

**ASSESSING THE HISTORIC ENVIRONMENT OF THE EAST SUSSEX AGGREGATE
RESOURCE**

AGGREGATES LEVY SUSTAINABILITY SCHEME

GENERIC REPORT



**Archaeology Section
Environmental Advice Team
East Sussex County Council
April 2009**



Casper Johnson and Greg Chuter
East Sussex County Council
01273 481608
county.archaeology@eastsussex.gov.uk

April 2009

Contents

1	INTRODUCTION.....	1
1.1	Project Summary.....	1
1.2	Business case	2
2	AIMS, OBJECTIVES & OUTPUTS.....	2
2.1	Key Aims.....	2
2.2	Objectives	3
2.3	Project Products	3
2.4	Project links.....	3
3	BACKGROUND.....	4
3.1	Previous Work.....	4
3.2	Geological background	5
3.3	Archaeological background.....	6
3.4	Aggregate extraction background.....	7
3.5	Planning background	7
4	METHODOLOGY.....	9
4.1	The Project Team	9
4.2	Stakeholders	10
4.3	Communication.....	10
4.4	Project stages	10
5	PROJECT RESULTS: GEOLOGY, SOILS AND TOPOGRAPHY	16
5.1	Folkestone Sandstone Beds Project Area.....	17
5.2	Ouse Valley River Terrace Gravels Project Area.....	17
5.3	Cuckmere Valley River Terrace gravels Project Area	17
5.4	Crumbles Storm Beach Gravel Deposits Project Area	18
5.5	Rye Bay Storm Beach Gravel Deposits Project Area.....	19
6	PROJECT RESULTS: HISTORIC ENVIRONMENT.....	19
6.1	Palaeolithic to Neolithic Periods (c. 500,000 – c. 2,000 BC)	19
6.2	Bronze Age and Iron Age Periods (2000BC – 43AD).....	22
6.3	Roman Period (43AD – 410AD)	24
6.4	Saxon Period (410AD – 1066).....	27
6.5	Medieval Period (1066 – 1550).....	28
6.6	Post-medieval and Modern Periods (1550 – present)	30
6.7	Historic Extraction.....	34
7	CONCLUSIONS.....	35
7.1	Summary of increase in knowledge resulting from the project.....	35

7.2	East Sussex Historic Environment Record (ESHER)	35
7.3	Historic Environment Potential	36
7.4	Historic Environment Value/Importance	36
7.5	Aerial Photography	36
7.6	Project Area Summaries	37
7.7	Research themes	40
<i>BIBLIOGRAPHY</i>		42
<i>APPENDIX 1: KEY STAKEHOLDERS</i>		43

ASSESSING THE HISTORIC ENVIRONMENT OF THE EAST SUSSEX AGGREGATE RESOURCE

AGGREGATES LEVY SUSTAINABILITY SCHEME

1 INTRODUCTION

This report sets out the results of an assessment of the historic environment of the East Sussex aggregate resource funded by English Heritage from the Aggregates Levy Sustainability Fund (ALSF). The survey area comprises the historic county of East Sussex¹ and focuses on five key areas of aggregate resource (Figure 1):

- Folkestone Sand (including Plumpton and Novington area)
- River Terrace Gravels (Ouse Valleys)
- River Terrace Gravels (Cuckmere Valleys)
- Storm Beach Gravels (Crumbles, Eastbourne)
- Storm Beach Gravels (Rye Bay)

The broad aim of the project was to provide a consistent understanding of the historic environment across the areas of sand and gravel aggregate resource, including areas of past, present and future aggregate extraction, in order to inform a range of decision-making and interpretation. The following aspects of the historic environment have been considered:

- Geology and Palaeo-environment
- Archaeology
- Buildings
- Landscape

1.1 Project Summary

The project was undertaken between August 2007 and March 2008 as a partnership between East Sussex County Council's Archaeology Section and local specialists during 2007-2008, funded by the ALSF and overseen by English Heritage. It has transformed the country's Historic Environment Record (HER) for its largest areas of sand and gravel resources. These comprise a high proportion of its coastline and the study areas approach a quarter of the total area of the County.

The Archaeology Section put together draft desk-based assessments of these areas using the HER. These were then reviewed by local technical experts in palaeoarchaeology, geoarchaeology, prehistory and post-medieval, military and industrial archaeology to define gaps in the HER and identify new sites.

As a result, nearly a thousand new monument records were added to the HER, increasing the total number for the county by 13%. The HER's coverage of military sites, particularly East Sussex's unique range of Second World War coastal defences, has been significantly enhanced.

This project contributes to future development control with partner authorities, minerals planning with County Council colleagues and the South-East Historic Environment Research Framework.

¹ Although East Sussex County Council provides archaeological advice to Brighton and Hove City Council, there is no aggregate resource in that area which was the subject of assessment during this project.

The success of the partnership has shown the potential of using local specialist expertise to enhance HERs.

1.2 Business case

The project matches the criteria in Objective 2 of ALSF (strategic mitigation of future extraction) and the analysis of existing data and its wider dissemination matches Objective 3 (mitigation of past extraction).

In order to have clear parameters this study focused on areas of **sand and gravel** aggregate resources. This decision was made in order to reduce the project complexity and ensure completion of the project within a relatively tight time frame.

Whilst aggregate extraction in East Sussex is relatively limited when compared with other counties in the South East, most notably Kent, there are areas where aggregate extraction has impacted on the historic environment in the past and where it will occur in the future. East Sussex has seen considerably more extraction of minerals such as chalk, iron ore, clay and gypsum than neighbouring counties and whilst some of these materials have been used as aggregate or have aggregate associated with them, they do not form part of this study.

Land-won aggregate workings in East Sussex (and the South East generally) have become increasingly difficult to find, due in part to environmental constraints. This has led to increases in marine-won aggregates and imported aggregates and a growing use of recycled materials.

The County of East Sussex is recognised for its outstanding areas of international and national environmental importance. There are two designated Areas of Outstanding Natural Beauty (AONBs), the Sussex Downs and the High Weald, which cover approximately two thirds of the county. The Government has approved the creation of a new 'South Downs National Park' to include the Sussex Downs AONB. It is worth noting that the part of the county that is not covered by the above designations has been shown by this project to also be of very high historic environment value.

It has been estimated that of the 14.8mt of primary aggregate sales in the South East in 2001, 1.7mt (12%) was produced from sites in or partly within AONBs, nearly 1mt (7%) from sites in or partly within SSSI/NNR, nearly 700,000 tonnes (4%) from sites in or partly within SAC/SPA designations, and over 5mt (36%) from sites within or partly within Green Belt (South East Regional Assembly data). The Government has published RPG9 Waste and Minerals (2006), which apportions the regional land-won aggregates supply to mineral planning authorities (Policy M3). East Sussex County Council Development, Waste and Minerals Group will use the enhanced historic environment data and information for their developing minerals planning documents.

The South East Historic Environment Research Framework (SEHERF) project commenced in January 2007. This study has been informed by the work of period and thematic specialists and has allowed knowledge from the ALSF project to be fed into the SEHERF.

2 AIMS, OBJECTIVES & OUTPUTS

2.1 Key Aims

The aim of this project was to provide a consistent understanding of the historic environment across the chosen areas of aggregate resource, including areas of past, present and future aggregate extraction, in order to inform decision-making and interpretation. In particular the project aimed to contribute to and enhance the following:

- East Sussex County Council Minerals and Waste planning documents
- East Sussex County Council Historic Environment Record
- South East Historic Environment Research Framework
- ESCC staff and project stakeholder understanding of the relationships between geology and the historic environment

2.2 Objectives

The project has achieved the following:

- O1** Contributed to emerging East Sussex County Council Minerals and Waste planning documents/strategies
- O2** Enhanced the East Sussex County Council Historic Environment Record (HER)
- O3** Contributed to the South East Historic Environment Research Framework
- O4** Provided an enhanced basis to inform future spatial planning
- O5** Increased ESCC staff and key stakeholder knowledge of the geology and historic environment of the relevant areas

2.3 Project Products

- PO1** A final report
- PO2** Site summary documents (5 separate Desk-based Assessments)
- PO3** A leaflet
- PO4** Enhanced HER
- PO5** PowerPoint presentation & newsletter article
- PO6** Project archive

2.4 Project links

Inclusion of specialists and dissemination of the project results has allowed a number of links to other projects to be made.

Raised Beach Mapping Project

In the Ouse and Cuckmere valleys study area, this project looked at the river terrace gravels, their extent and their archaeological potential. Dr Matthew Pope has acted as a specialist advisor to this project and the results are being fed back into the Raised Beach Mapping Project. A number of recommendations for future research are made in Section 6 below.

South East Historic Environment Research Project

Aspects of the resource assessment, research questions and future strategy suggestions, derived from this project will be fed into the developing South Historic Environment Research Framework. This will be achieved by liaison with Dr Jake Weekes (SEHERF) Project Officer and where applicable directly to thematic group leaders.

Local Societies

Dr Martyn Waller, a key member of the Romney Marsh Research Trust acted as a specialist consultant to the project. This has allowed closer links between ES HER and the RMRT to be developed, including linking products from the ALSF-funded Rye Bay work. Elsewhere, the same approach will be adopted with local societies, agencies and other interested parties in the other three study areas.

Projects such as this one act as the catalyst to bring more comprehensive understanding of the historic environment into the East Sussex HER where it is then available for future applications, whether in spatial planning, research or education.

We intend to seek to generate further projects and partnership with local archaeological societies to continue the work of assessing the historic environment resource in the areas around the defined aggregate resources of sands and gravels, so that, for example, specific parts of a District or Borough could see their HER enhanced to the same level that has been achieved through this project.

Environmental groups

It is often the case that former gravel extraction sites become important for biodiversity – indeed similar sites are created to encourage wildlife even without extraction of minerals. It is hoped that by highlighting the historic environment value of the chosen aggregate resource areas, the project will contribute to developing projects that balance the needs of cultural and natural heritage management. For example a copy of Rye Bay Desk-based Assessment will be sent to Dr B Yates, Reserve Manager, Rye Harbour Nature Reserve.

Characterisation projects

This project comes at a particularly important time for the review of the historic environment in East Sussex. A number of projects have been initiated to enhance the HER and begin the process of developing a more comprehensive model of the evidence for past human activity in the county. These include the Historic Landscape Characterisation (HLC) project, the Extensive Urban Survey (EUS) project and area-specific studies, such as that for the Ashdown Forest Higher Level Stewardship agreement. Lessons learnt from these projects will allow a clearer understanding of the strengths and weaknesses of the existing data sets and hence contribute to the overall aim of developing a comprehensive county HER.

Access to the digitized HLC Lewes District data has been useful in identifying a number of medieval and post-medieval settlements and farmsteads not apparent from the analysis of the HER and historic maps, as well as confirming or updating the extents of those already recorded. This showed a remarkable survival of large tracts of the medieval landscape, as well identifying later post-medieval and modern enclosure. As it is likely that this pattern is reflected outside the project study areas, the work has provided a glimpse of the potential for future analysis of the full HLC data as a key component of the HER.

National Mapping Programme

East Sussex County Council will provide time to contribute to the study of aerial photographs for this project in order to link with the English Heritage National Mapping Programme (more details are given below).

Sussex Depicted

East Sussex County Council (East Sussex Record Office, Libraries and Environment) are proposing to make information on the historic environment publicly available via a dedicated website to be called Sussex Depicted. The results of this project will provide the basis for useful period summaries for that website.

3 BACKGROUND

3.1 Previous Work

There have been no similar known archaeological surveys of the aggregate resource in East Sussex. Each of the aggregate resource areas has had archaeological research and study in some form, but the evidence was patchy and the information about the historic environment is spread out in different reports and locations. This study has addressed the historic environment holistically by recognising the key elements of geology/paleo-environment, archaeology, buildings and landscape bringing this information together in the county Historic Environment Record where it is now available for communication to a range of audiences and for planning decision making.

ALSF funding has been used to good effect in neighbouring areas such as across the border in Kent. In the Romney Marsh there has been considerable archaeological work within areas of gravel, mainly but not entirely as a response to aggregate extraction. These include the important later prehistoric and medieval sites at Lydd.

The ALSF-funded work for the Port of Rye (e.g. Long et. al. 2007) has been particularly useful in helping to underpin the resource assessment for the Rye Bay area and in bringing an understanding of that work into the HER and East Sussex County Council Archaeology section.

3.2 Geological background

The geological structure of East Sussex and Brighton and Hove can be characterised as a broad dome, or anticline, which trends east-west reaching its highest point in Ashdown Forest. This gives expression to a varied and highly attractive landscape. For the purposes of the East Sussex and Brighton and Hove Minerals Local Plan (1999) the area has been subdivided into four distinctive landscapes:

- The High Weald
- The Low Weald
- The Chalk Downs
- The Coastal Marshes

The High Weald covers much of the northern, central and eastern parts of the County. It is a faulted structure comprising clays and sandstones, collectively known as the Hastings Beds. The area is historically important for its relationship to the Wealden iron industry, but in recent years commercial quarrying has been limited. Today, surface operations are confined to clay extraction in association with the brick industry. Purbeck (or late Jurassic) rocks are mined for gypsum at Mountfield, near Battle.

The Low Weald is a generally low undulating clay vale which separates the High Weald from the Chalk Downs to the south. The surface geology is mainly Weald Clay, but narrow bands of Gault Clay and the Lower and Upper Greensand outcrop close to the scarp face of the Downs. An extensive brick and tile industry developed in the clay vale during the last century and despite rationalisation it remains economically important today. Building sand is extracted from the narrow Lower Greensand outcrop and includes the existing Novington Sand Pit.

The Chalk Downs form a significant line of hills extending along the coast westwards from Eastbourne. They produce an open, rolling landscape, dissected by the rivers Ouse and Cuckmere which contain river gravels as yet little exploited. The chalk has had a number of quarries, especially around Lewes. The development of the cement industry led to increased demand for chalk, centred on the Ouse Valley.

The Coastal Marshes represent a fourth geological sub-area. These are located between Eastbourne and Bexhill and in the Rye Bay/Camber area. Inundated by the sea following the last glaciations and reclaimed for agricultural purposes from late prehistoric and early historic times, these areas comprise large flat sheets of alluvium, extending inland over the Pevensy Levels and Romney Marsh. There are extensive storm beach gravel deposits along the coast which have been exploited commercially, particularly at the Crumbles, Eastbourne, between Winchelsea Beach and Rye Harbour, at Camber, and close to the Kent border. Further beach deposits remain unworked. There are now established nature conservation interests in these areas, much of which is designated.

The relative lack of terrestrial aggregate deposits, when compared with some neighbouring counties, has seen considerable marine extraction off the East Sussex coast.

3.3 Archaeological background

The historic environment plays a key role in defining many aspects of the landscape and present day environment of East Sussex, from castles to hedgerows and farmland. However at the outset of this project it was clear that the county-based Sites and Monuments Record (SMR) or Historic Environment Record (HER) (as it is now called) did not reflect recent archaeological survey by a range of researchers, and that its value for other researchers and as a decision-making tool was therefore limited.

East Sussex has a rich historic environment resource, and recent developments in the appreciation and understanding of what the historic environment comprises have developed rapidly. This meant that the HER needed to be developed to meet the challenges of spatial planning. This was particularly true of the aggregate resource areas covered in this project, where the level of information about the historic environment before this project was very uneven.

An overview of resources and constraints was prepared for DETR (the Department for the Environment, Transport and the Regions, a predecessor of DEFRA) in 1999 (BGS 1999). The map accompanying that report identified environmental constraints only at the level of formal designation (AONB, SSSI, National Nature Reserves, and Scheduled Ancient Monuments): consequently a large proportion of historic environment assets was excluded from consideration. In addition, recent developer-funded work in East Sussex has demonstrated that the HER does not provide a comprehensive picture of the historic environment potential: site or area-specific surveys are required to allow strategic proposals to be evaluated and informed decisions to be made.

Study Area 1 – Folkestone Sandstone Beds (Bedrock)

These comprise a thin band (c.300m wide) aligned east to west and outcropping between the Gault Clay to the south and Lower Greensand to the north. This geology runs from the beyond the county border in the west (TQ21041576) to near Novington Oak in the east (TQ37571454). The known archaeological resource comprises a medium to high concentration of sites (30+) ranging in date from Palaeolithic to post-medieval. **On completion of this project an additional 59 sites had been identified and added to the HER.**

Study Area 2 – River Terrace deposits (Superficial) (Ouse)

These comprise irregular bands along valley margins. The known archaeological resource comprises a medium number of sites (150+) ranging in date from the Palaeolithic to post-medieval. **On completion of this project an additional 280 sites had been identified and added to the HER.**

Study Area 3 – River Terrace deposits (Superficial) (Cuckmere)

These comprise irregular bands along valley margins. The known archaeological resource comprises a medium number of sites (200+) ranging in date from the Palaeolithic to post-medieval. **On completion of this project an additional 154 sites had been identified and added to the HER.**

Study Area 4 – Storm Beach deposits (Superficial) (Eastbourne, The Crumbles).

These comprise a wide band of mainly gravel deposits abutting alluvial deposits and the modern coastline. The known archaeological resource comprises a low quantity of sites (c.30) ranging in date from the later medieval to post-medieval. **On completion of this project an additional 147 sites had been identified and added to the HER.**

Study Area 5 – Storm Beach deposits (Superficial) (Rye Bay).

These comprise linear bands of mainly gravel abutting tidal flat, reclaimed marsh and the modern coastline. The known archaeological resource comprises a relatively low quantity of

sites (c.30) ranging in date from late medieval to post-medieval. ***On completion of this project an additional 121 sites had been identified and added to the HER.***

3.4 Aggregate extraction background

National Core Output Indicators for the production of Annual Monitoring Reports by Local Planning Authorities require reporting on the production of primary land-won aggregates. Policy M3 of the Regional Planning Guidance for the South East (RPG9) Waste and Minerals requires the County Council to plan to maintain a land-bank of at least seven years of planning permissions for land-won sand and gravel, which is sufficient to deliver 10,000 tonnes per annum up to 2016. Requirements of aggregate reserves over the 16 years in the period included in RPG9 Waste and Minerals (2001 – 2016 inclusive) equates to 16 x 10,000 tonnes. East Sussex and Brighton and Hove is required, therefore, to make provision to ensure sufficient permitted reserves of 160,000 tonnes of construction aggregate sand and gravel in a period up to 2016. The current allocations are being renewed as part of future modifications to the South East Plan, which is being prepared to replace RPG9.

The level of production in East Sussex is very low by regional standards. There are valid permissions for sand and gravel extraction in the County but activity is intermittent and is likely to remain so in the near future.

Existing Operation Sites and Permitted Aggregate Reserves (March 2006)

Site	Material	Permitted Reserve
Nook Beach/Castlewater	Sand and Gravel	Confidential figure
Stanton's Farm (Novington Sandpit)	Sand and Gravel	389,000 tonnes
Scotney Court	Sand and Gravel	935,000 tonnes
Scotney Court Extension/Wall Farm	Sand and Gravel	3,230,000 tonnes
Total:		4,545,000 tonnes

Source: ESCC Annual Monitoring Report 2005/2006 Minerals & Waste (Dec 2006)

Future Actions/Comments

There are very low levels of viable resources for land-won aggregates in the South East Plan area and there are relatively few sites in production. Despite this fact, nationally-set economic and housing objectives are creating a considerable demand for aggregates, which has implications for extraction activities within the county well into the future. It should be noted that the project matches the criteria in Objective 2 of ALSF (strategic mitigation of future extraction) as well as analysing existing data the wider dissemination of which will match Objective 3 (mitigation of past extraction).

3.5 Planning background

East Sussex County Council

The County Council is responsible for setting policies for minerals and waste development, dealing with applications for minerals and waste development and dealing with planning applications for its own service developments such as schools and libraries. For these reasons, this project, undertaken by East Sussex County Council Archaeology section with external specialist consultants, provides key guidance and information directly where it is most useful. At a wider level, the provision for involvement of the public, groups and operators in the process of contributing to setting future planning policies and considering planning applications is set out in the East Sussex Statement of Community Involvement (SCI) (East Sussex County Council, December 2006).

The Minerals and Waste Development Scheme (MWDS)

This sets out the titles and timetables of relevant documents to be prepared under the 2004 Planning and Compulsory Purchase Act. The main documents have to be accompanied by a Sustainability Appraisal (SA), which, along with social and economic issues, will appraise the environmental effects of the planning strategies and policies. It is likely that in pursuing the objectives of sustainable development the SA will include requests to carry out Strategic Environmental Assessments (SEA) of plans and programmes. This will demand good data about the historic environment, which at present is lacking in some areas. This project provides that information for areas of terrestrial aggregate resource (sand and gravel).

The Waste and Minerals Development Framework

This project has been undertaken at a time of considerable change for planning as well as heritage protection. The relatively new planning system (Planning and Compulsory Purchase Act, 2004) has introduced the concept of core strategies and site allocation documents. This means the replacement of the Minerals and Waste Local Plan with a Waste and Minerals Development Framework, Regional Planning Guidance by a Regional Spatial Strategy and Supplementary Planning Guidance by Supplementary Planning Documents (SPDs). It is anticipated that the new system will speed up the preparation of plans, ensure plans are kept up to date (the idea of site documents separate from the core strategy), achieve more effective community involvement and ensure the right development, in the right place at the right time.

The Waste and Minerals Development Framework (WMDF) will comprise a set of Local Development Documents (LDDs) that set out the spatial strategy for the area and include Development Plan Documents (DPDs), such as those for minerals and waste. Along with Supplementary Planning Documents, which expand on policies and provide advice, these documents make up the County Council's Local Development Framework (the Waste and Minerals Development Framework (WMDF), which will comprise the following:

- Adopted Plans
- Core Strategy
- Site Allocation Documents
- Proposals Map
- Supplementary Planning Documents
- Local Development Scheme
- Statement of Community Involvement (SCI) -
- Annual Monitoring Report

The increased understanding of the historic environment for the aggregate areas developed during this project will be useful for the development of both the Core Strategy document and the Minerals Sites Supplementary Planning Document. The Core Strategy document is being consulted Spring 2008 with the Minerals Sites DPD to follow. The timetables for both are being affected by regional and national decisions on how much aggregate each county should plan to make available. What ever the outcome of this process, the results of this project will allow more informed decisions to be made.

The participation of minerals planners in this project has allowed for discussion and awareness-raising about two external documents produced during the period of this project. The first is a guidance document, [Planning for Mineral Extraction and Archaeology: a practice guide](#), prepared by the Minerals and Historic Environment Forum as an aid to planning authorities, mineral planners, operators, archaeologists and consultants. The document will no doubt provide a valuable guide to established approaches for identifying, evaluating and making informed decisions for mitigating potential impacts from future aggregate extraction. The second document, is the English Heritage position paper entitled [Mineral Extraction and the Historic Environment](#) (March 2008). This sets out a useful overview of the wider mineral extraction industry and its history as well as its impact today on the historic environment.

4 METHODOLOGY

The project followed the English Heritage Management of Research Projects in the Historic Environment (MoRPHE) guidance and comprised the following key elements:

Project Planning (Start-up)

- Define scope and usefulness of project through consultation
- Outline project proposal
- Consider risks

Review Point R1

Initiation (Project Design preparation)

- Agree project team, audience and outputs (products)
- Agree project design including aims, objectives, methods and costs & Risk Log
- Agree review points

Review Point R2

Project Execution

- Project Management (Highlight Reports, Issue Logs, review Risk Log)
- Define the aggregate resource/study areas (Stage 2)
- Assess Aerial Photographs (Stage 3)
- Carry out desk-based assessment to define and assess the historic environment resource for each study area (Stage 4)
- Carry out field visits to four study areas (Stage 5)
- Carry out HER enhancement – first tranche (Stage 6)
- Prepare data for specialists (Stage 7)
- Carry out specialist assessments (Stage 8)
- Prepare Project Products (including HER enhancement second tranche) (Stage 9)
- Communicate results (Stage 10)
- Project Archive (Stage 11)

Review Point R3

Closure

4.1 The Project Team

The project was managed by Casper Johnson (County Archaeologist, East Sussex County Council), working with a Project Board comprising the Sponsor, English Heritage/ALSF, represented by Paul Roberts (English Heritage) and Jill Hummerstone (English Heritage), and the Key Stakeholder Tony Cook (Group Manager Development, Waste & Minerals, East Sussex County Council).

The project officer was Greg Chuter (East Sussex County Council), with specialist input from Dr Matthew Pope (University College London), Dr Martin Bates (University of Wales), Martyn Waller (Kingston University), Ron Martin (Sussex Industrial Archaeology Society), Luke Barber (Sussex Archaeological Society) and Christopher Butler (defence archaeology consultant). Minerals planning advice was provided by Tony Cook (Group Manager, Development, Minerals and Waste, East Sussex County Council). Anne Locke

(archaeological consultant) subsequently added the new data arising from the project to the East Sussex Historic Environment Record (HER).

4.2 Stakeholders

The Sponsors, Initial Users and Curators are well represented within the Project Team, and a list of Key Stakeholders is given at Appendix 1.

4.3 Communication

The Project Manager worked daily with the Project Officer in the same office. The wider project team was kept informed of progress by email and circulation of Highlight Reports. The Project Board met three times during Project Execution. The meetings were held at County Hall, Lewes with meeting room costs provided by East Sussex County Council.

4.4 Project stages

The project was carried out in a number of stages to address the aims and objectives set out above. The methodology followed the outline methodology for the Warwickshire and Gloucestershire surveys *The [Aggregate Landscape of Gloucestershire; Predicting the Archaeological Resource](#)* (David Mullin 2004).

Stage 1: Prepare and submit Project Design.

Stage 2: Define the geological resource and five study areas

This consisted of the identification of the relevant geologies and their spatial extent, using BGS data (which had already been purchased by the ESCC Archaeology Service in vector line work format). A GIS layer was developed based on data derived from the (1:10,000/1:10,560 scale) maps and surveys to produce a customised thematic map showing the extent of the aggregate resource (sands and gravels). The geological aggregate resource was defined as Folkestone Beds sands, river terrace gravel and storm beach deposits, resulting in five study areas being identified. The Study Areas covered the recorded geological distribution and 1km corridor either side. All areas of selected sands and gravels were examined including areas of sand and gravel outside the current minerals plan allocations, which have the potential to be exploited within the next 15 to 30 years. Limited geo-archaeological borehole log data was available for the five areas, but it was not possible to assess the huge volume of potentially available geotechnical/borehole data. The information from these data sources and historic mapping was used to check the BGS mapping.

The output from this Stage was an enhanced GIS layer of aggregate resource extent, which acted as a base map for the Stage 3 and later Stages. A map showing the locations and extents of the five studies areas in presented as Figure 1.

Stage 3: Assessment of the historic environment resource from aerial photographs

There is no National Mapping Project (NMP) data for ESCC at present. In agreement with the EH Project Officer Jill Hummerstone and Helen Winton of the EH Aerial Survey, Swindon, the project comprised a rapid identification exercise and no detailed plotting from aerial photographs (APs) was undertaken, as it was considered that this might duplicate future NMP standard work. For this project the assessment was undertaken by the Project Officer as a non-ALSF funded contribution.

The following aerial data sets sources were identified:

1. Oblique and vertical photographs held by NMR
2. 1947 black and white RAF verticals held by the ESHER
3. 1999 colour verticals held by ESHER
4. 2006 colour verticals held by ESHER
5. Selection of oblique black and white photographs held by ESHER
6. Selection of oblique and vertical photographs held by East Sussex Record Office
7. Selection of oblique and vertical photographs held by Sussex University
8. Oblique and vertical photographs held by Cambridge University

The following process was adopted for defining and assessing the archaeological resource from the aerial photographs:

1. Obtain/compile cover searches from NMR ESCC, ESRO, Sussex University & Cambridge collections (due to the large extents of the Ouse and Cuckmere study areas, research was focused on a series of 1km wide transects targeting the main distributions of the geological resource)
2. Assess archaeological potential from APs in the ESCC collection and list cover searches for all other sources
3. Assess potential for NMR and other sources to be useful for potential future NMP
4. Assimilate results from searches into HER/GIS to inform both the assessment of the study areas and as a contribution to future NMP work in East Sussex
5. Inclusion of a short section in the final report on the usefulness of the AP assessment process, in the context of the aggregate areas with a statement of the potential for future AP work

Stage 4: Desk-based assessment of the historic environment resource

This stage comprised separate assessments covering the key themes for the five study areas:

- Geology and palaeo-environment
- Archaeology
- Buildings
- Landscape

Relevant data for each of the above four categories was collated by the Project Officer for each of the four study areas and sent to the specialist consultants for comment and review (see Stage 7). ***A key aim here was to open up the HER to scrutiny by specialists in order to be in a position to consider the strengths of the HER and identify and address the weaknesses.***

Summaries of the approaches to the four key themes are outlined below.

Geology and palaeo-environment

Following definition of the aggregate resource in Stage 2 the Project Officer collated all available historic environment data and literature, which was then reviewed by the relevant specialist sub-contractors to establish its value for understanding the geology and palaeo-environment of the four study areas. The specialists did not make site visits or carry out field work. The aim of this work was to summarise existing knowledge (and gaps in it) and make the data accessible via the HER for future research and decision-making.

Archaeology

A similar approach was adopted for 'archaeology' with a desk-based review of evidence including standard sources (HER, Historic Maps, Record Office Search, published and unpublished sources etc.). During this stage the extent of worked-out and infilled extraction sites related to past and present aggregate extraction (sand and gravel) was mapped and added to the HER/GIS theme. The development of this layer involved the examination of OS

historical map data (1st – 4th Editions inclusive), geological data, aerial photographic data and available surveys. Quarries were identified as individual sites and given a unique ID. The database behind the GIS lists metadata about the sources consulted. Past, active and dormant extraction areas were identified using minerals planning data for post-1948 activity, and earlier OS data for pre-1948 extraction.

Buildings

A similar approach was adopted for 'buildings' with desk-based review of evidence including standard sources (HER, Historic Maps, Record Office Search, published and unpublished sources etc.). Particular attention here has been paid to structures related to industry and defence and how they contribute to the landscapes and historic environment resource of the study areas. Due to the large extent of the Ouse and Cuckmere study areas, research was focused on a series of 1km wide transects targeting the main distributions of the geological resource.

Whilst historic cartographic regression and documentary survey exploring both local and national archives formed the initial stage, it proved beyond the scope of the project to identify for each structure, information regarding current use, ownership, evolution and ultimate redundancy. Study of historic maps provided some information on the dates of buildings on site and whether, using current maps, field visits and specialist knowledge, they still survive.

Landscapes

Current land use was established by a combination of desk-based research and site visits where necessary. Historic Landscape Characterisation (HLC) digitisation had been completed for the majority of the four study areas and this data set formed the basis for an initial assessment. Using HLC the following was undertaken for each resource area:

- Check physical survival of key landscape features such as hedges, ditches and woodland through site visits
- Compare HLC, site visit data and geology to assess historic environment potential
- Compare project landscape data with existing landscape character assessments

Stage 5: Site Visits

The five study areas were visited by the Project Officer to assess the nature of physical evidence for past activity in the present landscape. Where sites have been identified a record comprising digital photography and summary record are being added to the Desk-based Assessments.

Stage 6: HER enhancement

The existing HER records within the study areas needed to be cleansed (focussing on location and monument extent) and were enhanced where necessary. Cleansing comprised the following tasks:

- Record checked against original sources for accuracy of information
- Location point checked against original source and 6" Archaeological Maps
- Archaeological Sensitive Areas (constraint mapping polygons) checked for accuracy of coverage, taking into account particularly geology and soil extents
- Polygon drawn to define potential extent of historic environment asset

New information has been added to the HER database and GIS layers in a form compatible with the existing GIS/database. New sites are added as basic monument record sheets and related point data. Entry of new records comprised the following:

- Summary description, references and class types entered from original source. Reference is back to the Desk-based Assessment in this case. By November 2008, 982 new monument records had been added to the HER database – an increase of 13% on the previous total of around 7,500. On completion of the project there were 8,470 monument records lists.
- The HER's coverage of military sites has been significantly strengthened, particularly regarding Second World War coastal defences.
- A number of parishes with little or no presence on the HER previously are now much better covered, with the potential for new archaeologically-sensitive areas to be identified
- All records have been polygonised, digitised as part of GIS layers and recorded in tabulated form. Polygon drawn to define potential extent of historic environment asset
- Consideration given to recommending new or refined Archaeological Sensitive Areas drawn around potential full extent of sites.

Stage 7: Preparation of data for specialist assessments

The Desk-based Assessments for each area were submitted to the Specialist Consultants for review.

Stage 8: Specialist assessment, review and recommendations

Where applicable each specialist consultant addressed the following:

- Existing data (Resource Assessment - knowledge)
- Archaeological potential (Physical survival)
- Level of past impacts and implications of future impacts
- Sensitivity/importance of sites/features (see explanation below)
- Key research questions
- Strategy recommendations to address future management

Assessing sensitivity/importance of sites/features

One of the project aims was to consider the sensitivity/importance of cultural heritage sites/features in local, regional or national terms in line with criteria used in Environmental Impact Assessment (EIA). The table below sets out the six categories of sensitivity/importance, with the criteria used to assign sites to a particular category. This approach was adopted for the following reasons:

- It is a recognised approach and data in this format should see cost-savings during future assessments (including by other parties)
- Planners and specialists in other environmental fields are familiar with this approach
- It will provide an opportunity to consider the usefulness and validity of categories, for example the assessment of Low sensitivity/importance for sites considered to be important at Local or Parish level

Sensitivity/ Importance	Equivalent to
Very High	World Heritage Sites Scheduled Ancient Monuments Grade I and II* Listed Buildings Sites or structures which appear to be of equivalent status to the above, but which have not previously been assessed for listing or scheduling
High	Registered Historic Park or Garden Conservation Area Grade II Listed Buildings Sites which, although not of schedulable quality are rare and important

	examples of significant monument or site types
Medium	Well-preserved examples of common or less significant monument or site types Significant sites or features (see above) which are so badly damaged that too little remains to justify inclusion into a higher grade
Low	Important Sites at a Local or Parish level Sites with a Local or parish value or interest for education or cultural appreciation
Negligible	Sites or features with no significant value or interest Sites which are so badly damaged that too little remains to justify inclusion into a higher grade
Uncertain	Possible sites or features for which there is limited information. It has not been possible to determine the importance of the site based on current knowledge. Such sites might comprise individual find spots or crop marks visible on air photographs

Based on EIA review – Oxford Archaeology

Identified assets have been assessed by the Project Officer who concluded that further survey work would be required to adequately assess their likely importance. With the exception of military defence structures, for which recommendations of importance have been made by Chris Butler, all the remaining assets have been provisionally grouped as falling into a High/Medium category pending further survey.

Many of the historic assets that have been defined through this resource assessment are historic landscape components and should be understood in that context. One of the outcomes of this project has been a fuller comprehension of the landscape context for historic assets and the implications for defining value/importance.

Within the Desk-based Assessments that accompany this final report there are recommendations for future site or area-based programmes where action is needed for future protection of the historic environment resource, both on-site and in the adjacent area.

Areas particularly worthy of protection for research or for teaching/display purposes have been identified and proposals for conservation and management have been suggested. Organisations with potential interest in the sites, have, where possible been involved in the process of identification and development of management recommendations.

Stage 9: Preparation of Project Products

The project products comprise the following:

- Final report
- 5 Desk-based Assessments
- A leaflet
- Enhanced HER
- PowerPoint presentation & newsletter article
- Project archive

Final Report

This report (also available on CD) has been distributed to the project funders, ESCC Development, Waste and Minerals Group and key stakeholders and deposited with the East Sussex HER.

The final report and summary documents will be sent to ADS for dissemination on their dedicated ALSF website. Copyright restrictions for some maps may limit the full number available for this form of communication.

Site Summary documents (Desk-based Assessments)

The five reports comprise maps showing the extent and importance of known historic environment assets and the potential in areas where no information is presently available. The study area assessments include information on sites and deposits worthy of protection which can contribute to existing research questions and the formulation of new research questions.

Leaflet

This has not been produced.

Enhanced HER

The enhanced ESHER comprises revised GIS with existing data cleansed, additional point data added with corresponding monument records, and Archaeological Sensitive Area polygons checked and refined with new ones recommended where appropriate. All data derived from this project is being added to the ESHER in existing formats for compatibility and to ensure that project products are not separate documents but fully integrated in the HER for future use. The ESHER will include digital copies of all the project products and event polygons defining the study areas.

Power Point presentation and newsletter article

These will be prepared by the Project Officer and Project Manager following completion of the main reports and will be used for explaining the project and its results. The presentation will be aimed primarily at local authority planners but will be applicable for other audiences. The newsletter article will be aimed at those interested in the historic environment of Sussex and will appear in an edition of Sussex Past.

Project archive

Archive material comprising photographs, plans and drawings, site record sheets, etc. will be lodged with Sussex Archaeological Society museum in order that the project material is kept together. The archive will be prepared by the Project Officer and the digital elements will form an integral part of the HER.

Stage 10: Communication of Project Products

Communication outline

Audience	The message	Methods
Minerals Planners	What data do you need on the historic environment to develop thorough planning documents? What does the historic environment comprise in the aggregate study areas?	<ul style="list-style-type: none">• Copies of final report• Guidelines/text for planning documents• CPD – PowerPoint presentation to minerals planners
Development Control Officers	Importance – what is the historic environment value of the areas under consideration? Understanding – which are the most sensitive sites and why? Mitigation – what are the likely stages required in developing each site? Highlight designated and important un-designated sites	<ul style="list-style-type: none">• Report with maps, summaries and guidelines• HER enhanced
Historic Environment specialists	Up to date survey data on the Historic Environment	<ul style="list-style-type: none">• Report with maps and text showing survey coverage and historic environment data with a

		particular focus on the South East HE Research Framework <ul style="list-style-type: none"> • HER enhanced
Developers	Importance Understanding What they will need to do	<ul style="list-style-type: none"> • Summary document/leaflet (brief and clear) available with the report or alone
General Public	East Sussex County Council is taking the historic environment into account in developing plans and programmes for mineral extraction	<ul style="list-style-type: none"> • Sussex Past article • Sussex Archaeological Forum • ESCC web page • English Heritage website • Extract (the ALSF annual report)

Community Involvement

This has been achieved by reporting the project to the Sussex Archaeological Forum, which reaches representatives from local museums and societies including Rye Museum, Eastbourne Museum, Romney Marsh Research Trust, Hastings Area Archaeological Research Group, Eastbourne Natural History and Archaeology Society, Brighton and Hove Archaeological Society, Lewes Archaeological Group, the Sussex Industrial Archaeology Group and Sussex Archaeological Society. Where applicable, members of these groups have acted as specialists to the project.

At Rye Bay, where ALSF funding has been used to develop community involvement (Rye Harbour – A Shingle Community 2005 – 2007 www.wildrye.info), discussions with Dr Barry Yates of the Rye Bay Nature Reserve have shown how the enhanced HER data will be useful in encouraging greater understanding and interpretation of historic assets in the Rye Bay area. For example if Camber Castle were to have enhanced interpretation in future, the data from this project would provide important contextual information. The information will also be useful in helping to manage future habit-restoration projects.

Stage 11: Archiving

The archive comprises a range of material from digital map layers to field records and project management reports. Some of this material forms an integral part of the East Sussex Historic Environment Record. Copies of the written reports will be placed with the HER. The other archive material, such as photographs, on-site record sheets, plans and drawings will be lodged with the Sussex Archaeological Society Museum.

Stage 12: Review Point R3 and Project Closure

Review was undertaken by the Project Board. All claims and grant payments were completed by end March 2008, though it was acknowledged that due to the scale of the project and its relatively short time period (seven months) the Desk-based Assessments would remain as open documents to be completed during 2008/9 by East Sussex County Council Archaeology section, along with creation of the remaining HER HBSMR records and the PowerPoint presentation.

5 PROJECT RESULTS: GEOLOGY, SOILS AND TOPOGRAPHY

The full details of the resource assessment are to be found in the five Desk-based Assessments which accompany this final report. The aim here is to set down some of the key findings and demonstrate the value of this project to the HER. The following text is intended as a summary explaining our current understanding of the five aggregate project areas and for this reason references have been omitted: full references can be found in the Desk-based Assessments.

5.1 Folkestone Sandstone Beds Project Area

Spatially the Folkestone Beds between Novington and Ditchling comprise a thin band (c.300m wide) of sedimentary rocks aligned east to west, outcropping between the Gault Clay to the south and Lower Greensand (a sandstone series of which they are part) to the north on the southern flank of the Wealden anticline. During the middle of the Cretaceous Period (around 110 million years ago) the land surface slowly subsided and the sea advanced. The Folkestone Formation, occurring at the top of the Lower Greensand sequence is thus a shallow marine deposit of middle Cretaceous age (c. 105 million years ago) and consists mostly of free-draining poorly lithified sands.

The anticline structure of the Weald has resulted in the Folkestone Beds being arranged so that they dip to the south and present a small scarp to the north along much of their distribution. The land along this narrow strip tends to fall from south to north, for example in the area around Novington Sand Pit elevations are typically around 47 – 48m AOD in the south, dropping to around 38m AOD in the north. This dip is caused by the anticlinal structure of the Weald, with topography reflecting drainage more than geological structure.

Soils on these free-draining sands are frequently bleached white due to the movement of iron oxides and other minerals down through the soil profile. This process of leaching leads to the degradation and depletion of the soil and the formation of podsoils. The soils on this geology are often acidic and lacking in nutrients and this inhibits soil fauna and leads to stark soil boundaries between the dark humus rich upper layers, grey and white leached out lower layers above iron pans at the base.

5.2 Ouse Valley River Terrace Gravels Project Area

The Ouse valley contains four main terrace remnants, which in many places have been impacted by later solifluction, the sediments having been moved and incorporated into head deposits. This movement and mixing of deposits makes the identification of *in-situ* deposits from reworked terrace and head deposits difficult. The terrace (terrace 4) around Barcombe Cross is the highest and oldest, but only survives as isolated patches. Terrace 3 around Barcombe Manor contains the location of the notorious Piltdown Man Hoax and survives as extensive but isolated patches. The younger terraces (terraces 1 & 2) occur close to the floodplain at Rodmell and Hamsey and are of unknown age, although the second terrace may date to the last interglacial.

Sedimentological analyses targeting the upper Ouse River at Sharpsbridge, recorded a complex, polycyclic, sub-alluvial surface cut into the Lower Cretaceous Tunbridge Wells Sand formation of the Hastings Beds. Two, small, bench-like features at c. 8m O.D. flank a deeper, channelised form, whose minimum surface elevation is 3.8 m O.D.. The rock-head is partly mantled by thin, residual river gravel deposits, and the series buried by up to 7 metres of inorganic alluvial deposit which can be divided into four phases, the latter three of which were strongly influence by human activity from the Mesolithic to late Bronze Age periods.

Head Gravels and Loess deposits are found directly associated with River Terrace Gravel. Head gravels may, in some cases, be commercially extracted themselves, either in isolation or alongside fluvial deposits.

5.3 Cuckmere Valley River Terrace gravels Project Area

The project area is dominated by the Cuckmere River, which flows from its source to the north of Heathfield, through the Low Weald and on through the chalk landscape of the South Downs to Exceat on the coast. The project area is located entirely in the Low Weald, between the High Weald and the South Downs. The Low Weald can be characterised as a broad, low lying clay vale, incorporating gently undulating hills and broad valleys aligned roughly east to west. The Low Weald is broadly formed of softer silty sandstones and mudstones which continue under much of the Pevensy Levels and across the middle reaches of the Cuckmere River. Springs are common at the junction between permeable

sandstones and the impermeable mudstones, resulting in a large number of small streams with a naturally flashy response to rainfall events and strong seasonal variations in river flows.

The Cuckmere valley contains four terrace remnants. Terrace 4 between Michelham and Hellingly is the best preserved and may be the oldest. Terrace 3 north and east of Chiddingly survives only as isolated patches and appears to have been in many places impacted by later solifluction, the sediments having been moved and incorporated into head deposits. This movement and mixing of deposits makes the identification of *in-situ* deposits from reworked terrace and head deposits difficult. The younger terraces (terraces 1 & 2) which occur lower down the river, survive as very small isolated patches north and south of Alfriston and are again hard to distinguish from later head deposits. The 'Short-Cliff' deposits, a complex and poorly understood suite of sands, silts and gravels, exposed in the cliff face on the western side of the Cuckmere Estuary, may represent a fifth a River Cuckmere terrace.

Within the Lower Cuckmere Valley there is a general lack of extensive or interlocking Downland spurs within the chalklands stretch of the valley. As Downland spurs are likely to preserve high terraces more effectively it needs to be established if the lack of older terraces in the valley relates to the topographic impact upon survival, or to other factors. It may, for example, be possible that the Cuckmere represents a relatively young valley in which a Downland valley has cut back and captured pre-existing Wealden drainage in the past half million years. A similar process can be seen to be happening in the Lavant Valley in West Sussex.

Sedimentological analyses carried out on the deposits of the upper Cuckmere Valley has recorded a deep alluvial deposit, which represents sediment that had accumulated after the removal of vegetation during the Prehistoric period, possibly starting in the Mesolithic. The transportation by the river of this sediment and its deposition south of the Downs began the formation of a coastal plain. Consideration must therefore be given of the off-shore record both in determining the evolution of the palaeo-coastline during the early Holocene, the environmental record of estuarine development and some rough quantification of near-shore aggregate resources which might be impacted upon by either direct extraction or sea-defence work.

The geological makeup of clay and silty soils is well suited to agriculture, although deeper soil horizons are clayey and subject to waterlogging for long periods in winter.

5.4 Crumbles Storm Beach Gravel Deposits Project Area

The Crumbles to Bexhill foreshore comprises of a long relatively flat linear strip of beach gravels, of a maximum width of 1400 metres (but generally less than 500 metres) and approximately 11 km long. The majority of the foreshore is at 0m O.D., but there are small isolated higher points or knolls rising to 2-3 metres O.D. on the Langney Point area, and larger high points representing former 'eyes' or islands at the Bexhill end which rise to 10 metres O.D..

The Crumbles Storm Beach Deposits have been formed by shingle movement from west to east along the Sussex coast. The beaches are dominantly made up of a gravel backshore and a sandy foreshore, but the latter is often absent or suppressed where shoreline platforms occupy most of the inter-tidal zone.

Soils on the storm beach are scarce due to the loose nature of the gravels and the constant erosion by the elements. They do survive better along the north edge of the foreshore, protected by modern day built structures and encouraged by human management. Where they do exist however, they are relatively thin and heavily leached.

5.5 Rye Bay Storm Beach Gravel Deposits Project Area

The area examined comprises a range of gravels, clays-silts-sands and channel sands, which can be divided into three main areas:

Broomhill Level, SW-NE orientated beaches generally below 3m O.D. in height. These formed as part of a shingle spit developing in a north-easterly direction across Rye bay between c. 2700 BC and c. 2200 BC.

East Guldeford Level, represent gravels driven inland as a result of the major breach in the gravel barrier system in the vicinity of Rye in the 13th century. They appear subsequently to have been reworked within the Rother estuary and Wainway channel. A 'high level' (crest height c. 3.5 m O.D.) gravel ridge at near Broomhill Farm probably formed in a similar fashion, again also after the 13th century breach in the barrier.

Camber Castle/Rye Harbour a series of gravel ridges formed between the 17th and 19th centuries. The beaches in the vicinity of Camber Castle have not been subject to gravel extraction and are exceptionally well preserved. The now largely extracted gravels north of the river Rother can also be shown through cartographical evidence to be of relatively recent age (but pre-18th century), formed by the westerly movement of material as the Rye breach in the gravel barrier system healed. Borehole evidence indicates the Rye Harbour deposits do not extend laterally much beyond their surface expression.

6 PROJECT RESULTS: HISTORIC ENVIRONMENT

6.1 Palaeolithic to Neolithic Periods (c. 500,000 – c. 2,000 BC)

During the Pleistocene, glaciers covered all but the southern parts of Britain (down to approximately the present River Thames) and during the height of the interglacial temperatures were warmer than those of the present day. The extreme temperature variations led to extensive modifications to the topography with valleys carved out and mass deposits of sediments. The present landscape is largely the result of these Pleistocene changes, and Palaeolithic remains often lie deeply buried or transported from their original positions. This immense period of time (over 500,000 years) saw the arrival of one hominine species, their evolution into Neanderthals, extinction of the Neanderthals and arrival of the first modern humans. The last main glacial period was at its height approximately 16,000 years ago when sea level was as much as 100m below that of today. A sudden rise in temperatures approximately 13,000 years ago was followed by nearly 2,000 years of slowly cooling temperatures before a sudden decline in temperatures brought in the colder so called Loch Lomond Stadial around 11,000 years ago. This colder period lasted for a further 1,000 years before the final retreat of the glaciers around 10,000 years ago. Current evidence suggests that humans recolonised Britain about 12,600 years ago during this later Upper Palaeolithic period, but evidence for human activity in the south east is rare.

The dramatic, high-energy nature of deposition during this period raises the potential for the preservation, in-situ, of portions of ancient landsurface through the mass movement of sediment or loess cover. Present day impacts to Pleistocene geologies such as aggregate extraction, even where artefacts are not immediately present, offers potential recovery of environmental evidence and opportunities to date river terrace sequences. These factors in themselves are of significance to understanding the wider regional archaeological record.

Until around 8,500 years ago (c. 6,500 BC) the present day Sussex landmass would have overlooked large coastal lowlands that connected southern England to the European landmass. Migrating across this area would have been small groups of nomadic humans, surviving by hunting animals and gathering foodstuffs. Tools and weapons constructed out of stone (predominantly flint), bone and wood were being used.

Rising sea-levels severed the land-link between southern England and Europe around 8,500 years ago, the climate became warmer, and cool tundra-like landscapes were being replaced by deciduous woodlands of hazel, lime and oak, broken by isolated patches of grassland. Big game died out due to a change in environment and humans adapted by hunting smaller prey and increased foraging. Tracking and hunting smaller prey required different strategies and more movement around their 'territory' probably on a seasonal cycle. Lighter tool kits were developed which were better suited for working in a woodland environment and travelling greater distances. The major impact during this period is the severing of the land bridge to the continent which 'stranded' Mesolithic groups in Britain and meant they developed a different culture to their cousins in Europe. Certainly in Sussex, Mesolithic communities appear to have utilised all geological and topographical zones, but appear to have been more active, possibly in the form of semi-permanent settlements, on the better drained lands, such as sand and gravel deposits. This distribution is confirmed by this research for example along the Folkestone Beds, see Fig. 4. Most 'sites' are represented by concentrations of flint tools and waste flint debitage from tool production, but occasionally physical features and deposits are discovered, such as pits, hearths and stake hole clusters.

The Neolithic period marks the adoption of elements of European farming technology by the indigenous Mesolithic population of Britain as well as the introduction of pottery. Possibly as a result of agriculture, there came an increase in forest clearance resulting in an increase in erosion and rapid choking of the river valleys. This led to the development of floodplains. This period also marks the appearance of communal monuments such as burial mounds and ritual enclosures.

Folkestone Sandstone Beds Project Area

The Palaeolithic period within the study area is currently represented by two records of finds of two hand axes. These are likely to have been surface finds, rather than from fissures within the Folkestone Sand deposits. Other beds of the Lower Greensand, at Beedings (West Sussex) and Ightham (Kent) give rise to fissuring which can preserve deep fills of loess and soliflucted material.

While the Folkestone Beds are softer, analogous processes may allow for the capture of ancient land surfaces and terrestrial sedimentary sequences in localised areas. With such limited data it is unclear whether Palaeolithic finds and possible sites are focused on the Folkestone Beds or its adjacent geology. However, The Lower Greensand may have been more important in the Palaeolithic than is generally recognised. The relatively high topography gives excellent views across the Weald, especially in deforested, open cool environments of early/late cold stages and inter-stadials. The provision of free-draining land would provide route ways through Weald for hunting groups following migrating game.

Five concentrations of humanly struck flint and flint tools identified as Mesolithic have been recorded to the north and west of Ditchling Village and a single core from Streat. Only one of these concentrations has been subject to detailed archaeological investigation: that at Streat Lane, Streat, a site on the border of the Gault Clay and the southern edge of the Folkestone Beds. Excavation targeting a large flintwork concentration recorded four pits containing large quantities of fire-fractured flint, together with another pit that was interpreted as a possible temporary shelter or 'pit-dwelling'. The flintwork assemblage comprised of over 3,000 pieces, mainly debitage waste flakes, but also included microliths and a small number of larger tools. The flint assemblage was indicative of a small range of activities on the site, likely to consist of repairing hunting equipment, campsite construction and small scale food processing. The other concentrations recorded are also likely to represent temporary seasonal foraging camps, although the large quantity recorded at Lodge Hill suggests either longer/more intensive occupation or the use of the site on several occasions. Further fieldwork is very likely to increase this number substantially, based on distribution patterns of sites recorded in other areas of the Low Weald.

The actual number of Mesolithic sites within the project area is likely to reflect the relatively low level of archaeological fieldwork rather than a limited amount of activity during this period. Certainly at Streat and on Lodge Hill a series of dense worked flint concentrations have been recorded. The present distribution (see Fig. 4) strongly suggests that the Folkestone Beds, with their free-draining landscape and possibly a more open heathland environment, were sought out as a favourable location for settlement during the prehistoric and from the earliest periods.

By contrast no definite Neolithic sites or find spots are recorded. However some of the material identified as Mesolithic and discussed above may be of Neolithic date. The apparent lack of material from this period may reflect a lack of survey: clearly this area would have been used in some form. Whilst it is possible that some Mesolithic material may have been wrongly classified, the apparent absence of Neolithic material may be significant. There is a stark polarisation between recurrent Mesolithic scatters and possible pits on the Lower Greensand when compared with Neolithic activity and pits (e.g. the causewayed enclosures) on the chalk. This raises the hypothesis that activity shifted away from the sandy soils of the Lower Greensand during the Neolithic to the chalk Downlands.

Ouse Valley Project Area

The Ouse Valley would, prior to the formation of the English Channel and during periods of low sea level, have formed a tributary of the large English Channel river system. It would have offered a natural routeway into the main body of the Wealden landscape for mobile game herds and hunting groups. The Upper and Lower Palaeolithic periods are represented by a series of stray finds of flint tools, many collected in the 19th and early 20th centuries. Excavation in the 1970s at Newhaven by Martin Bell recovered a large assemblage of in-situ flint work originally classified as Upper Palaeolithic but now thought to be older, possibly representing the site of a seasonal camp and highlighting the potential for *in-situ* deposits to survive from this period. The current data suggests there is a medium to high potential for artefacts from the Palaeolithic period to be located within the gravel deposits, with a potential for *in-situ* deposits to survive.

The Ouse Valley was inundated by the sea as far as present day Lewes in the Mesolithic Period, effectively forming a Ria in its lower reaches. The interplay between marine, estuarine and freshwater depositional environments remains complex throughout the valley's development. In this context topographical highs (such as The Rises situated south of Lewes in the Vale of Brooks) would have presented themselves as true islands. Human activity during the Mesolithic Period in the Ouse Valley is represented by a series of concentrations of humanly worked flint, representing the sites of seasonal or semi-permanent foraging camps. Significantly these concentrations focus on the river terrace gravels around Barcombe, Rodmell and Piltdown, suggesting these free draining sites were more suitable for settlement than the poorer-draining clay and alluvial deposits nearby. Potential for further sites on these gravel terrace areas is high.

At present, Neolithic activity in the Ouse Valley is represented only by a small number of flint work concentrations and axe-head find spots, evidence of either temporary foraging activities or more permanent settlement. Although fairly limited evidence for this period currently exists, it does suggest a low to medium potential for further sites to exist, possibly as seen in the Mesolithic period being focused on the free draining gravels. The sighting of communal monuments, such as the causewayed enclosure at Offham and the long barrow at Cliffe, on the chalk downs overlooking the valley certainly suggests occupation within the vicinity and most likely in the valley itself.

Cuckmere Valley Project Area

The Cuckmere would, prior to the formation of the English Channel and during periods of low sea level, have formed a tributary of the large English Channel river system. It would have offered a natural routeway into the main body of the Wealden landscape for mobile game herds and hunting groups. The Upper and Lower Palaeolithic periods are represented by a series of stray finds of flint tools, many collected in the 19th and early 20th centuries. Six such

findspots are recorded, although four have very vague provenance; of the two that can be accurately located, one came from the terrace gravels at Alfriston. Although the data for this period is limited it does suggest a low to medium potential for further artefacts to be found within the project area, and possibly focused on the gravel terraces. As with the Ouse, it is important to remember that present day impacts, such as quarrying, in Pleistocene geologies offer potential recovery of environmental evidence and opportunities to date river terrace sequences, even where artefacts are not immediately present. These factors in themselves are of significance to understanding the wider regional archaeological record.

There is evidence, in the form of a number of flintwork concentrations and isolated finds of single tools, that the Cuckmere Valley was certainly utilised by humans during the Mesolithic period. The concentrations are likely to represent the locations of semi-permanent and seasonal foraging camps. Nine artefact concentrations have been recorded, of which seven are located on or very close to river terrace gravels, suggesting these free draining areas were a focus for occupation. There is however a total lack of recorded sites from this period in the upper Cuckmere Valley, which may suggest this area was not heavily utilised, or more likely reflects a lack of archaeological investigation. The current data suggests the potential for further Mesolithic sites and artefacts within the project areas is medium to high.

There is currently little evidence of settlement or utilisation within the Cuckmere Valley during the Neolithic. The relative lack of evidence may reflect a lack of survey targeting activity areas of this period. Settlement in the wider landscape is clearly indicated by a number of communal monuments and large worked flint concentrations. With such limited data for this period it is difficult to interpret the potential for further sites to exist within the project area, but the potential is likely to be medium to high if comparisons are made with the previous period.

Crumbles Project Area

There are currently no records of finds from the early prehistoric periods from the project area. It remains a possibility that archaeological and paleo-environmental remains dating from the Palaeolithic to the Neolithic may lie buried below the current storm beach gravels.

Rye Bay Project Area

There are currently no records of finds from the Palaeolithic, Mesolithic or Neolithic periods within this project area. The Broomhill Level beaches were forming between 2700 and 2200 BC, which falls within the Neolithic period and there is likely to be some limited potential on, between or within these gravel surfaces.

6.2 Bronze Age and Iron Age Periods (2000BC – 43AD)

The Bronze Age in Britain is defined by a marked influx of new people, technology and customs from the European continent. They brought new industrial and agricultural practices, burial traditions and the new technology of tools made of bronze metal. Certainly by the end of the Bronze Age, population pressures, limited land and a wetter climate resulted in the emergence of a tribal society and defended settlements.

Iron Age society appears to have become increasingly territorial, with social/political power apparently focused on hillforts some of impressive size and complexity. These hillforts are likely to have acted as the administrative and trade centres for territories that would have been predominately occupied by small farmsteads.

Regionally, the Iron Age period is characterised by a steady increase in agricultural practice and possibly increased expansion into the Low Weald, although current evidence suggests the main focus was on the chalk Downland and the colluvial deposits at its scarp base. By the later Iron Age, East Sussex appears to have formed part of the territory of the Atrebates tribe, who dominated much of South-East Britain. The later Iron Age period also marks the first resourcing of the iron deposits of the Low and High Weald and a possible shift of communal hierarchy/control from the Downs onto the High Weald.

Folkestone Sandstone Beds Project Area

It is likely that the Bronze Age period saw continued agriculture and settlement activity in this area. There is a record of a single probable Bronze Age bowl barrow (although recent fieldwork suggests it may be a mill mound reused as a WW2 site) and another undated mound which may be Bronze Age in date on Lodge Hill to the north of Ditchling, as well as finds of Bronze Age and Iron Age artefacts in the vicinity of Ditchling. As in the Mesolithic period, the Lodge Hill to north Ditchling area appears to have been a focus for activity, but this may however reflect more archaeological investigation in this area. The limited data from this period makes distribution modelling difficult, but the Folkestone Beds may have attracted more activity and possibly related settlement, compared to the adjacent clay geology.

A relatively low quantity of recorded Iron Age sites makes distribution modelling difficult within the project area. Only two find spots are recorded from this period, fragments of a late Bronze Age / early Iron Age cauldron and a late Iron Age coin, both from the vicinity of Ditchling. It is possible that further investigation of the Romano-British sites discussed below will show them to have their origins in the Iron Age or early periods.

Ouse Valley Project Area

Evidence from the early Bronze Age period suggests a steady 'colonisation' of the 'wildwood' of the Weald, within the Ouse valley continuing as a main transport route and resource centre. It is likely however that a series of droveways were being formed running from the South Downs through the Low Weald and onto the High Weald. These droveways would have attracted settlement and further forest clearance along their routes, perhaps drawing the population densities out of the Ouse Valley. A ring ditch, likely to have surrounded a burial mound, and six find spots of metal tools, one of which was a deposited hoard of axes, are recorded at Barcombe. The probable Barcombe barrow certainly gives evidence of a community in this area, possibly attracted by the free draining river terrace gravels, and suggests a medium potential for related features to exist.

There is currently very little evidence for activity within the valley during the Iron Age Period, although, like the Neolithic there is greater evidence on the nearby Chalk Downland. This lack of evidence may indicate that the lower reaches of the valley were flooded during this period and settlement concentrated on the fertile chalk downlands, or is more likely to represent a low level of archaeological research along the valley floor. There is also a potential for deeply buried salt-working sites in the Lower Ouse Valley. Briquetage was recovered during the excavation of the Prehistoric, Roman and early Saxon settlement at Rookery Hill, Bishopstone, which overlooks the Ouse Estuary. With such limited data it is difficult to assess the potential of sites existing on the gravels during this period, however as these areas were utilised in the periods prior and after the Iron Age, there is a likelihood they were utilised during the Iron Age.

Cuckmere Valley Project Area

The Cuckmere Valley is likely to have remained the main transport route and resource centre for the wider landscape during the Bronze Age. It is also likely however that a series of droveways were being formed running from the South Downs through the Low Weald and into the High Weald. These droveways would have attracted settlement and further forest clearance along their routes, perhaps drawing the population densities out of the Cuckmere Valley.

Two burial mounds are located on the chalk Downs on the margins of the project area, whilst in the middle Cuckmere Valley near Berwick Station a concentration of burnt flint perhaps representing a 'burnt mound' or cooking site and the finding of a spearhead have been recorded. The limited field research and data for this period make it difficult to interpret the potential for further sites to exist within the project area.

Although there is extensive Iron Age period activity on the South Downs on either side of the Cuckmere valley, there is no evidence for any hill forts or other defences associated with the valley. Seaford Head, some 2km to the west is the nearest hill fort, and may have exerted

some influence over this area in the Later Bronze Age & Early Iron Age. Only one site is recorded from this period, a late Iron Age coin found near Sessingham. This total lack of occupation or activity sites is unusual, suggesting either this valley was not the focus for settlement and only received occasional visits to gather resources or as is more likely, the sites have not been identified due to lack of archaeological investigation. The lack of sites in the lower valley at this time may be the result of the environment; possibly it was still a tidal inlet at this time. If this was the case, there may be the potential for salt-working and other coastal sites.

In light of the lack of data, the overall potential for this period is unknown.

Crumbles Project Area

We currently only have very limited evidence of utilisation of the project area during these periods. There is however a possibility, based by analogy on evidence from Romney Marsh, that the levels could have been utilised for hunting, reaping of thatching materials and salt production (evidence of this industry may be buried beneath the later storm beach deposits).

A number of areas of raised ground exist within the salt marshes of the Pevensey Levels and it is probable that such 'islands' of dry ground were utilised during the Prehistoric periods as temporary/permanent settlement areas utilising the resources of the surrounding marshland. More palaeo-environmental work is required to test whether this area was drier in the Bronze Age and a greater distance from the foreshore than it is today.

Evidence from the analysis of the submerged forest at Pebsham suggests that the Bexhill to Hastings area of coastline was forested coastal plain during the Bronze Age. Inundation appears, based on evidence from the Shinewater timber structure on the Willingdon Levels, to have come suddenly around c. 800 BC.

Rye Bay Project Area

Pollen evidence from the western valleys adjacent to Romney Marsh indicate that the early Bronze Age marks the beginning of the permanent destruction of the primary lime-dominated woodlands found over the adjacent parts of the Weald. Although this is evidence of occupation and activity, the limited number of recorded scatters of finds and structures (barrows and ditches) in the wider landscape suggests a limited occupation, or non-intensive utilisation of landscape resources, but this may reflect a lack of targeted archaeological investigation.

There are no early Bronze Age sites or finds recorded within the project area; however their potential to exist is highlighted by the dating of the Broomhill Level Beaches to between c. 2700 BC and c. 2200 BC and the finding of a barbed-and-tanged flint arrow head from near Lydd in Kent and a Bronze Age axe hoard located in geomorphologically part of the same beach complex.

A small number of Late Bronze Age and Iron Age finds have been made in the Pett area, suggesting settlement or activity at the western edge of Rye Bay. The wetland areas are likely to have been utilised for hunting and salt production and possibly during dryer periods for grazing.

6.3 Roman Period (43AD – 410AD)

The arrival of Roman control and the integration of Britain into a different and larger European community marked a sharp expansion of activity and settlement in East Sussex, triggered by new technology, a stronger economy and possibly by investment from the Empire. One major investment was a huge expansion of the iron processing industry in the Weald, part of which appears to have been controlled by the Roman navy.

A road network was constructed, consisting of an east to west road (the Greensand Way) linking Pevensey to Chichester, and a series of north to south roads linking the Greensand Way to London. East Sussex does not appear to have had a major town, but instead a series of major settlements, market centres and ports, one of which, at Pevensey, was fortified in the later Roman period. The road network and ports would have opened up the landscape and providing trade routes with the rest of the country, increasing the export of food and resources (including processed iron ore) out of the area and allowed the import of fine commodities from the rest of the Roman Empire.

The agricultural economy also grew, with many 'native' farms using this increased income to upgrade to Roman style buildings, such as the villa complex at Barcombe. By the mid 3rd century however many farms appear to have been abandoned (presumably increasing the populations of the towns), possibly due to over-cultivation, climate change, or the general instability of the Roman Empire due to economic collapse, disease and conflict. Certainly by the end of the Roman occupation, the archaeological evidence for the population of East Sussex appears almost non-existent in many areas.

Folkestone Sandstone Beds Project Area

Very early in this period an important road known today as the Greensand Way, running in an east to west alignment and connecting Chichester to the Ouse Valley and onto Pevensey was constructed across the study area.

A substantial villa farm complex has been identified north of Plumpton and artefact concentrations likely to relate to settlements or buildings recorded to the north-east of Ditchling and adjacent to the Roman road at Providence Farm, Plumpton. The Plumpton villa is located on the Folkestone Beds, suggesting this geology provided a richer agricultural land than the adjacent clays as well as providing better drainage. Its 'central' position between the South Downs and the High Weald also gave it a greater range of landscape types to exploit. Recent fieldwork suggests that the villa is very badly plough damaged. It is highly likely that other farmsteads existed on this geology, some of which may have been of villa status. The villa lies some way to the south of the Roman road and may pre-date it.

The study area therefore holds a high potential for further sites from the Roman period, some of which may be of regional importance.

Ouse Valley Project Area

A road network was constructed along and into the Ouse Valley during this period, presumably complementing and adding to existing communication networks, opening up the landscape and providing trade routes with the rest of the country. This road network, along with river transport, would have increased the export of food and resources (including processed iron ore) out of the area and allowed the import of fine commodities from the rest of the Roman Empire. Excavations at Culver Mead and Pond Field, Barcombe have shown the potential for roadside settlement. More settlement may be located along the lines of these roads. The extent of river transport is not known although there could be quay facilities at Newhaven and Lewes as well as the remains of buried boats.

The increased prosperity during this period is reflected by a number of high-status villa farms being constructed, such as the one currently being excavated at Barcombe. There is a high potential of ditched field systems connected with these villa estates.

The Ouse Valley contains eleven recorded sites representing either settlement, burial or industrial activity; as well as ten finds spots of artefacts. This recorded activity appears to mainly focus on the River Terrace Gravels around Barcombe, where there is an important road junction; although this pattern may be biased by a focus of fieldwork in this area. See Fig. 5.

The current data suggests a medium to high potential for further sites to exist from the period, especially in the middle section of the valley. Gravel terraces do appear to have been targeted

for activity during the Romano-British period, but sites are just as likely to be recorded on clay geology.

Cuckmere Valley Project Area

A road network was constructed, the main 'trunk road' of which ran from the Ouse Valley to Pevensey, crossing the Cuckmere south of Arlington. This road network, along with river transport, would have opened up the landscape and provided trade routes with the rest of the country, increasing the export of food and resources (including processed iron ore) out of the area and allowed the import of fine commodities from the rest of the Roman Empire. The main occupation site for the valley appears to have been focused at this river crossing south of Arlington, where fieldwork has identified a very large settlement containing both high status occupation and evidence of industrial activity in the form of pottery kilns and iron smelting furnaces.

So far no high status villa farms have been identified within the project area, but one has been located at Ripe just to the west, along with a high concentration of 'peasant farmsteads'. Future fieldwork may identify this dense settlement pattern within the confines of the Cuckmere Valley as well.

There are 15 records of sites for this period within the project area, comprising five settlements (four of these however relate to the Arlington major settlement discussed above), one burial site and two industrial sites; as well as two finds spots of artefacts. This recorded activity appears to mainly focus on the River Terrace Gravels between Berwick and Arlington; although this pattern may be biased by a focus of fieldwork in this area. Due to a low level of research there is still no real understanding of potential in the Upper and Lower sections of the valley during this period. As with the Iron Age period there is a strong possibility that the lower valley was still a tidal inlet, and again this possibility raises a potential for salt production sites.

Based on the current data, the potential for further Roman sites within the project area can be seen as high, especially in the middle section of the valley where the Roman road crosses the river.

Crumbles Project Area

Evidence of Romano-British activity within the project area is apparent only at the western end on the chalk/foreshore margin. Here a substantial and very early villa complex was constructed. It is likely that this villa was built for a local aristocrat (a series of early villas stretch along the Sussex coast, focused on each of the River Estuaries, culminating in the important palace site at Fishbourne) and that this villa was a centre of trade and control over the surrounding area, origins of which may have existed prior to the Roman invasion.

During the Roman period, the marsh and foreshore are likely to have been utilised for hunting and the production of salt, although no sites have yet been identified, but are suggested by evidence of this industry that has been recorded on Romney Marsh.

Rye Bay Project Area

The Roman navy in particular is likely to have viewed Rye Bay and Romney Marsh principally as a way in to the iron richer areas of the eastern High Weald. The Rother and Brede Rivers provided the Romans with a transport route between the iron-bearing geology of the eastern Weald with the sea. The shingle bars also provided the location for trading sites with associated salt making and possibly trans-shipment of materials such as wool, timber and charcoal. Evidence for industrial salt production has been revealed nearby at Lydd.

The area appears to have been essentially used for trading and industry with limited settlement and occupation but there remains the potential for buried remains of this period beneath the more recent shingle deposits.

6.4 Saxon Period (410AD – 1066)

By the early 5th century AD Roman military and economic systems were collapsing in Britain. Troops were being transferred to more strategic sites or withdrawn from Britain. By AD 410 the few remaining Roman-trained forces formed the only defence against invading Saxon tribes arriving in greater numbers from northern Europe. The current archaeological record suggests a dramatic contraction of population and settlement patterns after the withdrawal of Roman control. This decline appears to have begun in the later years of the Roman period, brought on by a series of catastrophes including a collapse of the economy, pressures of Germanic raiding along the coast and a series of devastating plagues. The surviving population appears to have quickly adopted Saxon overlords and Germanic culture.

An expansion of population and settlement patterns starts again around the 7th century a time when the pagan population was being converted to Christianity and once again becoming part of a European community.

Folkestone Sandstone Beds Project Area

There are currently no recorded sites from the early Saxon period within this study area. The lack of early Saxon sites may reflect an abandonment of this area after the Roman withdrawal, or more likely the probability that evidence from this period has not yet been encountered as it lies buried under the modern villages and farms. Anglo-Saxon sites are also difficult to detect as the main datable artefact, the pottery, is poorly fired during this period and does not survive well in the plough horizon. At Hassocks in West Sussex however excavation has recorded substantial settlement and an associated cemetery site at the junction of the London to Brighton Roman Road and the Greensand Way.

The later Saxon period is represented by eight record sites, which include the historic villages of Ditchling, East Chiltington and Streat, which based on place name evidence are likely to have had their origins in the Saxon period. The village of Ditchling, centred on an important crossroads, appears to have been the most important, possibly acting as a regional centre and royal manor.

Based on our current record, there appears to be a moderate potential for the early Saxon period and a high potential for the later Saxon period on the Folkestone Beds geology.

Ouse Valley Project Area

During this period a number of villages formed along the Ouse valley, probably starting as little more than a cluster of family farms, but gradually increasing in size over the following centuries. Some became important centres of power, such as Hamsey, which was owned by the Kings of Wessex (who had conquered Sussex in the 7th century) and was the location of an important *witan* or royal council held between AD 924 and 939. Just to the south an important monastic centre was founded at Malling. However, the main centre of power, trade and settlement formed at Lewes, which was defended as part of the burgh fortress chain against the Vikings.

Evidence from this period does not appear to specifically focus on the river terrace gravels, but they were certainly areas that were utilised. There is a medium to high potential for further sites to exist throughout the valley.

Cuckmere Valley Project Area

There are very few recorded sites for the Early Saxon period within the Cuckmere Valley, which is surprising given the number of sites within the wider landscape. Their absence may reflect a low level of archaeological research or the possibility that this area was largely abandoned after the end of the Roman period. The potential for this period must therefore be characterised as 'unknown'.

During the middle to later Saxon period a number of villages such as Arlington, whose church contains late Saxon elements within its fabric, formed along the Cuckmere Valley. These

settlements probably started as little more than a cluster of family farms, but gradually increased in size over the following centuries. Unlike the Ouse Valley, there is no main administrative centre or ecclesiastical sites and the current evidence suggests the valley was not defended as part of the burghal hidage scheme against Viking raids.

Crumbles Project Area

It is likely that small-scale reclamation of the Pevensey Levels started in the late Saxon Period; the Domesday Book however shows that its main function was salt production. During the late Saxon/medieval period a number of hamlets formed on the low rises of land within the Pevensey Levels, probably starting as little more than a cluster of family farms, but gradually increasing in size over the following centuries.

There are currently no sites or findspots from this period within the project area, settlements and cemeteries are however recorded at Eastbourne and Pevensey. As in the Roman period, it is likely that the marsh behind the shingle barrier was utilised for salt production and hunting.

Rye Bay Project Area

Romney Marsh, having only been marginally occupied during the Roman period, shows little evidence of activity during the early Saxon Period.

By the 8th- and 9th-century AD land ownership documents (charters) kept by Christ Church, Canterbury reveal that the north east of the Romney Marsh was being actively settled. Evidence of maritime trading and occupation has come from the excavation of the eighth- and ninth-century AD site known as *Sandtun* in Kent. The tidal inlet used previously by the Romans was shrinking due to siltation and a new outlet for the Rother through the shingle had formed at Romney.

6.5 Medieval Period (1066 – 1550)

Following the Norman Conquest, Sussex was divided up into five administrative areas or *rapes*, each controlled by a major castle and subservient towns and ports. The land was held and controlled by both the Norman noble families and the church.

This restructuring of power and distribution of wealth appears to have triggered an increase in trade connections and an improved economy. An increase in wealth and prosperity is attested by the construction of masonry parish and town churches. The medieval period represents a rapid growth in existing settlements and the formation of new settlements and outlier farms. Many of these medieval settlements contracted in size in the following periods, their curtilages therefore have a high potential for containing archaeological deposits relating to the medieval occupation.

The medieval period represents the expansion of existing Saxon settlements and the formation of new settlements and outlier farms. This pattern forms the basis for much of today's settlement pattern within the study area: the Historic Landscape Characterisation records a substantial amount of surviving medieval fieldscapes.

There are record for six sites of this period, with a further four being identified by the HLC, comprising of villages, a chapel and farmsteads. These do not appear to be predominantly focused on sand geology, but as with earlier periods there may have been a preference to settle and farm well-drained soils. Rather there is a clear focus on cross roads of the Greensand Way and routes coming off the Downs. There is currently no evidence of industrial sites, but the Domesday reference to a mill at Ditchling attests their potential to exist. The potential for further medieval sites to exist on the Folkestone Beds is high.

There is a high potential for further sites to exist on the Folkestone Bed geology, although this does not appear to have been specifically target by medieval communities.

Ouse Valley Project Area

The medieval landscape pattern forms the basis for much of today's settlement pattern along the Ouse valley. Lewes continued to be the dominant population and trade centre in the study area and the wider *Rape of Lewes*, with a series of villages and scattered manor farms located along the Ouse Valley.

The medieval period sees the first clear evidence of extensive settlement and landownership within the Weald, exemplified by sites such as Fletching Mill, where there is evidence of a moated manor and adjacent settlement. At the very close of the medieval period this colonisation and exploitation began to rapidly increase with the formation of an extensive iron working industry. Gravel areas such as Barcombe were the focus for settlement; however occupation / sites also existed on the other geologies.

Evidence from this period does not appear to specifically focus on the river terrace gravels, but they were certainly areas that were utilised. There is a medium to high potential for further sites to exist throughout the valley.

Cuckmere Valley Project Area

A 'power' focus was founded during this period at Arlington (although Alfriston also appears to have been a large dominant community), and a large priory was founded at Michelham. This priory also owned a large hunting park to its east, the exact boundaries of which are not fully understood.

The medieval defence of the Cuckmere valley is currently a mystery, with no confirmed location for the site of a defensive structure guarding the valley, making it the weak link in the defences along the Sussex coast. A number of locations have been put forward as the possible sites for a medieval castle, including Burlough Castle and The Rookery. However other possibilities include a possible small motte at Berwick Church, and the enigmatic site at Lower Court, Frog Firle. In the upper reaches of the Cuckmere Valley, Michelham Priory is surrounded by a moat, and has a fortified gatehouse. There are also a high number of moated sites within the parish of Arlington, suggesting a necessity for fortification against raids, which might imply a lack of any defences further south.

The medieval period sees the first clear evidence of extensive settlement and land ownership within the Weald, exemplified by settlements such as Chiddingly in the upper Cuckmere Valley, and a large concentration of moated manor sites in Arlington parish. At the very close of the medieval period this colonisation and exploitation began to rapidly increase with the formation of an extensive iron working industry.

It is likely that the management/reclamation of the lower valley floor started during this period. This may have left landscape features, though most are likely to be of post-medieval date.

There are records for 42 sites dating to the medieval period, ranging from defensive, monastic and agricultural settlement sites to water management earthworks. This high number reflects the growth during this period and suggests a high potential for further sites to exist within the project area focused on all types of geology, including the river terrace gravels.

Crumbles Project Area

The medieval landscape pattern forms the basis for much of today's settlement pattern on the Pevensey Levels. The 'power' focus remained at Pevensey as it was in the Roman period, which became an important *Cinque Port* town.

It is likely that the current shingle beach deposits were beginning to form during these periods, possibly as a result of land and water management on the Pevensey Levels. Access to the port at Pevensey was through a narrow channel in the shingle barrier and appears to have shifted a number of times during this period. The medieval period saw a huge reclamation project to drain the Pevensey Levels and provide good quality farmland; the leading organisation in this appears to have been the monks of Battle Abbey, who owned much of the marsh. Later on the project was taken over by the inhabitants of Pevensey whose port access was suffering from silting brought on by the earlier reclamation and the shifting river mouth.

There is currently only one recorded site from the medieval period within the project area, a large boundary earthwork. There are however a large number of records comprising of settlements, salt production sites and a series of dykes/earthworks behind the shingle barrier. It is probable that as the port of Pevensey waned boats were landed on the beach, raising the potential for hulks and repair sites to exist buried within the storm beach gravels.

Rye Bay Project Area

By the mid-eleventh century AD a large portion of Romney Marsh had been reclaimed from the sea and the population of the area was growing. The town and *Cinque Port* of Romney and its inhabitants of sailors and fishermen were recognised during the last phases of Saxon rule, and immediately by William the Conqueror, to be of strategic and economic importance. Following the Norman Conquest the town and port of Romney flourished commercially and culturally due to maritime trade and political associations with continental Europe.

During the twelfth century AD the port of Romney was already being affected by estuarine siltation, with trade being re-directed to Old Winchelsea, which had been established on a gravel barrier and tidal inlet to the south of Rye. This was an intense period of dramatic environmental, economic and social activity on Romney Marsh. Reclamation and occupation of the marsh continued to spread out south-east from land and sea walls constructed by the Saxon/Norman population and from better drained areas such as the exposed gravel barriers around Lydd. Although creating productive land for grazing and crops, reclamation accelerated the decline of the port at Romney and increased the amount of land at risk from flooding. This period also saw a shift in the focus of commercial and cultural activities on the marsh from Romney to the towns of Old Winchelsea and Rye.

While deposition led to the demise of Romney, the opposite process, erosion, led to the rapid and total destruction of Old Winchelsea. Coastal erosion during this period broke through the gravel barrier that had protected the reclamation efforts of the marshland in the preceding centuries. In AD 1250 and AD 1252 severe storms damaged much of Old Winchelsea. Later storms eroded the town further pushing sea water inland as far as Appledore and extensively flooded Walland Marsh and inland floodplains to force the course of the Rother into its present position.

Large landowners and their tenants restarted reclamation of marshland areas affected by the late 13th century flooding and New Winchelea as constructed on the hill at Igham. There are records for a series of earthworks and dykes at Walland Marsh and Broomhill Level dating from this period but at present the HER does not clearly reflect the complex and changing nature of the study area during this period. Due to the change in land-use however, much larger fields were created for grazing. These reclaimed lands were well situated to supply wool to the established Wealden cloth industry which exported textiles to the continent.

6.6 Post-medieval and Modern Periods (1550 – present)

Folkestone Sandstone Beds Project Area

The medieval pattern of a series of main villages and outlying farms is reflected during the post-medieval period. There are records of twelve sites of post-medieval date, comprising a farmstead related buildings and a water mill. The villages of Ditchling, East Chilington and Streat continued to be occupied, however all were reduced in size with some areas of former

medieval occupation being abandoned. This shrinkage may reflect a population movement out into the hinterland where there appears to be an increase in farm estates. There areas around the current villages and historic farms therefore have a high potential to contain archaeological deposits from both the medieval and post-medieval periods.

There is currently no evidence of 19th century or WW1 military sites within the study area. Although the ESHER recorded no WW2 sites, specialists were able to provide 18 sites relating to defensive structures and aircraft crash sites. There are currently no records relating to post-medieval or modern industrial sites, the identified quarries however are likely to contain features and structures relating to the extraction industry.

There is a high potential for further sites to exist on the Folkestone Bed geology, although this does not appear to have been specifically target by post-medieval and modern communities.

Ouse Valley Project Area

The post medieval period marks an explosion in occupation and industrial activity within the Ouse Valley. In the Lower and Middle Ouse valley this is marked by the expansion of the medieval settlements and an increase in the number of outlying farmsteads. In the Upper Ouse, new villages such as Newick appear to have been founded, along with a series of large country estates and parks, such as Sheffield Park.

The use of the Weald's industrial resources, mainly for iron production, reached its peak during this period, with an extensive iron industry emerging in the 16th century. This industry had a huge impact on the Low and High Weald, not only in the quarrying and smelting of iron ore, but in the secondary industries such as charcoal production needed to sustain it. By the 18th century however, the industry had collapsed due to competition from the iron industry in the Midlands, which with a huge coal resource was able to produce iron more efficiently and at a cheaper cost.

This collapse probably resulted in a large population migration out of the area and into the larger towns and cities. Some attempts were made to retain industry in the Ouse Valley, including reclamation of the Lower Ouse valley together with the straightening of the channel in C18th/19th at Newhaven and the Ouse Navigation Project with its associated locks (i.e. at Barcombe Mills). There are also considerable surviving water management features along the river such as the weirs and sluices. They both relate to former mills as well as drainage and are often overlooked by archaeologists despite their importance to the maintenance of the floodplain.

Industry did not completely vanish from the valley. At Bishopstone a large tidemill and its associated village was constructed in the 19th century, along with a series of other mills upstream producing corn, oilseed and paper. In the upper valley there are a number of small sandstone quarries of interest, many of which may be quite old. In the lower valley there are a small number of brickworks with associated pits (i.e. Piddinghoe) but this area is dominated by the chalk/lime industry, particularly in the later 19th century. Study should be made of the development of these sites (using cartographic sources) and recording what buildings/features/kilns still remain (above and below ground). Although the main workings are not strictly in the valley, being concentrated on the chalk, there are a number of related elements in the valley associated with the transport of bulk materials to the river for transportation. Examples include the Offham inclined plane and its associated 'canal' cut and remains of raised tramways from the South Heighton works. There are often surviving remains of quay facilities on the river as at the Cliffe works and at Piddinghoe, associated with the brick/tile works. Other wharf facilities may still survive at other sites.

The large country estates appear to have been unaffected by the collapse of the iron industry in the Weald, although some estate owners who had invested in industry would have faced a severe reduction of income.

During the 16th Century the mouth of the River Ouse at Seaford became blocked and a new course was opened up in its present location. A series of gun batteries were built at Newhaven in the 16th century. Lewes was also provided with cannon during this period. Batteries were also located at Blatchington and Seaford, just to the east of the Project Area. There were also beacon sites at Newhaven and on Mount Caburn. Few of these sites have been positively identified on the ground.

In the 18th century the mouth of the Ouse was redefended, with batteries being constructed at Newhaven, Blatchington and Seaford and a barracks north of Blatchington Fort. A Martello Tower was also built at Seaford (Tower 74) in 1808, and is still extant today.

During the Second World War, the Ouse valley was heavily defended as a strategic element in the defence of Britain against Nazi invasion. These defences comprise of numerous surviving pillboxes, road blocks, nodal points, all part of the GHQ stop line which ran up the west bank of the river, as well as anti-aircraft batteries, search lights and barrage balloon sites. Survival of these structures is generally good and a 'near' complete sequence survives. These structures are certainly of regional importance when taken as a whole. The valley also contains numerous civil defence structures such as air raid shelters, observation posts and water tanks.

Evidence from this period does not appear to specifically focus on the river terrace gravels, but they were certainly areas that were utilised. There is a high potential for further sites to exist throughout the valley.

Cuckmere Valley Project Area

The post medieval period marks a very rapid increase in occupation and industrial activity within the Cuckmere Valley. In the lower and middle valley this is marked by the expansion of the medieval settlements and an increase in the number of outlying farmsteads. In the upper valley, a series of manor farms appear to have been founded, such as Tanners Manor at Waldron, but no large country estates, which are so common in other areas of East Sussex.

The industrial resourcing of the Weald reached its peak during this period, with an extensive iron industry emerging in the 16th century. This industry had a huge impact on the Low and High Weald, not only in the quarrying and smelting of iron ore, but in the secondary industries such as charcoal production needed to sustain it. By the 18th century however, the industry had collapsed due to competition from the iron industry in the Midlands, which with a huge coal resource was able to produce iron more efficiently and at a cheaper cost. This collapse probably resulted in a large population migration out of the area.

The farming economy appears to have been unaffected by the collapse of industry in the Weald and still forms the main character of this valley today. This period also represents a large and important brick/tile/pottery industry forming in the valley during the 18th and 19th centuries. There are numerous clay pits and remains of associated brickyard structures which have received little archaeological survey despite their importance to the local economy. Further cartographic analysis and field survey are required here to define these assets more precisely.

The total reclamation of the lower valley culminated in the post-medieval period creating a network of water management features including earthen walls (horseshoe repairs), drainage ditches and sluices. These are very important historic landscape features which are often overlooked. The river is also likely to have continued to be used for the transportation of iron and ceramic building materials, this industry may have left extant/buried traces such as wharfs. We currently have a very poor understanding of water transportation within the valley.

In the Napoleonic Wars and again in the Second World War, the Cuckmere was seen as a potential landing point for invading armies and was therefore heavily defended. The most

striking and important survivals are the WW2 beach defences at Cuckmere Haven which include a number of different pillboxes and antitank walls. These are still a relatively complete set and are still in their landscape setting. Other sites include those associated with cross-channel cables, firing ranges and a WW2 decoy site.

There are records of 95 sites from the post medieval to modern periods, comprising settlements, isolated dwellings, agricultural structures and Napoleonic and 20th century military sites. Recorded industrial sites comprise mills, kilns and iron furnaces.

The potential for further sites from this period to exist within the project area can be characterised as high for all geologies including the gravel terraces.

Crumbles Project Area

By the post medieval period the Pevensey Levels had been reclaimed and set in place the landscape we see today. This land was predominately used for the grazing livestock and is characterised by a series of scattered farms and 'lookers' cottages. As with Romney Marsh, this was probably a harsh environment in which to live, with population numbers severely affected by outbreaks of malaria.

Records within the project area are dominated by military structures, starting with a chain of artillery batteries built during the Elizabethan period and culminating with the impressive chain of Martello Towers, forts, batteries and barrack complexes built against the threat of invasion by Napoleon (1793-1815).

This coastline continued to be defending against invasion and there are a large number of recorded WW2 defensive sites within the project area, some such as the features at Normans Bay are of regional importance.

Rye Bay Project Area

The post medieval period is dominated by a situation of negative population growth in marshland parishes, with burials exceeding baptisms. At the time, increased mortality and ill-health of the inhabitants of coastal wetlands in southern England was attributed to the stagnant water and unpleasant smelling air of the wetlands, but we now know it was due to malaria.

Reclamation of saltmarsh across Walland Marsh since the 14th century rapidly increased up to the mid-16th century, reducing the volume of tidal flow within the Rother estuary. The inability of the flow of the Rother to scour away sand and silt deposited by the tides, had by the late-16th century led to the deterioration of Rye Harbour and the economy of the town.

The development of the post-Medieval landscape into large open fields capable of sustaining large numbers of sheep led to significant numbers of 'lookers' being employed in the marsh by landowners living in upland villages. A looker often had to tend the flocks of several landowners which led to the need for 'Lookers Huts' from where the shepherds could operate. These structures, once common on the marsh, are now rapidly disappearing.

Records are dominated by military structures, starting with a chain of artillery batteries built during the Elizabethan period and culminating with the impressive chain of Martello Towers, the Military Canal, forts, batteries and barrack complexes built against the threat of invasion by Napoleon (1793-1815).

Romney Marsh found itself in the frontline of the defence of Britain during WW2. One of the closest points to Nazi-occupied France, Romney Marsh looked to be one of the most obvious places for a German invasion force to land. As a result, the foreshore, beaches and marshlands were turned into a defensive fortification. Barbed wire and bunkers ringed the shoreline, minefields were laid, bunkers were built along the Royal Military Canal and plans for the flooding of the marsh in the event of attack were drawn up. One part of the marsh was

actually flooded by breaching the sea wall. This ALSF project's research, has highlighted that a vast number of WW2 structures survive on the gravel beach deposits and therefore are at a high risk from destruction by quarrying.

6.7 Historic Extraction

The desk-based research associated with this project has established that all the aggregate mineral resources studied have been subject to past extraction. On the current evidence this extraction appears to have taken place from the later post-medieval period to present day. The most heavily quarried resource was found to be the storm beach deposits at the Crumbles and Rye Bay, with moderate extraction within the Folkestone Sandstone Beds and limited extraction of the river terrace gravels.

'Historic' extraction sites are often located where new extraction is proposed and this can result in the complete destruction of any associated structures, transport systems/infrastructure and indeed the fossilized outline of the original pit/quarry. This project has highlighted the need in such instances for further archaeological field survey and mapping and more detailed historical research to understand the development of the site, the material extracted and the nature of historic components. Whilst walkover survey can locate surviving structures and transport networks and assess preservation, likely importance and the need for further recording, often many features will be buried and trial trenching, guided by the historic maps, may be required. Before detailed assessments of importance or significance can be arrived at, this project has demonstrated that field work is required.

Folkestone Sandstone Beds Project Area

Historic map analysis proved very useful in identify a number of quarries targeting the Folkestone sand beds. This suggests that the sand was quarried from at least the mid 19th century (probably earlier) and was on a relatively large scale. This quarrying continued and expanded into the 20th century and continues today as is demonstrated by the expansion of the Novington sand pit in 2006/7. The quarries identified all fell within the Folkestone Beds resource defined by the British Geological Survey.

Ouse Valley Project Area

The River Terrace Gravels appear to have been targeted by extraction in the past but only on a small piecemeal scale, probably for road building. There appears to be no current extraction. Identification of historic quarries does show that the British Geological Data may be slightly inaccurate in some areas for example at Stoneham where a gravel quarry is located outside the recorded gravel area. See Fig. 7

Cuckmere Valley Project Area

Historic map analysis provided evidence of past quarrying. Although these identified quarries have not been confirmed as gravel quarries, it is likely due to their location that most are. This suggests that the River Terrace Gravels have been targeted in the past but only on a small piecemeal scale, probably for road building. No evidence was seen of current extraction.

During the early 20th century, beach shingle was exploited at Cuckmere Haven and transported using a narrow gauge railway, traces of which still remain, from the beach to Exceat. Extraction of chalk was also a prominent industry within the lower valley, where the chalk/lime pits in the valley are numerous, but on a smaller scale than those of the Ouse valley which are much larger 19th century establishments. It is likely most within the Cuckmere Valley were for local agricultural/building needs, but some may have had transport networks which ran to the river.

Crumbles Project Area

The Crumbles area has been targeted from at least 1862 for gravel extraction, but is likely to have been utilised in a piece-meal fashion as early as the early 19th century when the Martello Towers were constructed. In 1862 a railway was constructed linking the Crumbles to the main London, Brighton and South Coast railway for the purpose of transporting gravel for railway construction. The railway was closed in the 1920s when demand dropped. Subsequent extraction was undertaken by Hall Aggregates (South East) who at their peak were extracting between 200,000 – 250,000 tons per annum. This material was used for foundation works on highways and construction sites, sea defences, the Ready Mix Concrete plant, ground cover for waterlogged sites, decorative building work and ground up material for pottery production. Extraction ceased in 1988 in advance of the development of the Crumbles for industrial and housing needs.

Rye Bay Project Area

The Rye Bay area is likely to have been targeted from at least the late 19th century for commercial gravel extraction. This extraction is likely to have started in a piece-meal fashion possibly triggered when the Martello Towers were constructed. In the 20th century this extraction grew rapidly, with virtually all the gravel resource having been targeted by large quarries at Rye Beach, the Nook and Scotney. This material was used for foundation works on highways and construction sites, sea defences.

7 CONCLUSIONS

7.1 Summary of increase in knowledge resulting from the project

This project has been very successful in increasing our understanding of history and archaeology of the five project areas, in highlighting current gaps in the Historic Environment Record and in showing the potential of using local specialist knowledge to enhance HERs. The project has identified nearly one thousand previously unrecorded historic assets.

An example of the increase in sites/knowledge is demonstrated in figure 6, showing the Crumbles area, where before this project the HER recorded only 31 historic assets where following this project a further 157 have been identified. The figure speaks for itself and this pattern is repeated across the other four project areas. The Desk-based Assessments set out the 'before and after' situation in detail.

The existing HER record was demonstrated to be almost totally lacking in WW2 sites and generally poor regarding post-medieval sites. Analysis of historic mapping, historic landscape characterisation and input from specialists produced 998 new historic asset/monument records. This figure is summarised below:

Project Area	Pre project records	DBA	HLC	Specialist information*
Folkestone Beds	31	24	8	28
Ouse Valley	158	62	12	309
Cuckmere Valley	199	50	N/A	152
Crumbles	31	43	N/A	124
Rye Bay	31	28	N/A	158
Total	450	207	20	771

* consists largely of post-medieval military and industrial sites identified by specialists

7.2 East Sussex Historic Environment Record (ESHER)

As well as adding new sites and data, a key output from this project has been the opportunity to create 'polygons' defining areas of archaeological interest, rather than simply spot points, as part of the GIS used within the HER for research and decision-making purposes. Allied with the descriptive texts, this project has significantly increased the understanding of these areas and this will lead to faster and more precisely explained future planning advice. In seeking to provide public web-based access to information about the historic environment, the narrative texts produced for this report have been deliberately couched in a language that will hopefully make them accessible to a wider public or non-specialist audience. For example we have chosen to use the expression 'years ago' rather than BP for early prehistoric dates. The Desk-based Assessment uses the normal archaeological terminology.

7.3 Historic Environment Potential

This project has been useful in developing a greater understanding of the potential relationship between buried archaeological remains and upstanding historic assets. For the buried archaeological resource it has shown that there is considerable potential for many periods of human history and that the present distributions of 'sites' in the ESHER are largely a result of the distribution of past survey activities. Archaeological potential by period is considered below and more details are given in the desk-based assessments. A series of key research framework notes is given by period below.

For upstanding built environment and landscape assets, it has become clear from this project that most have not previously been included in the ESHER, in part because until very recently they were not considered to be 'archaeological'. This is particularly the case with the post-medieval and modern periods and assets related to industry and defence. Listed building data was again very basic and did not include local lists. A clearer pattern of surviving medieval and post-medieval buildings was identified from the historic mapping which in turn was enhanced by the HLC data where this was available. The HLC was useful in analysing the character of the present landscape and the likely date of its components.

This project has confirmed that as well as approaching specific areas of the landscape in terms of their time depth and all evidence for past human activity contained within them, there is also a real need for a more developed understanding of key themes in the history of the area, such as communication, settlement, agriculture, industry and defence. Given the availability of historic documentation it could be argued that there is greater potential for the detailed understanding of the more recent past, and that these periods are often those that most engage the public.

7.4 Historic Environment Value/Importance

It has proved difficult to give the importance of many of the sites individually, partly because most can be seen as components of wider landscapes which require more research and partly because there is a need for more detailed field work to define the extent, character and survival of individual activity areas/historic assets. Below, by project area, we have proposed our consideration of potential based on IFA criteria but we have not attempted to define importance for individual assets. We have concluded that to assign value at this stage would have been too subjective and that, given the important landscapes of these five projects areas, importance will need to be defined in terms of historic environment/landscape value. This will require analysis of the Historic Landscape Characterisation data combined with the newly enhanced HER and could form the basis for a follow-up project.

7.5 Aerial Photography

Aerial photographs in the East Sussex County Council and University of Sussex Collections were studied and only one site, a probably post-medieval enclosure in the Ouse Valley, was located. It should be noted that the number of photographs available for study in these

collections was very small (<50) and the periods for which total cover is available date from 1947, 1999 and 2006. By contrast the table below lists the number of photographs available in the NMR and other sources for a series of transects across the project areas and given the very large number of images and range of dates available a more detailed NMP approach would be likely to yield useful results.

Source	Folkestone Beds	Ouse Valley	Cuckmere Valley	Crumbles	Rye Bay
NMR (verticals)	192	1402	848	1883	939
NMR (oblique)	0	11	35	12	15
NMR (military)	0	0	4	30	136
ESCC (1947 RAF)	Full coverage	Full coverage	Full coverage	Full coverage	Full coverage
ESCC (1999 colour)	Full coverage	Full coverage	Full coverage	Full coverage	Full coverage
ESCC (2006 colour)	Full coverage	Full coverage	Full coverage	Full coverage	Full coverage
ESCC (oblique)	0	1	0	4	5
ESRO (1947 RAF)	Full coverage	Full coverage	Full coverage	Full coverage	Full coverage
ESRO (1957)	Full coverage	Full coverage	Full coverage	Full coverage	Full coverage
Sussex Uni (1947 RAF)	Full coverage	Full coverage	Full coverage	Full coverage	Full coverage
Sussex Uni (1950 verticals)	Full coverage	Full coverage	Full coverage	Full coverage	Full coverage
Sussex Uni (1990 vertical)	Full coverage	Full coverage	Full coverage	Full coverage	Full coverage
Cambridge (vertical)	1	5	3	4	7
Cambridge (oblique)	5	21	10	2	20

7.6 Project Area Summaries

Folkestone Sandstone Beds Project Area

The Folkestone Sandstone Beds project area has been characterised as having a generally high historic environment potential, though there remains uncertainty due to the relative lack of field survey and research. The project has noted high early prehistoric and historic period potential but little evidence for later prehistoric activity. There is evidence for a shift away from settlement on these deposits in the post-Roman periods but it may be the case that following activity in the Mesolithic it was not until late in the Iron Age that this landscape saw more intense settlement activity. Recent archaeological evaluation at Novington Sand Pit has demonstrated that extensive field survey will be needed to locate new activity foci. Here, recent evaluation trial trenching in advance of the next phase of sand extraction has found only limited evidence for

past human activity on the north-facing slope and evidence that some of the worked flint artefacts have been re-deposited from further upslope.

From the evidence collated the following historic environment potential is proposed:

Period	Potential
Palaeolithic	High?
Mesolithic	High
Neolithic	Medium/Low?
Bronze Age	Medium/Low?
Iron Age	Medium to high?
Romano-British	Very high
Anglo-Saxon & medieval	Very high
Post-medieval, Industrial & Modern	Very high

Ouse Valley Project Area

The Ouse Valley has been characterised as having a high historic environment potential covering all periods of human activity and has received a reasonably high level of previous archaeological research. The river terrace gravel deposits appear to have been a focus for settlement and related activity during the earlier prehistoric periods and possibly during the Roman period, with the valley providing the main access through the landscape. Occupation from the medieval period onwards is characterised by a small number of administrative/trade centre towns, supported by a large number of agricultural villages and their outlying farms. The medieval and post-medieval landscapes appear to form the basis for the current landscape character and it is difficult to understand at present whether there are clear links back into the preceding periods. The valley formed an important defensive line during the Second World War and an important complex of related defence assets survive today.

The East Sussex Historical Environment Record was found to be good regarding Prehistoric to Post-medieval sites, but very weak regarding modern military sites, especially those from WW2. In particular, specialist feedback provided a very large number of previously unrecorded WW2 sites.

From the evidence collated the following historic environment potential is proposed:

Period	Potential
Palaeolithic	High
Mesolithic	High
Neolithic	Medium ?
Bronze Age	Medium
Iron Age	Medium ?
Romano-British	High
Anglo-Saxon & medieval	Medium to high
Post-medieval	Very high
Modern	High
Industrial	High

Cuckmere Valley Project Area

The Cuckmere Valley is characterised as having a moderate to high historic environment potential but with limited evidence at present of prehistoric activity. There is greater evidence for the more 'visible' Roman and medieval settlement and land use. The valley is rich in post-medieval remains and the current landscape character appears to reflect this post-medieval landscape.

The East Sussex Historical Environment Record was found to be good regarding Prehistoric to medieval sites, but very weak regarding post-medieval sites and modern military sites, especially those from WW2.

Specialist feedback has provided a large number of WW2 sites.

From the evidence collated the following historic environment potential is proposed:

Period	Potential
Palaeolithic	Medium
Mesolithic	Medium to high
Neolithic	Medium?
Bronze Age	Low to medium?
Iron Age	Unknown
Romano-British	Very high
Anglo-Saxon & medieval	Very high
Post-medieval	Very high
Modern	Very high
Industrial	Very high

Crumbles Project Area

The Crumbles project area can be seen as a predominantly post-medieval and modern landscape, mainly focused on defence of this stretch of coastline. The virtual lack of earlier sites is the result of the current storm beach having been formed largely since the end of the medieval period. This has been in part caused by a combination of drainage of the Pevensey Levels to the north and increased deposition from long shore drift. It is possible that the storm beach gravels cover the older land surfaces or former foreshores and thus there is potential for buried archaeological remains.

The most important group of sites are the six Martello Towers that survive within the Project Area, together with the Eastbourne Redoubt. Any military sites that pre-date the 20th Century are now so rare that they should all be considered nationally important. Although other Martello Towers and the Langley Forts have been lost, there may still be remains of these sites either below the high water tide level or buried under the shingle, so any proposed extraction or other work on the sites of these monuments should be monitored.

There are a number of Second World War defences still surviving along the foreshore, together with many areas where defences have been superficially removed or infilled. It is very likely that some forms of defence were buried in the shingle rather than being removed; for example anti-tank cubes, beach scaffolding etc. As the surviving sites are now so rare consideration should be given to the preservation of all such in-situ sites, whilst proposed extraction in other areas should be subject to desk-top research to locate the appropriate defence schemes which will provide a guide to the types of defences that were located there and may still survive, albeit buried and infilled.

The East Sussex Historical Environment Record was found to be good regarding Prehistoric to Post-medieval sites, but very weak regarding modern military sites, especially those from WW2.

Specialist feedback has provided evidence for a large number of WW2 sites.

From the evidence collated the following historic environment potential is proposed:

Period	Potential
Palaeolithic	Medium
Mesolithic	Medium to high

Neolithic	Medium?
Bronze Age	Low to medium?
Iron Age	Unknown
Romano-British	Very high
Anglo-Saxon & medieval	Very high
Post-medieval	Very high
Modern	Very high
Industrial	Very high

Rye Bay Project Area

The identified Rye Bay Historic Environment can be characterised as predominately medieval, post-medieval and modern, with a wealth of military structures and features relating to water management and coastal defence. There is currently little evidence of pre-medieval activity within the area, predominately because deposits and features from the Prehistoric and Roman periods (if they exist) are likely to be buried beneath later gravel deposits. There is a strong likelihood that Neolithic and Bronze Age remains/artefacts exist within the gravel deposits on the Broomhill Levels. The East Guldeford and Broomhill Levels are likely to contain features relating to the upkeep of sea defences and water management behind the shingle beach.

The East Sussex Historic Environment Record was found to be fairly weak regarding this project area, mainly containing records relating to 19th century military structures, and medieval earthworks. It was totally lacking in data regarding 20th century sites, especially military structures. As a result of this project, these weaknesses have been redressed.

From the evidence collated the following historic environment potential is proposed:

Period	Potential
Palaeolithic & Mesolithic	Low
Neolithic & early Bronze Age	Low
Late Bronze Age & Iron Age	Low - Medium
Romano-British	Low - Medium
Anglo-Saxon & medieval	Medium
Post-medieval	Very high
Modern	Very high
Industrial	Not reviewed

7.7 Research themes

Whilst in the desk-based assessments the research questions related to individual periods are developed, the following key methodological research areas are suggested here:

Palaeo-geography/environment

More research is needed on the nature of the palaeo-environment and how and why it changed through time, and more palaeo-geographic models are required. There is currently a very poor understanding regarding the formation of the present coastline and river valleys. With the exception of the Rye Bay area, there is thus an urgent need for geo-archaeological surveys in order to establish phases of development and dates for this process, as well as evidence for underlying older land surfaces and environments. Only by understanding the full nature of these deposits can we hope to fully assess the archaeological potential of them.

Historical analysis

This project has highlighted the urgent need for much closer joint working between archaeologists and historians and for the HER to make much more use of historical documents to define archaeological potential. For example, a War Department 'defence scheme' survives from the Second World War for the Eastbourne coastal area, but has not yet been fully studied. Another exists for the Pevensey and Normans Bay area, and there are likely to be others, which will provide more information and evidence for potential physical remains to survive. A full desk-top study of these defence schemes and other associated documents will enable us to have a much better understanding of the location of sites within the Project Area. This could be followed up with a detailed field survey to locate some missing features. The emergency coastal batteries set up in 1940/41 also need further research. There should be drawn plan of each battery, together with a war diary available at the National Archives. Recent fieldwork has suggested that there could be many elements of these batteries surviving as current structures, albeit much altered. More research, both desk-top and in the field, for surviving military sites that were transient in their nature. Examples of these would be anti-aircraft, searchlight and barrage balloon sites, together with camps, training areas and storage sites.

Field Survey

This project has highlighted the rich historic environment potential of the project areas but has also demonstrated that once identified there is still much work to be done to evaluate these historic assets. This will require programmes of field survey. Some of this work will take place as a result of development control but there is a clear need for programmes of field research, which could be both local area based (e.g. parish surveys similar to the Barcombe and Hamsey project – see www.bandhpast.co.uk) or be theme based. Whilst these issues are being addressed for the Rye Bay and Ouse Valley project areas, there is an important role here for Universities and local archaeological societies in the Cuckmere Valley, Crumbles, and Folkestone Beds project areas.

BIBLIOGRAPHY

See Desk-based Assessments for detailed project area bibliographies

- Drewett, P. (ed.) 1978. *Archaeology in Sussex to AD 1500* (CBA Research Report 29)
- Eddison, J. 1995. *Romney Marsh: The Debatable Ground* (OUCA Monograph 41)
- Eddison, J. 1998. 'Catastrophic Changes: A Multidisciplinary Study of the Evolution of the Barrier Beaches of Rye Bay', in Eddison, Gardiner and Long 1998
- Eddison, J. 2000. *Romney Marsh: Survival on a Frontier* (Tempus)
- Eddison, J. & Green, C. (eds.) 1988. *Romney Marsh: Evolution, Occupation, Reclamation* (OUCA Monograph 24)
- Eddison, J., Gardiner, M. & Long, A (eds.) *Romney Marsh: Environmental Change and Human Occupation in a Coastal Lowland* (OUCA Monograph 24)
- English Heritage., 2007 *The Management of Research Projects in the Historic Environment – The MoRPHE Project Manager's Guide*
- ESCC., 1999 *Minerals Local Plan for East Sussex and Brighton and Hove* (East Sussex County Council)
- Green, C. 1998. 'Palaeogeography of marine inlets in the Romney Marsh area' in Eddison & Green 1998
- Mullin, David., 2004 *The aggregate Landscape of Gloucestershire, predicting the Archaeological Resource* Gloucestershire County Council (Unpublished)
- Wessex Archaeology. 1993 *The Southern Rivers Palaeolithic Project Report No.2 1992-1993 The South West and South of the Thames*

APPENDIX 1: KEY STAKEHOLDERS

Project Board:

Casper Johnson (ESCC)
Tony Cook (ESCC)
Paul Roberts (EH)
Jill Hummerstone (EH)

Project Officer

Greg Chuter (ESCC)

Specialist sub-contractors

Dr Martin Bates (University of Wales,)
Luke Barber (Sussex Archaeological Society)
Chris Butler (Defence Archaeology specialist)
Ron Martin (Sussex Industrial Archaeology Society)
Dr Matthew Pope (University College London)
Dr Martyn Waller (Kingston University)

Key stakeholders:

East Sussex County Council Development, Waste and Minerals Group
District and Borough Authorities (Development Control)
National Monuments Record
Dr Barry Yates (Rye Bay Nature Reserve, ESCC)
Brighton and Hove Archaeological Society
Eastbourne Natural History and Archaeology Society
Hastings Area Archaeological Research Group
Lewes Archaeological Group
Romney Marsh Research Trust
Sussex Archaeological Society
Sussex Wildlife Trust