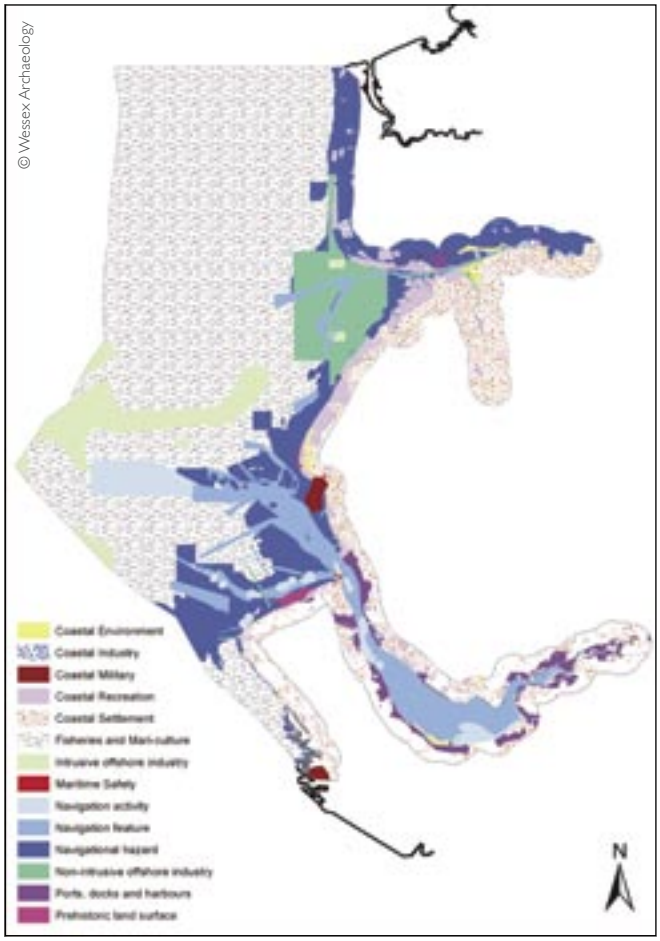
England's Historic Seascapes, also by Wessex Archaeology, will pilot a methodology for extending our application of historic landscape characterisation to encompass marine landscapes from the coast to the limit of England's share of UK Territorial Waters. An initial pilot study is being undertaken in the Liverpool Bay extraction area.

The need for overviews of the marine environment's historic dimension is urgent. Developmental pressures for mineral aggregate extraction from the sea floor are growing rapidly; as well as for oil and gas extraction, wind-farm construction, port development and dredging for shipping channels. As baseline information is unevenly spread and coverage inconsistent, our ability to respond to such developments is compromised. Our records map known historic wreck sites, and research in some areas has confirmed the survival of submerged prehistoric landscapes with excellent artefactual and palaeoenvironmental preservation. Nevertheless, these records provide only a tantalising glimpse of the wider extent and context of the rich historic heritage in our marine environment.

The Seascapes project will develop new methods and data structures for this innovative work. These will be trialled in a series of pilot areas reflecting a wide representation of the historic environment and the present management complexities encountered in England's maritime zone. The trial areas have been selected to inform our response in areas affected by mineral aggregate extraction now or in the future, giving the project immediate relevance to a live management issue subject to active policy development and cooperative engagement between all stakeholders.

The Liverpool waterfront, looking north west from the Albert Dock

Marine Character Types attributed to the Liverpool Bay Seascape



ENGAGING WITH STAKEHOLDERS

Promoting the work of the Aggregates Levy Sustainability Fund.

Ultimately we are all **Aggregates Levy Sustainability Fund** (ALSF) stakeholders because without aggregate we could not build the houses, roads, hospitals, office blocks and other infrastructure vital to the wellbeing of our country.

ALSF stakeholders are many and varied, ranging from the quarrying industry itself, to national and local government agencies, universities, commercial and contracting organisations, museums and local interest groups and members of the general public. Engaging with stakeholders has always been a key objective of the English Heritage ALSF scheme. For the ALSF to be successful, it is vital that we communicate effectively with those who pay the aggregate levy (industry and consumers who pay for and use aggregates) and who allocate the funding (Defra, the other distributing bodies, and the organisations undertaking the projects themselves). In order to do this, the English Heritage ALSF team is implementing a dissemination and communication strategy to ensure that the widest possible audience is reached in the most effective and appropriate ways.

In order to reach out beyond the traditional historic environment audience and to promote the positive work of the fund, English Heritage attended two recent industry events: the **How a Quarry Operates** days and the **Hillhead International Quarry Show**. Funded by the ALSF through the Minerals Industry Research Organisation (MIRO), the former comprised a series of training days aimed at raising the awareness of local authority staff about how the industry operates and opening up discussion on the issues surrounding planning. The days included quarry tours, presentations on general issues and planning legislation for extraction sites. The quarry show at Hillhead offered a rare opportunity to engage with the industry on a grand scale. English Heritage had a stand in the Quarry Products Association (QPA)/Institute of Quarrying marquee where we were on hand to discuss projects past and present with those at all levels of the industry from machine and lorry drivers to managing directors and quarry owners. The team was also grateful to the British Marine Aggregates Producers Association (BMAPA) for an invitation to visit Greenwich Wharf, London, to learn more at first hand about the landing and sorting of marine aggregate. The trip included a bridge tour of a dredger and proved enormously informative

Left: *Sarah Cole, ALSF advisor for the north, at the Hillhead International Quarry Show.*

Right: *Sara Cooper, ALSF advisor for the east, and the English Heritage stand also at the Hillhead International Quarry Show*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Left: *ALSF territorial advisors Sarah Cole and Sara Cooper attend a "How a Quarry Operates" day*

Right: *The Historic Environment Commissions Team visit a dredger at Greenwich Wharf*

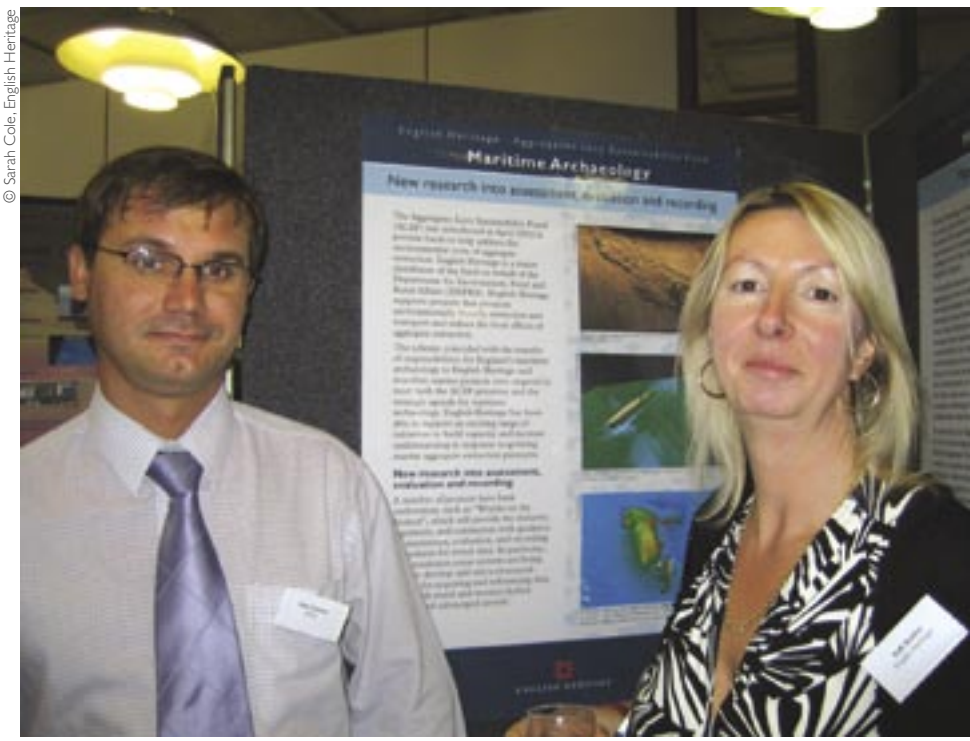
in helping to develop our understanding of the industrial process behind aggregate extraction in the marine environment.

We remain committed to promoting the ALSF, both internally within English Heritage and externally with our partnership agencies, other historic environment and conservation professions, and government. One approach has been the introduction of **Lunch & Learn** lectures at our regional offices. The lectures, all of which include external guest speakers involved in projects, provide accessible and exciting introductions to the type of projects funded through the Historic Environment Enabling Programme (HEEP) and English Heritage's ALSF. Successful events have already taken place in Portsmouth, Birmingham, Bristol, Manchester and York with more planned in the other regional offices in the coming months. The key role of these seminars has been to introduce colleagues to projects which could be transferable to other areas of the country or where pioneering methodological approaches or interpretation skills have been utilised in order to inform our management of the historic environment.

The same themes can also been seen in our external seminar series. The principal aim of the **Severn Seminar,** hosted by Worcestershire County Council, was to identify and implement research priorities along the heavily extracted Severn Valley; seen to be best achieved through the promotion of continuing dialogue amongst all the relevant historic environment and conservation communities. With this in mind, national and local curators were invited to attend the event held at University College, Worcester, along with contracting archaeological units, universities with a research interest in the Severn, and the Severn Levels Research Committee. The morning session of the seminar presented a showcase of new and exciting projects located along the entire length of the river, while the subsequent discussion session agreed that the best way forward would be to establish a network of interrelated projects of varying scope and intent, rather than a single unwieldy super project covering all the Severn. The afternoon sessions explored some of the issues of project data and information exchange that people engaged in projects would need to tackle.

The technical conference **Marine Aggregate Extraction - Helping to Determine Good Practice**, although organised to look at national issues, followed in the same vein and included presentations by Defra and BMAPA and on projects funded through the various marine stream distributing bodies. The conference followed four broad themes, Habitats and Mapping, the Historic Environment, Impacts and Recovery, and Risk Assessment and Management, and attendees ranged from national and local government to universities, industry representatives and consultancies. The day provided a useful forum for feedback and discussion of work currently being undertaken through the ALSF for the marine environment.

Kath Buxton of English Heritage and Alex Comber of DEFRA at the Marine Aggregate Extraction Conference in London



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THREAT DEFINITION

Measuring threat: Researching into the potential impacts of aggregate extraction and devising responses.

In an age of mass development and the consequent increase in aggregate extraction and transportation, it is important that we understand and manage effectively the true impact of these activities on the historic environment. Through projects which aim to consider the potential impacts of aggregate extraction, map the resource and define the threat to the historic environment we are improving methods to protect our heritage and provide a sensitive, considered approach to mitigation.

The University College of London Centre for Sustainable Heritage project **Impact of Aggregates Extraction and Transportation on the Historic Environment** is one in a series of projects which addresses these issues. Through a combination of desk based research and field measurement programmes, the project will investigate the impact and range of physical factors such as noise, vibration and dust on monuments, buildings and associated object collections in order to provide guidance on ways in which these can be better managed. It will also consider issues such as the visual impact of quarries on the historic landscape and consider the future of quarries that are no longer in use.

Representative case studies have been selected from an upland and lowland area so that the impact of transporting aggregates, often along small country roads and through towns and villages, can be considered and a methodology developed for use elsewhere. The project will contextualise the impact of aggregate extraction on the historic environment and involve and inform the many different communities affected by or interested in this activity.

One of the major factors influencing planning decisions relating to archaeology and extraction is the impact of dewatering on the historic environment. The project **Understanding Water Table Dynamics in Relation to Aggregate Extraction Sites**, joint funded with MIRO, is considering the effect of extraction on the water table in order to produce data that can inform future management strategies. Undertaken by the University of Hull, the project will focus on the gravel extraction site of Newington, Nottinghamshire on the northern side of the River Idle floodplain.

In order to understand the impacts of extraction and the associated lowering water tables on the buried archaeological resource, the project will

Below: *Aggregate traffic in Cromford, one of the sites being studied as part of the Impact of Aggregates Extraction and Transport on the Historic Environment project*

Below centre: *Dene quarry, Derbyshire, the source of traffic being studied as part of the Impact of Aggregates Extraction and Transport on the Historic Environment project*

investigate water table dynamics over time. Targeted assessment of the burial environment through environmental analyses, redox potentials and pH will aid the development of criteria by which controlled mitigation can be developed. The ultimate aim of the project is to produce a modelling package which can be tested in a range of environments with different sites, landscape contexts, soils, and sediments in order to determine the best approaches to ***in situ*** preservation.

The results from this work will provide a baseline for the future management of aggregate extraction sites, providing the heritage sector, managers of extraction sites, and planning authorities with empirical data against which realistic mitigation strategies can be developed.

The **Predictive Modelling of Multi-Period Geoarchaeological Resources at a River Confluence** project by the University of Exeter, is seeking to establish a research model for the development of pre-determination designs for site evaluation. This will assess the effectiveness of various airborne and ground based remote sensing methods in alluvial environments and derive relationships between pre-extraction site survey data and chronostratigraphic and environmental data as part of archaeological assessment. In order to do this, it is modelling the Trent-Soar river confluence over a timescale of millennia at a spatial scale appropriate for archaeological management. The research is innovative in its approach, integrating high resolution topographical, archaeological and geological (three-dimensional subsurface) data within a GIS. It is pioneering technical innovations

Newington, Nottinghamshire, the site being examined by the Understanding Water Tables project

including the integration and comparison of Interferometric Synthetic Aperture Radar (IFSAR), Airborne Laser Altimetry (LiDAR), CW Differential GPS (DGPS), Ground Penetrating Radar (GPR) and other ground based remote datasets captured as part of the project. It is also further demonstrating the potential of using geophysical techniques to map the subsurface sedimentary architecture and palaeochannels of the confluence zone. Within the study area, geomorphological field mapping and analysis of channel platform relationships interpreted from remotely sensed imagery (aerial photographs, LiDAR and IFSAR) has identified approximately ten distinct episodes of channel development.

The research will assist planning authorities in demanding and specifying rapid evaluations of geoarchaeological potential as part of the implementation of PPG16 by providing baseline information on the resource and the most effective and cost effective evaluation methodologies. It will also contribute to the framework for the management of the archaeological resource in the Trent Valley developed through the Trent Valley Geoarchaeology project and is providing a transferable model for the geoarchaeological investigation and management of valley floor archaeology.

Horton Quarry, Ribblesdale, one of the case study sites for the the Impact of Aggregates Extraction and Transport on the Historic Environment project

MARINE HISTORIC ENVIRONMENT PROTECTION

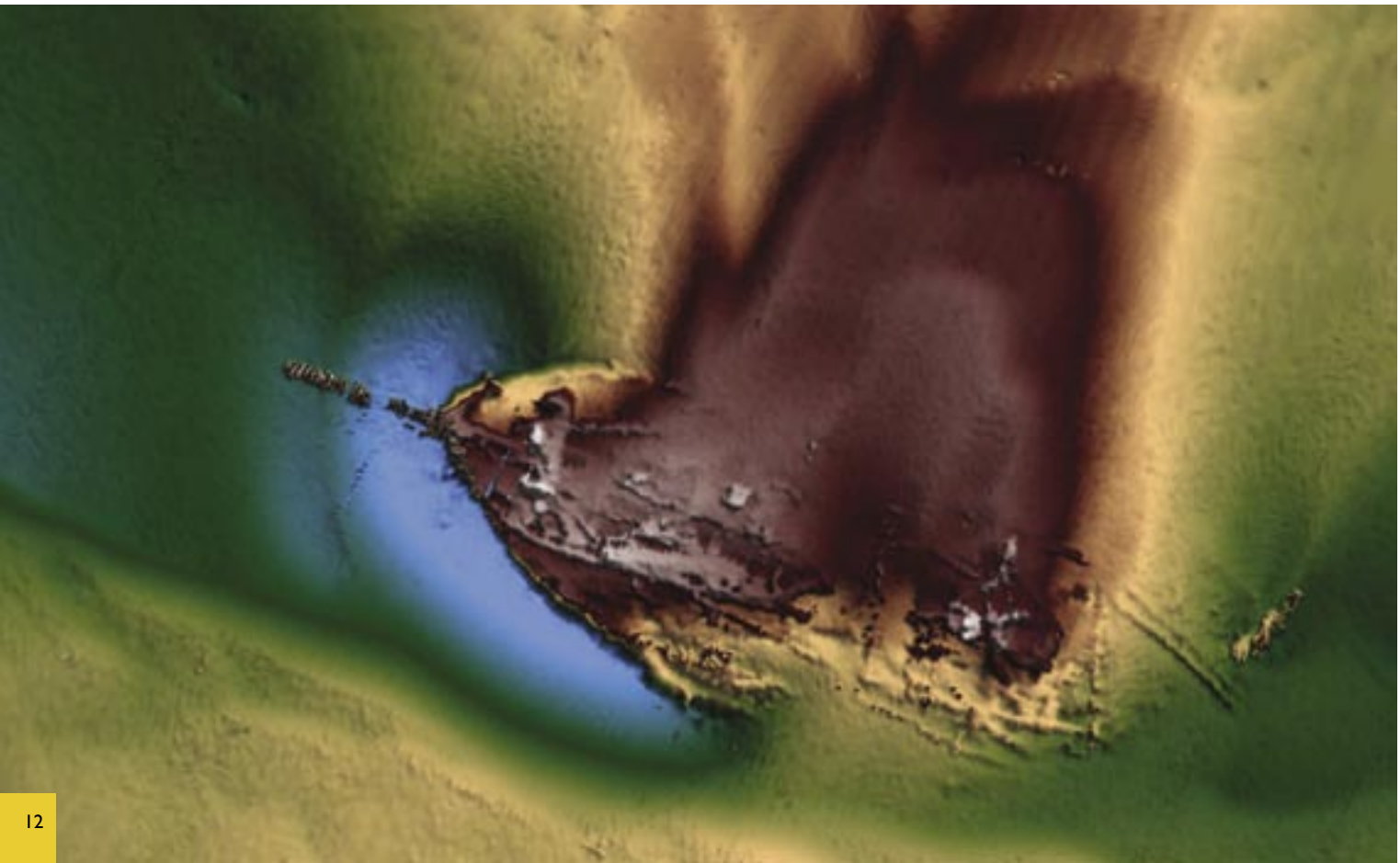
New research into marine evaluation and mitigation techniques.

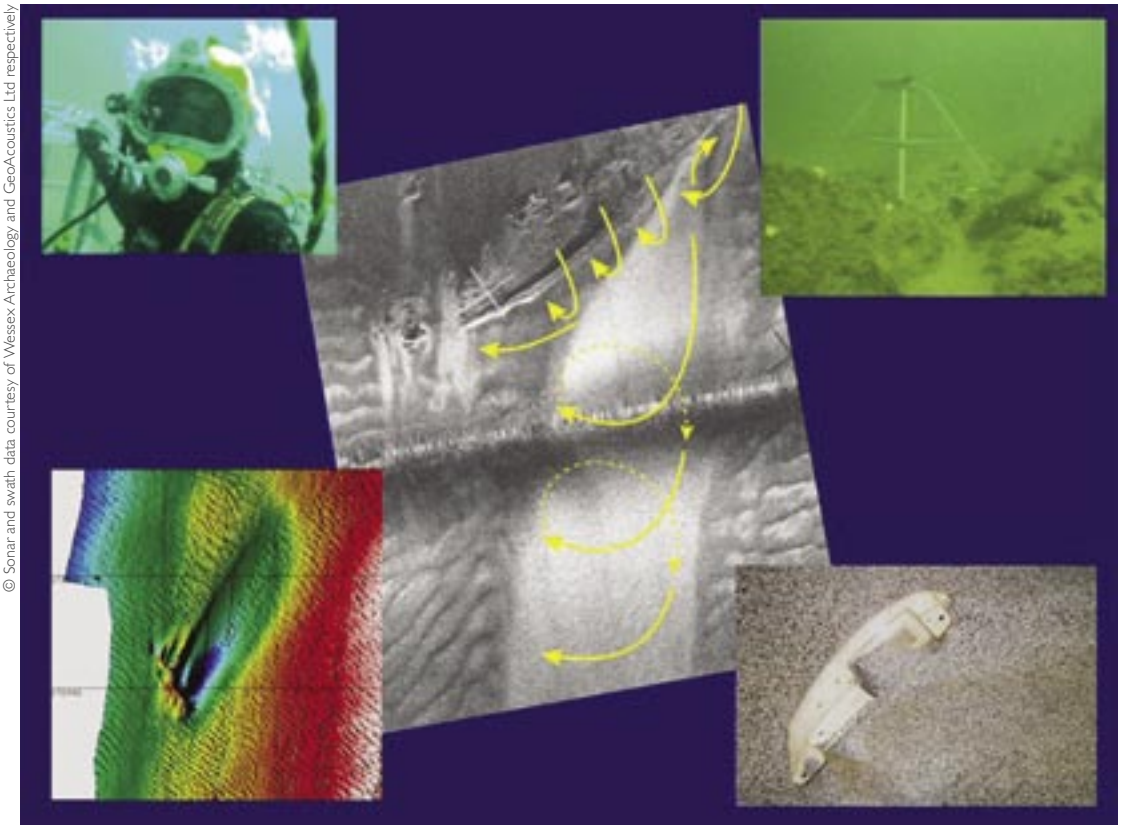
The historic environment is unlike the natural environment because in the majority of cases restoration is impossible. Quarrying and dredging destroy areas of land or seascape and when the historic environment has been destroyed it is lost forever. Therefore the only way to reduce the impact of aggregate dredging on the marine historic environment is either by reducing demand or by developing the capacity to manage the extraction process. We know that in the future, marine aggregate dredging is likely to increase rather than decrease, therefore the development of predictive evaluation and mitigation techniques is one way to improve the management of the marine resource.

The potential of geophysical remote survey equipment to rapidly investigate submerged archaeological sites and help us understand their environmental setting is being investigated by St Andrews University through the **Innovative Approaches to Rapid Archaeological Site Surveying and Evaluation** project. By using rapid mapping techniques on a number of test sites, quantifiable environmental changes over time can be cost effectively monitored so that the potential impact of aggregate extraction on the natural cycle of change can be accurately assessed. One test site is focussed on a wreck located within a dynamic burial environment off east Kent where previous studies have established that the wreck has been through a cycle of exposure, reburial and exposure. The project will explore the possibility that sand aggregate removal for infill during the recent redevelopment of Dover Harbour is affecting this sedimentary pattern.

A secondary aim of the project is to establish the optimum configuration of acoustic instruments to provide the best data for informed management decisions using a combination of backscatter and bathymetry information. This project will go beyond currently available techniques and utilise a number of new and innovative approaches to improve artefact recognition, seabed characterisation and the measurement of diverse impacts on marine archaeological sites.

Unidentified wreck on the Goodwin Sands, surveyed as part of the Rapid Archaeological Site Survey and Evaluation project





© Sonar and swath data courtesy of Wessex Archaeology and GeoAcoustics Ltd respectively

Imagery related to the predictive modelling of scour around shipwrecks and its response to aggregate dredging from the Wrecks on the Seabed project

Where archaeological artefact-based sites, principally wreck material, are identified within licensed aggregate extraction areas, dredging exclusion zones are created around them in order to effect ***in situ*** preservation. It is acknowledged by both the marine aggregate and the maritime archaeological communities that neither the definition of these exclusion zones nor the potential direct or indirect impacts of dredging on marine or coastal archaeology are well understood. In addition, although studies of the coastal impacts of dredging are undertaken, these are infrequently if ever, used to predict likely archaeological impacts. This mirrors the academic paucity of knowledge of the physical controls on underwater site formation in general.

Southampton University's **Modelling Exclusion Zones for Marine Aggregate Dredging** project will bring together experience and expertise from a variety of different disciplines including archaeological site formation studies, sediment and fluid dynamics, numerical modelling of dredge plume and coastal zone impacts, and direct experiential knowledge from the dredging industry to study these issues and provide accurate, appropriate and cost effective recommendations for defining exclusion zones in the future.

During the pilot stage of the ALSF, the **Wrecks on the Seabed** project team from Wessex Archaeology successfully developed and tested a range of methodologies for the assessment, evaluation and recording of wreck sites. The results provided sufficient information to establish the extent, character, date and importance of a number of wreck sites off the south coast of England, and the methodologies are now being used by those investigating sites in advance of aggregate dredging. Ongoing discussions with aggregate industry representatives have suggested that marine extraction will move into deeper water, so investigation techniques and methodologies need to be refined accordingly. This follow on project is investigating the use of remotely operated vehicles (ROVs) to examine deeper sites that divers would not normally be able to reach, and undertaking a cost/benefit analysis into the benefits of using a larger support vessel that will increase the opportunities for investigating in all tidal windows and adverse weather conditions.

English Heritage's marine ALSF projects continue to make a substantial contribution to emerging public policy with respect to the marine historic environment. They are also providing practical management and mitigation tools which are already being used by the marine aggregate industry and beyond.

Diver entering the water during the latest round of diving survey work on the Wrecks on the Seabed project

© Wessex Archaeology

CARING FOR OUR PALAEOLITHIC AND PLEISTOCENE HERITAGE

Characterising the resource and developing predictive tools and mitigation strategies.

Palaeolithic archaeology and the quarrying of Pleistocene sand and gravel are particularly closely linked because the remains from this very early period in our history are actually contained within these geological deposits.

The first humans to come to Britain probably arrived some 750,000 years ago and were likely to have belonged to an ancestral form of our own species called ***Homo heidelbergensis***. They are best known from the internationally important finds at Boxgrove, Sussex, which are some 500,000 years old. All but the last 10,000 years of this immensely long history is termed the Palaeolithic period by archaeologists; it also belongs to the geological period called the Pleistocene, which is marked by a series of Ice Ages preceding the present warm stage (Holocene).

Much of our knowledge of Palaeolithic/ Pleistocene archaeology and environments in Britain is derived from quarries. Without the opportunities provided by aggregate extraction over the last 100 years or more we would not have the human remains from Boxgrove or Swanscombe, or many of the assemblages of stone tools which form the vast majority of archaeological finds from this period. We need to acknowledge a history of co-operation between industry and archaeologists that long predates any legislation to protect archaeological deposits.

Most of these discoveries however, have been unanticipated chance finds and while many research projects have developed from these finds, our ability to predict their occurrence and adequately manage or mitigate the impact of extraction has remained patchy. Most Pleistocene deposits lie within what many archaeologists would call 'the natural', that is, deeply buried and not comprehensible through traditional prospection methods like fieldwalking, aerial survey or geophysics. The ALSF has given us the chance to fund a number of projects aimed at better characterising the Palaeolithic resource and developing predictive tools and mitigation strategies. With more information about past discoveries, and better ways of assessing the potential impact of new extraction on deeply buried deposits, both archaeology and industry stand to benefit.

Three projects funded by the present round of ALSF grants show the kind of work that is needed. The **Palaeolithic Rivers of South West Britain** project run by the Universities of Exeter and Reading, focuses on establishing baseline information for a poorly understood region of the country. The project will synthesise the archaeological evidence for Palaeolithic occupation in the south west, and provide an up-to-date statement of the known archaeological materials associated with the region's fluvial aggregate deposits, an assessment of the archaeological and geological potential of those deposits and guidelines for management and mitigation of extraction. Beginning with a desktop analysis of geological data and museum visits to locate and study previous finds, the project will move on to field investigations in a series of river valley systems, including that of the River Axe, the location of the only major investigation of an open air assemblage so far undertaken in the region. Mapping and characterising deposits of archaeological potential will utilise new remote sensing methods, such as GPR and IFSAR, as well as OSL dating, fieldwalking of terrace landform surfaces, and coring/trenching of suitable fluvial deposits.

A large pointed handaxe recovered during Medway project fieldwork at the site of 21 Rochester Road, Cuxton, Kent - carried out courtesy of the owners David and Sarah Norwood. The handaxe is of the type known as a "ficron" and, at over a foot long, is the second longest ever found in Britain

Another marginal area, in terms of our current understanding of what was habitable during former cold spells of the Ice Age, is northern England. **The Palaeolithic Occupation of the Middle and Lower Trent Catchment** project by Durham University aims to elucidate the Palaeolithic archive of the present-day Trent Valley and areas formerly drained by the Trent, an important ancient river system on the edge of this region. Palaeolithic archaeology has been encountered and studied more frequently than in the south west, but usually only as a by-product of fieldwork focussed primarily on the alluvial, Holocene history of the Trent. The project aims to review the available evidence for Palaeolithic activity and its geological context in order to provide an informed basis for resource management and a strategy for site prospection. Like the south-western project, it will combine reviews of museum collections with fieldwork, but in this case the latter is focussed on operational quarries, synthesising the monitoring of ongoing work and sampling for palaeoenvironmental evidence from sites where artefacts were previously recovered.

These projects reflect the fact that so far, the most detailed Palaeolithic research has been undertaken in south east England and East Anglia. Even here however, there is still much to learn. The **Medway Valley Palaeolithic Project** by Southampton University, covering south east Essex and north Kent, is focussed on another ancient river system about which uncertainties remain. Sand and gravel deposits associated with the palaeo-Medway River contain stone tools and faunal remains, often alongside palaeoenvironmental evidence. Despite the presence of these key sites, their dating remains very uncertain particularly in relation to the better known deposits of the Lower Thames. The project therefore aims to develop an integrated chronological and stratigraphic framework, leading to the identification of areas of high potential and improved methodologies for evaluation, characterisation and interpretation of Palaeolithic evidence in Pleistocene sands and gravels.

All these projects have important additional aims in promoting public appreciation and understanding of this period. Although in some ways difficult and remote, Palaeolithic archaeology offers the potential to help us understand other forms of humanity and their abilities to cope with changing climates and sea levels, challenges similar to those which may confront us all in the future.

Above: *Four OSL dating samples being taken from strata of a varied fluvial sand deposit, Tattershall Thorpe gravel pit (RMC), Lincolinshire a site visited as part of the Trent Catchment project*

Left: *Sediment recording and environmental sampling in advance of extraction at Barling Gravel Pit, Southend Essex during the Medway project*

Below: *Sampling a sand lens for dating by Optically Stimulated Luminescence Clubb's works, Isle of Grain, Kent, carried out courtesy of J. Clubb Ltd during the Medway project*

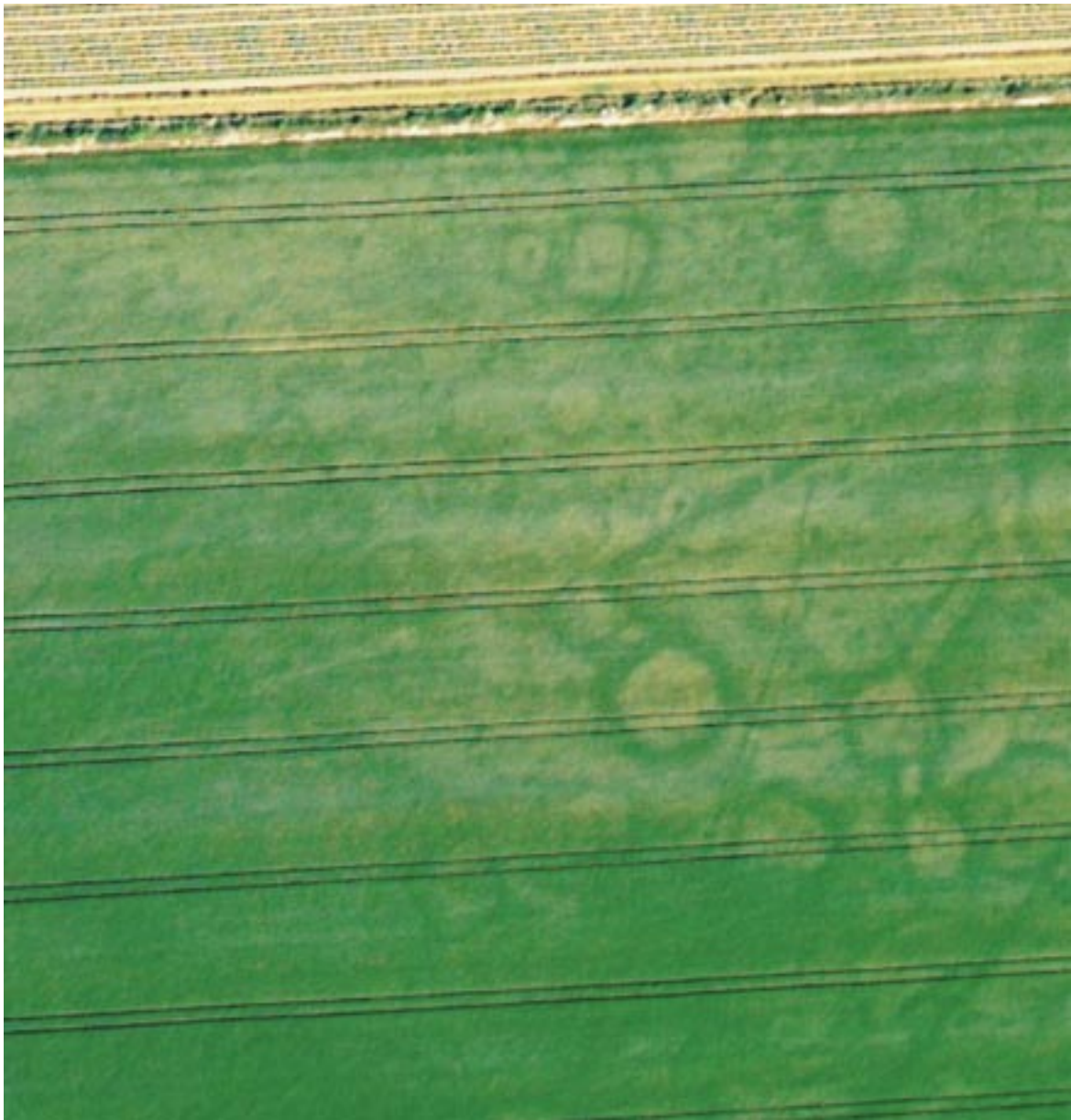
DEVELOPING NEW APPROACHES TO IMPROVE THE MANAGEMENT OF THE HISTORIC ENVIRONMENT

Sharpening the tools.

Key issues supported by the English Heritage ALSF programme are developing, promoting and disseminating new approaches, techniques and best practice which will improve the quality of historic environment work undertaken in association with aggregate extraction.

Technical research and development is vital to ensure that the methods used for data collection are as accurate and efficient as possible. Such work covers a diverse group of sub-disciplines within archaeology that range in scale from biomolecular research to landscape analysis and remote sensing. Many of these innovative developments may also be applicable across the wider heritage industry.

A number of projects supported by the ALSF are engaged in characterising the age, associated archaeology and depositional environments of deposits suitable for aggregate extraction. The premise is that this information can be used to build models to predict the likely preservation potential and/or archaeological potential of particular deposits in advance of extraction. In order to have confidence in these models, the primary data used must be robust, particularly



High resolution vertical digital photograph showing crop marks in turf of a circular enclosure, roughly 80m in diameter, with two rectangular features near the eastern side; possibly buildings relating to an Anglo-Saxon monastery. The crop marks could no longer be seen when the same field was re-photographed. Examined as part of the Multi-Spectral Imaging project

the dates ascribed to particular geological units; but the further back in time we go, the more difficult this can be. One project, **An Improved Chronology of British Aggregates Using Amino Acid Racemization and Degradation** being undertaken by York University, is approaching the issue by refining a technique that has been used for the past 35 years but which has been the subject of vigorous debate regarding the accuracy of its results. The project uses the remains of a particular snail species, specifically the opercula of ***Bithynia tentaculata*** that is frequently found in aggregate deposits of the Quaternary period. The operculum, like the shell, can be preserved for very long periods of time under suitable conditions. The dating process uses biomolecular analysis to determine the age of the sample and is concentrating on refining the method to an improved level of confidence. If successful, it suggests exciting advances in the potential to date aggregate deposits associated with some of the earliest periods of human occupation in England.

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Archaeological survey

In contrast to such detailed information about individual deposits, aerial photography and ground based geophysical survey can provide large amounts of information about multi-period archaeological sites and the development of landscape components. Often this can be achieved relatively rapidly but the results that can be gained from any particular technique vary according to the nature of the soils in the area. This means that a geophysical survey in one area may identify most features, whereas in others features fail to show. The **Multi-Spectral Imaging and Thermal-Decay Mapping on Sands and Gravel Bearing Sub-Soils** project by the Landscape Research Centre, uses multi-spectral digital imaging (MSS) and LiDAR surface modelling data to assess the potential benefits of different survey techniques on different soil types. The project is focusing on two different sand and gravel deposits in the Vale of Pickering, north Yorkshire, an area for which there is abundant information regarding the archaeological background. The project will draw upon aerial photographic, multi-spectral data collected in 1994, and geophysical survey data to compare and contrast the results of these and new survey techniques. The project will develop a strategic understanding of the potential of MSS survey, linked to LiDAR surface modelling data, for the rapid assessment of large areas of aggregate bearing geologies.

The development of remote sensing and predictive techniques is an area that has seen considerable growth in support over the past couple of years in the UK, as a direct consequence of the introduction of the ALSF scheme. **Trent Valley Geoarchaeology 2004** is pursuing this research by investigating the archaeological potential of tributaries of the River Trent. This project seeks to improve the baseline information available for river valleys either earmarked for extraction or which contain deposits suitable for aggregate production. In addition, the project will develop integrated three-dimensional modeling of geological deposits, airborne remote sensing of archaeological and geomorphological features and computer based modeling of landscape processes, which will inform heritage management strategies and provide information about the likely impacts of extraction on the historic environment as early in the development process as possible.

A vine bedding trench (pastinatio) dating to the Roman period at Wollaston, Northamptonshire. Part of the Trent Valley Geoarchaeology project

© Northamptonshire County Council

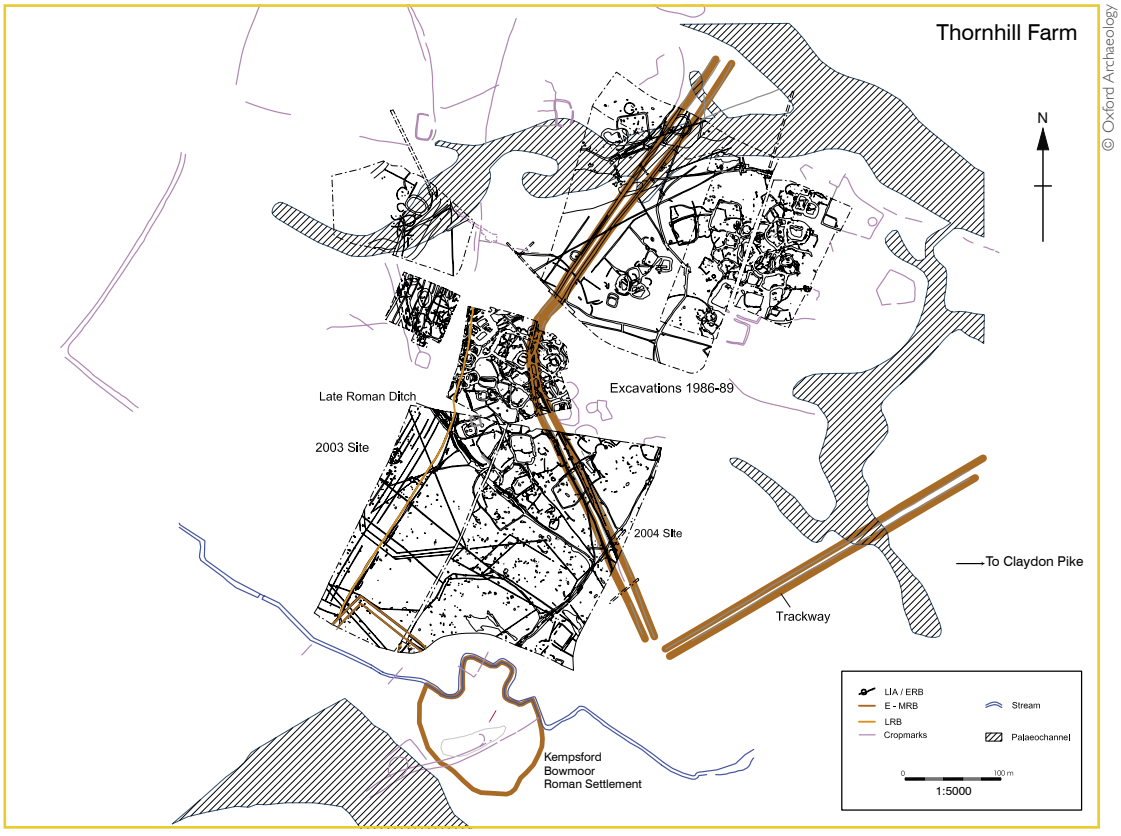
SUPPORTING THE PLANNING SYSTEM

Rescue! The last resort.

View looking north showing ditches of Roman trackway cutting through Iron Age/early Roman enclosures at Coln Gravel, Thornhill Farm

Archaeology, by its very nature, involves the uncovering of hidden or buried evidence of our past. Despite the best efforts of the quarrying industry, their archaeological consultants and contractors, and the local planning authority, there will be rare times when completely unexpected treasures come to light. Where appropriate planning conditions have been established, and the appropriate planning guidance or legislation followed, and where the discovery is deemed of national importance, English Heritage is able to deploy the ALSF as a last resort to ensure that such discoveries are recorded and conserved for all. Only one such event occurred in 2004-5.

At **Coln Gravel** in Gloucestershire, an Iron-Age and early Romano-British settlement was revealed in advance of extraction during the 1980s. What emerged then was part of a rare and highly specialised agricultural complex of dense livestock paddocks and enclosures. Hanson Aggregates, the quarry operators, had already met all the relevant requirements of the 1983 extraction permissions, but in a welcome demonstration of responsibility, they entered into discussions with English Heritage and the local authority about their plans to extract the remaining 6.5 hectares. The significance of the site lies primarily in its position within a wider agrarian landscape of similar character and date and consequently its ability to fill in gaps in our knowledge about that landscape and the people that lived there. Despite there being no formal obligation that Hanson put further funding into archaeological mitigation, they generously agreed to fund the remaining fieldwork: English Heritage was able to provide ALSF funding to ensure that the post-excavation work was undertaken to the required standard.



Coln Gravel, Thornhill Farm site plan

MANAGEMENT AND CONSERVATION PLANS

Helping local communities to care for the historic environment.

One of the most important prerequisites for caring for the historic environment is a full understanding of the resource. Knowledge of the history and archaeology surrounding us not only helps our appreciation and enjoyment, but facilitates informed decision making regarding the most appropriate methods of management and conservation. Enabling local communities to care for their own history and archaeology is a requirement of most of the projects funded by the ALSF but can be specifically illustrated by two projects funded within the past year.

The Clee Hill massif in South Shropshire comprises two peaks, Titterstone Clee in the north west and Clee Hill in the south east. The area and its immediate surroundings, including both active and inactive quarries, is the focus of the **Titterstone Clee** project being carried out by the Institute of Archaeology and Antiquity at the University of Birmingham. A detailed landscape characterisation report of the area will be produced, and a number of visitor surveys will be undertaken at different times of the year, enabling the project team to develop a focused management plan for the area. This management plan will enhance the local Historic Environment Record (HER), and the information gathered will also be used to produce a popular booklet and to inform talks and displays in order to more fully realise the potential of the hills as a visitor attraction.

In Cumbria a similar project has been carried out at **Kendal Fell Quarry** by Oxford Archaeology North (OAN) in association with the Kendal Civic Society. The area is a former building stone and aggregate extraction site and was in need of a full conservation plan. The conservation management plan will be used to address the future management of the site with respect to the preservation of the surviving historic fabric and the development of its recreational potential, and will also allow the Kendal Civic Society to further their study of the local area. The project included both desk based assessment and fieldwork in order to establish the origins of the quarry, the potential for any further features relating to the extraction industry and

View of Clee Hill, focus of the Titterstones Clee project

the likelihood of associated buried remains. Members of the local Young Archaeologists Club were involved in the fieldwork element under direction from OAN staff; an approach English Heritage is keen to encourage in future projects.

Management and conservation plans give a clear statement of the historical content and significance of sites, monuments and landscapes along with well defined management policies which enable long-term sustainable preservation and development.

An area of ridge and furrow identified during the Kendal Fell Quarry survey

Inset: *Members of the Young Archaeologist Club undertaking survey work at Kendal Fell Quarry*

RAISING AWARENESS OF CONSERVATION ISSUES

Developing and disseminating policies, principals and guidelines.

Prof David Keen describing environmental sampling strategy to Quarry Manager John Green at Smiths Concrete Waverley Wood Site – May 2005

One of the most important roles of the ALSF continues to be the ability to fund projects that raise awareness of conservation issues, not only across the historic environment sector but also amongst the wider community and the aggregate extraction industry. Many who work in the quarry industry will have some awareness of the archaeology that often comes to light during operations but it is important that these discoveries are better recognised and understood and that an accurate record is made of them. Two projects commissioned in the last year particularly address this issue.

Environmental sampling of an organic channel at Waverley Wood during the National Ice Age Network project

Teams from Birmingham University, Royal Holloway (University of London) and York Archaeological Trust have been working on projects that will increase awareness of archaeology within the sand and gravel quarrying industry, and have developed methodologies to ensure that reporting and recording takes place. Both projects emphasise the importance of outreach and dissemination to the industry itself and the general public.

The National Ice Age Network (NIAN) operating from the Universities of Birmingham and Royal Holloway, is strengthening contacts between those working in the aggregate extraction environment. These include quarry companies, geologists, archaeologists, Quaternary scientists, other specialists and members of the public. The aim of the project has been to create an infrastructure throughout England to promote the regular and systematic monitoring of sand and gravel workings in order to assess their potential for providing Palaeolithic and Pleistocene finds that can be used to reconstruct past environments. The project includes a variety of activities such as seminars, public lectures, artefact handling sessions and weekend events.

This flagship project, jointly funded by English Nature, sees the Universities of Southampton and Leicester joining the partnership in late 2005.

Glacial Reconstruction used for National Ice Age Network project publicity and handouts

Inset: *Biface found by metal detectorist in the Bidford area using Shotton/National Ice Age Network project artefact recognition sheets*

Traditional Derbyshire well dressing in Stoney Middleton designed by Dave Thorpe to promote awareness of the Lead Rakes project

Alongside the NIAN project we are funding **Making Archaeology Matter**, which focuses on the Trent Valley in the East Midlands. Following wide consultation with local archaeological officers and industry representatives, the project team at York Archaeological Trust will produce two sets of information and guidance for quarry workers.

The first, designed for the quarry manager is a 'one-stop' information file for reference when a find is made on site. It comes in the form of a durable ring bound file and contains information about the types of artefacts likely to be found, how to stabilise them on site, who should be contacted to report finds locally and what the legal and statutory requirements are for reporting.

A slightly different approach is being piloted for the quarry workers pack. This is an informal suite of media that includes mess hut posters, mugs, pens, pencils and lunchboxes with snippets of relevant information. Two themes have been developed: 'I/ We found this', which will focus on successful finds made by quarry workers and 'What is it?', giving examples of items and a brief statement of their significance. The cheerful graphics and accessible language will remind quarry workers about the need to report finds to their managers, and also give information about the processes that follow a reported find.

The two sets of prompts and guidance should complement each other in the goal to increase reporting of finds, raising the awareness of archaeology with quarry workers, emphasising the value in reporting finds, and giving managers a better understanding of the processes of reporting and recording. If the regional pilot scheme is successful it is hoped that the project can be rolled out nationally.

The lead industry has helped shape the historic landscape of the Peak District over centuries, with evidence of the work visible above ground as well as below. Although lead isn't an aggregate, the limestone overburden from the mining is frequently used as an aggregate; a recent survey demonstrating that three-quarters of the surface remains of this industry are already lost. The **Lead Rakes** project set up by the Peak District National Park Authority promoted understanding and appreciation of this important resource the resulting report making recommendations for its future management.

Through these projects, and ones like them in the future, the ALSF has engendered a wider understanding of the issues and importance of the remains, finds and the issues associated with sand and gravel extraction.

Below: *Magpie mine at the launch of the Lead Rakes report*

CONSERVATION OF MONUMENTS DAMAGED BY AGGREGATE EXTRACTION

Reducing the local effects of past aggregate extraction.

The Sinah Common Gun Site, located on Hayling Island, Hampshire, was designated a Scheduled Ancient Monument in March 2003 and is partly owned by Havant Borough Council and the Hayling Island Golf Club. The site, known as Sinah or P2 (Portsmouth 2) formed part of a chain of batteries positioned to defend industrial and military targets in Portsmouth. Due to their resemblance in size and shape, Hayling Island acted as a decoy to distract enemy aircraft from Portsmouth city and harbour. The gun site consisted of four gun emplacements with an accompanying control building, ammunition stores, a gun store, air-raid shelter and domestic camp. Nearly 1,000 gun sites were built during World War Two – less than 200 have some remains surviving and only around 60 now have sufficient remains to provide an under standing of their original form and function.

The gravel extraction at the site commenced before World War II and continued until 1966. The project is primarily concerned with emplacement number 3 which is subsiding into an adjacent lake created by quarrying. Although the site can appear relatively stable, wave action across the lake will continue to erode beneath the structures, leading to further deterioration and the possibility of additional collapse.

ALSF funding has been used in 2004/05 to fund the first stage of work at the site, a feasibility study and structural survey. The second stage of work will aim to stabilise, consolidate and repair gun emplacement number 3 and its associated ammunition store plus generator room. It will also aim to improve on-site interpretation and to eventually permit controlled access for supervised groups. This will be achieved through a close working relationship between Havant Borough Council and Hayling Island Golf Club. In addition, as much of Sinah is of SSSI status, English Nature has been invited to explore the potential for improving and enhancing biodiversity in the area. This second stage is under consideration and may involve further ALSF funding.

Gun emplacement 3 showing proximity to lake edge and extent of damage caused by wave action

Inset: *View of the Command Post*

CONSERVATION OF INDUSTRIAL REMAINS ASSOCIATED WITH AGGREGATE EXTRACTION

Regenerating, protecting and enhancing the historic environment.

The Valley of Stone situated on the moorland edges at the gateway to east Lancashire and the Pennines, was once an area with a great stone quarrying industry and still contains some of the largest sandstone quarries in the UK. This massive operation fuelled economic growth and helped to build a local identity. The legacy of this enterprise, both economically and socially, is a significant heritage asset in the area. The extensive network of tramways that once linked the quarries across the moors, connecting them to the valley bottoms is also of importance. The **Valley of Stone** project aims to prevent the further loss of the physical features of the quarries and tramways, increase public awareness of the historic environment through various education programmes, and reduce damage from vandalism.

A preparatory project funded during the pilot phase of the ALSF, has already delivered an archaeological survey of the quarries and tramways in Rossendale. This has provided the base line information for a two year regeneration programme of conservation, education, outreach and access that will open a vast area of the Rossendale quarries to the public. The preparation of a conservation plan and proposed outreach will help safeguard the industrial remains of the area by raising local appreciation and understanding of the historic environment.

This has been an exceptional partnership project with Groundwork Rossendale, English Heritage, various aggregate industries, the Wildlife Trust, Lancashire County Council, Rossendale Borough Council and Rossendale Partnership (Local Strategic Partnership) working together to both fund and facilitate the project.

Merrygill Viaduct in Cumbria lies on the route of the Trans Pennine Barnard Castle to Tebay railway. It was built by South Durham and Lancashire Union Railways, and opened to mineral traffic in 1861. The link between the railway and the aggregate industry are undisputable as one would not have developed without the other, the railway being essential for the transport of the aggregate and lime products between 1925 and 1975. The remains of the rail viaduct, sidings and other structures clearly show that they were integral to the earlier working of the quarry. General rail services between Kirkby Stephen and Barnard Castle ceased in 1962 and, with the rise in road transportation of aggregate products, the rail traffic from Merrygill stopped in the mid 1970's. The viaduct then fell into disuse.

A partnership with RMC Aggregates, the current owners of the quarry, and the Northern Viaduct Trust (NVT), and joint funding from English Heritage and the Countryside Agency has allowed the Merrygill project to open the viaduct to the public. The project highlights the connections between rail transportation and a traditional aggregate quarry by interpreting the close historic and practical transportation links between the quarrying operation and the rail transport network.

In addition to the public access, the NVT have developed heritage and route information into accessible and integrated interpretive material for the public, thus maximising the outreach opportunities that this project offers. They have established and maintained partnerships with Kirkby Stephen Town Council, Sustrans, Cumbria Wildlife Trust, Cumbria County Council, the South Stainmore Railway Company, and RMC Aggregates.

Both projects meet ALSF Objective 3 criteria by conserving industrial remains associated with specific aggregate extraction sites and demonstrate the huge value of partnership working.

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Above: *Merrygill Viaduct, Cumbria*
Below: *The Merrygill opening*

© Groundwork Rossendale

Key Stage two pupils learn about the impact of aggregates extraction at Troy quarry in Rossendale Lancashire as part of the Valley of Stone project. A stone crushing platform can be seen in the background

DISSEMINATION OF IMPORTANT INFORMATION FROM PAST AGGREGATE EXTRACTION

Unlocking the research dividend of past investigations.

Aggregate quarrying has revealed some of the most remarkable archaeological discoveries ever made. Prior to the 1990s, while some funding was available through government grants (English Heritage, its predecessor the Department of Environment and the Manpower Services Commission) or the quarry companies themselves, this work was often under-resourced, with little or no money set aside to ensure that the full story reached the wider public.

The archives of many of these unpublished excavations contain a wealth of information that is currently virtually inaccessible to the general public, archaeologists, planners and the aggregate industry. While much of this data is an important local archaeological and historical resource, there are many sites where the information is of regional, national or international importance. Not only can this information contribute to academic research that will significantly advance our knowledge of mankind's past, it can also play an extremely important role informing the planning process and future mitigation strategies.

An example of how such 'backlog' material can be utilised is at **Beckford** in Worcestershire, where excavation in the 1970s revealed evidence of land use and settlement from the Mesolithic through to the medieval period. The site was unusual for a rural site on gravel soils because although it had probably been ploughed since the Roman period, the undulating surface of the gravel terrace had preserved floor surfaces, hearths, and soil layers within its hollows.

Late Iron Age enclosure at Beckford

Inset: *Middle Iron Age settlement, 1979 excavation season*

© Oxford Archaeology

© Oxford Archaeology

The assessment of the archive by Gloucestershire County Council during the first round of the ALSF demonstrated that even after 25 years the site remained of national importance. The well-preserved finds, in particular the animal bone and the Iron Age pottery, offer enormous potential for us to reconstruct aspects of the lives of the inhabitants, and refine our understanding of the first millennium BC. Consequently the decision was taken to fund the current analysis work which will result in a major monograph publication.

The **Thames through Time** project by Oxford Archaeology takes a synthetic view of the archaeology of the extensive Pleistocene gravel terrace systems of the Upper and Middle Thames Valley, worked for gravel extraction on a large scale during the nineteenth and twentieth centuries. The area still remains a major region for aggregate operations today with primary extraction set to continue at a high level for the foreseeable future. This has resulted in the region seeing some of the most intensive archaeological activity in England with excavations closely linked to aggregate extraction.

The Oxford project will result in four seminal volumes with broad period remits, structured around themes rather than chronological narratives, which pull together previous work and provide intellectual access to both academic and informed non-specialist audiences.

Left: *A schools' dig during excavations at Yarnton, Oxfordshire; one of the sites contributing to the Thames through Time publication*

Right: *A pit alignment recently discovered during excavations at Cotswold Water Park one of the sites contributing to the Thames through Time publication*

Below: *An Iron Age landscape under excavation at Gravelly Guy, Stanton Harcourt, Oxfordshire one of the sites contributing to the Thames through Time publication*

© Oxford Archaeology

EDUCATION, OUTREACH, ACCESS AND COMMUNITY

Broadening access to the historic environment.

Promoting understanding of and access to the historic environment is a core objective of English Heritage. All projects funded under the ALSF scheme, where possible, include outreach, education, access and community involvement initiatives. The following projects were commissioned to specifically address outreach.

The **Solent Aggregates to Outreach** project by the Hampshire and Wight Trust for Maritime Archaeology was inspired by the underwater archaeological reserve of the Solent and Sea Wight area. Using information gained from previous work related to aggregate extraction this project will produce teaching and presentation packs for schools, local archaeological groups, community groups and the general public, which will use information on both aggregate extraction and the marine historic environment to raise awareness of conservation issues. Representatives from the aggregate industry are assisting the project with offers of resources including access to important information, pictures, animation, survey data and artefacts.

The **Testwood Lakes, Hampshire: Building Bridges** project was managed by the Hampshire and Isle of Wight Wildlife Trust. The Testwood area contains lakes and grassland covering fifty-five hectares of the parishes of Netley Marsh and Totton, to the west of Southampton, created in the late 1990s by the extraction of 1.3 million tonnes of sand and gravel from the floodplains of the rivers Blackwater and Test. The work which was monitored by Wessex Archaeology uncovered extraordinary remains from the late Iron Age to the mid Bronze Age, including the earliest definitely identified bridge in England, a fragment of a sea going boat, and other well preserved organic artefacts. The ALSF project, which involved the production of educational and interpretive materials, has promoted a wider understanding of the benefits of well planned and delivered aggregate extraction, and has demonstrated, particularly to the local community, the archaeological importance of the site and the past environment of the Lakes.

The **Peterborough's First People** project updates the story of the first known inhabitants of Peterborough through the use of information gained from development led archaeological field work over the last twenty years on sites associated with sand and gravel extraction.

HWTMA divers diving on a site called 'The Mystery Wreck off Horsetail Sands' a site being used as a case study in the Aggregates to Outreach project

© Jill Hummerstone, English Heritage

Phil Harding of "Time Team" at the Testwood Lakes opening day

The Peterborough Museum and Art Gallery is the principle museum in the region and currently has approximately 37,000 plus visitors per year including 7,000 children from local schools who participate in events and educational programmes. ALSF funding has enabled the creation of collections of material and replica items for handling and display, and has demonstrated that by allowing people to make a physical connection with artefacts they have a greater appreciation of their function in relation to the local historical environment. These innovative displays have also enabled mineral operators who commission archaeological work in the area to become more involved in the presentation and long term care of archaeological materials found as a result of extraction.

The **Cotswold Water Park** project was commissioned specifically to develop strategies for the interpretation of the historic environment. The site which lies on the county boundaries of Wiltshire, Gloucestershire and Oxfordshire as well as extending into the borough of Swindon, is of national importance for wintering and breeding wetland birds and many areas are designated SSSIs. Large scale sand and gravel extraction has taken place in the area since the 1920s thus creating what is now a unique landscape.

The modern gravel extraction has allowed an unparalleled opportunity to examine large areas of the landscape, and has shown that the Upper Thames area is one of the richest and most intensively settled landscapes in the region. The earliest documented activity goes back to Palaeolithic period with casual finds of flint axes. The first substantive evidence for settlement starts in the Neolithic period and there is a steady increase in activity throughout the Bronze Age, Iron Age, Romano-British and medieval periods through to modern settlements. Such an extensive history has meant that themes for educational and recreational purposes cover a wide chronological span and make the site particularly accessible to a wider audience with varying interests.

These projects and others like them are enabling people to better understand and value their local environment. They encourage a sense of pride and ownership and directly involve the local population in the long-term care of the environment in aggregate producing areas.

View across lakes at Somerford Keynes, where excavations produced evidence of Iron Age and Roman activity at the Cotswold Water Park

© Oxford Archaeology

PROJECT LISTING

ALSF Projects 2004.

Project Name	Responsible Organisation	Grant Paid
Aggregate Extraction in the Ribble Valley	University of Liverpool	£125,000.00
Aggregate Extraction Related Archaeology in England: A Survey	University of Exeter	£14,000.00
Aggregates Industry in the Trent Valley: A History and Archaeology	University of Sheffield (ARCUS)	£23,000.00
Achaeological Cropmark Landscapes on the Magnesian Limestone of Yorkshire	West Yorkshire Archaeology Service	£153,952.50
Archaeology and the Quarry Products Industry	Institute of Field Archaeologists	£5,328.00
Archaeology at the Water Park	Oxford Archaeology	£10,762.00
Beckford, Worcestershire	Gloucestershire County Council	£73,200.00
Berinsfield, Mount Farm	Oxford Archaeology	£18,000.00
Bestwall Quarry, Dorset	AC Archaeology	£125,944.81
Breedon-on-the-Hill: Conservation Plan	Leicestershire County Council	£1,600.00
Characterising, modelling and managing the Vale of Pickering	Landscape Research Centre	£16,000.00
Chronology of British Agregates using Amino Acid Racemization & Degradation	York University	£23,070.00
Cleveland Farm, Ashton Keynes, Wiltshire	Wessex Archaeology	£18,800.00
Coln Gravel, Fairford, Gloucestershire	Oxford Archaeology	£11,793.75
Cotswold Water Park: Interpreting the Historic Environment	Cotswold Water Park Society	£34,038.50
Developing Predictive Modelling and Survey Techniques for North West England	Terra Nova Ltd.	£53,489.75
England's Shipping R2 - Liverpool Bay/Bristol	Wessex Archaeology	£3,192.00
Enhancing Our Understanding: Naviational Hazards	Bournemouth University	£60,939.75
Gloucestershire - Assessment of Archaeological Resource in Aggregate Areas	Gloucestershire County Council	£12,314.00
Greater Thames Survey of Known Mineral Extraction Sites	Essex County Council	£12,000.00
Gwithian, Cornwall: Excavations 1949-1963	Cornwall County Council	£26,283.00
Hartshill, Berkshire	Cotswold Archaeological Trust Ltd.	£7,729.00
Impact of Aggregates Extraction on the Historic Environment	University College London	£75,000.00
Kendall Fell Quarry, Kendall, Cumbria	Oxford Archaeology North	£21,871.25
Late Quaternary Landscape History of the Swale-Ure Washlands	University of Durham	£65,000.00

Project Name	Responsible Organisation	Grant Paid
Lead Rakes	Peak District National Park Authority	£5,000.00
Lodge Farm, St. Osyth, Essex	Essex County Council	£17,183.00
Lower Lugg Valley, Herefordshire	Herefordshire Council	£3,250.00
Lydd, Romney Marsh, Kent: Medieval Evidence	University College London	£2,938.00
Mapping the Sub-surface Drift Geology of Greater London Gravel Extraction Areas (Lea Valley)	Museum of London Archaeological Service	£55,000.00
Medway Valley Palaeolithic Project	Southampton University	£146,029.37
Merrygill Viaduct, Kirkby Stephen, Cumbria	Northern Viaduct Trust	£27,390.00
Middle Thames Northern Tributaries 2002	Essex County Council	£50,000.00
Modelling Exclusion Zones for Marine Aggregate Dredging	Southampton University	£154,150.00
Multi-spectral Imaging & Thermal-decay Mapping on Sands & Gravel Bearing sub-soils	Landscape Research Centre	£70,750.00
National Ice-Age Network (Birmingham Archaeology)	Birmingham Archaeology	£116,797.00
National Ice-Age Network (Royal Holloway)	Royal Holloway, University of London	£28,924.00
Nene Valley: Archaeological and Environmental Synthesis	Northamptonshire County Council	£70,900.00
On the Importance of Shipwrecks	Wessex Archaeology	£25,862.00
Palaeolithic Rivers of South-West Britain	University of Exeter	£42,482.00
Peterborough's First People	Peterborough Museum and Art Gallery	£56,000.00
Predictive Modelling of Multi-Period Geoarchaeological resouces at a River Confluence	University of Exeter	£115,000.00
Radiocarbon Dating Bone Samples recovered from Gravel Sites	Oxford University	£15,000.00
Radiocarbon Dating Costs Related to ALSF Projects	Oxford Radiocarbon Accelerator Unit	£4,707.00
Radiocarbon Dating Costs Related to ALSF Projects	University of Groningen	£7,871.85
Radiocarbon Dating Costs Related to ALSF Projects	Scotish Universities Environmental Research Centre	£10,450.00
Radiocarbon Dating Costs Related to ALSF Projects (Charcoal IDs)	Rowena Gale	£116.00
Rapid Archaeological Site Surveying & Evaluation in the Marine Environment	University of St. Andrews	£118,400.00
River Severn ALSF Seminar	Worcestershire County Council	£3,226.75

Project Name	Responsible Organisation	Grant Paid
Rossendale: Valley of Stone	Groundwork Rossendale	£80,000.00
Sandhills Project, Alderley Edge, Cheshire	University of Manchester	£10,902.34
Seabed Prehistory R2	Wessex Archaeology	£141,517.00
Seascapes: Marine HLC	Wessex Archaeology	£55,000.00
Severn Estuary: Assessment of Sources for Appraisal of Maritime Aggregate Extraction	Museum of London Archaeological Service	£17,000.00
Sinah Common Gun Site, Hayling Island, Hampshire	Hockley and Dawson	£1,468.75
Solent Aggregates to Outreach	Hampshire and Wight Trust for Maritime Archaeology	£5,481.25
Somerset - Assessment of Archaeological Resource in Aggregate Areas	Somerset County Council	£61,600.00
Southworth Hall Farm, Southworth, Cheshire	National Museums and Galleries, Liverpool	£4,000.00
Streets For All: Design	Evolve	£66,397.19
Streets For All: Printing	Colourhouse	£75,270.00
Suffolk - Assessment of Archaeological Resource in Aggregate Areas	Suffolk County Council	£70,600.00
Testwood Lakes, Hants: Building Bridges Project	Hampshire and Wight Trust for Maritime Archaeology	£17,780.42
Thames through Time Volume I: Up to 1500 B.C.	Oxford Archaeology	£61,494.72
Thames through Time Volume II: 1500 - 1 B.C.	Oxford Archaeology	£44,766.00
Thames through Time Volume III: A.D. 1 - 1000	Oxford Archaeology	£56,625.41
The Depositional and Landscape Histories of Dungeness Foreland and the Port of Rye	University of Durham	£25,000.00
The Finest Prospect in all England: A History of South Essex from the First People to the Saxons	Essex County Council	£6,898.00
The Lower and Middle Palaeolithic Occupation of the Middle and Lower Trent Catchment	Durham University	£101,586.25
Thornborough Henges: Air Photo Mapping	West Yorkshire Archaeology Service	£22,233.76
Till-Tweed Catchment Aggregates and Archaeology Project	Newcastle University	£100,000.00
Titterstones Clee Project, Shropshire	Birmingham Archaeology	£51,200.00
Trent Valley Geoarchaeology	Birmingham Archaeology	£71,250.00
Trent Valley Gravels Geophysics Assessment	Trent and Peak Archaeological Unit	£3,540.95
Trent Valley Survey 2002	Trent and Peak Archaeological Unit	£474.35
Trent Valley: Making Archaeology Matter	York Archaeological Trust	£5,000.00

Project Name	Responsible Organisation	Grant Paid
Understanding the East London Gravels	Museum of London Archaeological Service	£140,000.00
Understanding Water Table Dynamics in Relation to Aggregate Extraction Sites	Hull University	£70,200.25
Wasperton Anglo-Saxon Cemetery, Warks	York University	£12,003.50
Where Rivers Meet: Landscape, Ritual, Settlement and the Archaeology of River Gravels	Birmingham Archaeology	£39,125.75
Willington, Derbyshire	Leicester University	£37,000.00
Worcestershire Resource Assessment	Worcestershire County Council	£50,541.87
Wrecks on the Seabed R2	Wessex Archaeology	£218,458.00

Further details of all projects funded through the English Heritage ALSF scheme, and links to project websites, can be found through the ALSF Projects page on the English Heritage website (http://www.english-heritage.org.uk/).

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For further details of the English Heritage ALSF scheme please refer to the English Heritage website (www.english-heritage.org.uk/ALSF) or contact:

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This annual report was brought to you by Buzz Busby, Kath Buxton, Tim Cromack, Sarah Cole, Sara Cooper, Jade Donovan, Mark Dunkley, Jen Heathcote, Jonathan Last and Sarah Reilly.

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