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EXECUTIVE SUMMARY

Background to the Project

English Heritage, in association with Kent County Council and Essex County Council, commissioned Chris Blandford Associates (CBA) to undertake a rapid strategic characterisation of the historic environment of the whole Thames Gateway area, from Southwark in London, to Southend-on-Sea in Essex and Faversham in Kent.

The principal aims of the project were to prepare a broad overview of the character of the area's historic environment and to develop a model for assessing its sensitivity. These were intended to supply a context for the long-term involvement of English Heritage and its partners in the Sustainable Communities Plan, with particular regard to:

- realising opportunities for using the historic environment as the cultural heart / root of new and existing communities;
- masterplanning and creating a vision for the future of the Thames Gateway;
- identifying historic environment issues early in the development process;
- identifying suitable locations for different types of development;
- developing strategic concepts for the layout and form of urban extensions and new settlements; and
- encouraging high quality design for existing communities and landscapes.

The project was developed as the first stage in a longer-term three stage approach:

i.) a strategic high-level overview of historic environment character and sensitivity to assist with determining the location and broad scale of development and change, and provide a broad framework within which more detailed studies can be undertaken (this project);
ii.) later, co-ordinated with priorities for housing growth, more detailed localised characterisation and analysis to help determine the character, scale and location of new development and change; and
iii.) thereafter, as required as part of a responsive ongoing programme, very detailed assessment of particular locales to help in final design processes.

Specific Project Objectives

Within the context of these three stages, specific objectives for this project were to:

- prepare an ***overview of the development of the area's historic environment***;
- prepare a high level ***historic characterisation of the area***;
- develop a ***model for assessing the sensitivity to change of the area's historic environment;***
- create an ***integrated GIS infrastructure*** with data from a variety of sources;
- propose an ***agenda for future work;*** and
- serve as a pilot for developing improved methods.

Overview of the Area's Historic Environment

The Thames Gateway has a rich and varied historical environment that has evolved through millennia of interaction between humans and nature. At the heart of the area's historic environment lies the River Thames and its estuary, throughout history a vital corridor for trade, travel and industry. The Gateway is however more than just the River: it's estuary is wide and the area also encompasses inland areas with unique and compelling histories.

Most of these inland areas have been inhabited since earliest prehistory and there has been no period when the land has been empty of people, their buildings or their work. Aspects of the area that we believe to be quite recent have long antecedents - urbanisation seemingly began before the Roman period, and the building of the landscape of fields goes back many centuries further. Where there seems to be an absence of archaeological or historical remains this is generally because they have not yet been found or have been destroyed by later episodes of landscape change, not because they never existed. The 'archaeological record' is a record of what we have found, not of what exists.

This rich and significant history means that the Thames Gateway is a vital repository of heritage assets, such as archaeological sites (most of which are probably as yet undiscovered) and historic buildings and townscapes all set within a complex rural historic landscape.

A key element of the project was a broad and general analysis of this long story. This provides a wide ranging understanding of the area's history, presented in a manner that is accessible to a broad range of audiences. The analysis was guided by the project partners, and drew heavily on the *Archaeological Research Framework for the Greater Thames Estuary* (Williams & Brown 1999) among other key sources.

Characterisation of the Historic Environment

The primary product of the project is a high-level historic characterisation, which breaks new methodological ground as well as drawing on existing approaches to characterisation such as Historic Landscape Characterisation and Landscape Character Assessment.

The approach used was very novel and challenging in terms of its scope, subject and style. The analysis initially involved the preparation of three separate strands of characterisations, one for each element of the historic environment, namely: *Historic Landscape*, *Urban Areas* and *Archaeology*. These characterisations used a wide range of data sources including the HLC databases for Essex and Kent as well as local and national heritage datasets. In all, the study defined around 80 Historic Landscape Character Areas, a further 80 or so Archaeological Context Areas and over 300 Urban Character Areas. The boundaries and brief descriptions for all of the areas are accessible through the GIS data contained on the enclosed CD.

These three separate strands of landscape, archaeology and urban areas were then woven together into a fourth combined *Historic Environment Characterisation*, for which about 140 Historic Environment Character Areas (HECAs) were defined, ranging from large expanses of the south Essex coastal plains, through to small historic town centres. Each HECA has a unique and distinctive range of historic environment attributes that set it apart from other areas within the Thames Gateway. Short descriptions and boundaries for these areas can also be found on the enclosed CD.

The study confirmed that a broad understanding of the character and attributes of the historic environment can be reached within the context of geographically distinct "character areas", and that these can be presented in accessible and usable formats. All three separate strands, and the combined characterisation, can be used together or as stand-alone elements for future analyses. They paint a generalised picture of the historic environment to be used (as part of a larger suite of information) in strategic development decision-making.

Model for Assessing the Sensitivity to Change of the Historic Environment

Assessing the historic environment's sensitivity to change is a difficult task especially at a strategic scale. A number of studies at a local and sub-regional scale have been undertaken in the last few years in Essex, around Milton Keynes and in the M11 corridor, but no single agreed methodology is emerging because different scales of analysis require different approaches.

Based on the experience of previous studies, this project has developed an updateable and repeatable GIS model that gives a generalised overview of the relative sensitivity to change of the three key strands of the historic environment. The methodology assigned numerical values and buffers to historic environment assets, whether historic buildings, archaeological sites or field patterns recognised through HLC. The values reflected the professional judgement of the team on the relative sensitivity of different types of historic assets in relation to *major physical change* such as substantial housing development and new urban expansions, major new industrial and commercial complexes, and large-scale transport infrastructure projects. It should be noted that modified values might be needed for other scales of proposed change – this is not an area where one size fits all. This large scale view of sensitivity were expressed as cumulative maps of sensitivity for each of these historic environment themes, expressed on a common scale ranging from Extremely Sensitive to No Known Sensitivity.

The initial outputs from this pilot model, supplied within the report, are based on limited available data and do not provide a complete and reliable measure of sensitivity to change. Further analysis of existing datasets and the addition of new datasets to the model would change the picture, and develop a more robust model, which eventually needs to be aligned with sensitivity models for social, ecological and other environmental issues. The current model is designed to assist with broad strategic design-making and should not be used at a site specific scale. The outputs from the model will always be dependant on the quality of the inputted data and therefore the model should only be used in consultation with relevant local authority historic environment advisors, namely Essex County Council, Southend-on-Sea Unitary Authority, Kent County Council and the Greater London Archaeological Advisory Service.

Integrated GIS Infrastructure

As well as this a technical report with select characterisation data on a CD, the project has produced a fuller GIS that is held by ECC, KCC and EH.

The CD supplied with the technical report, due to copyright restrictions, does not include the extensive datasets employed by the project to develop the sensitivity model or the characterisation analysis. All GIS data is presented in industry standard ArcView format. The fuller GIS supplied to the key partners contains a range of digital GIS data covering all elements of the project. Where data could not be supplied to the partners for copyright reasons, details on how to source the relevant data have been made available.

Going Forward: Agenda for Future Work

An element of the project involved the production of a separate proposed plan of action for future work to assist English Heritage and its partners. This planning structured around four key themes:

- *Further understanding* e.g. research projects
- *Development* e.g. design guides
- *Interpretation and promotion* e.g. community-led characterisation
- *Partnership and Liaison with other stakeholders*

Many of the recommended projects are already in progress and English Heritage and its partners are working together to identify ways to deliver the wider agenda over the next decade.

Applications and Uses

The characterisation is designed to be as a living tool to assist in the implementation of the Sustainable Communities Plan for the Thames Gateway. In this context the project and its various outputs could be used in a number of ways, including:

Developing Historic Environment Guidance Notes: The project's broad overview of the Gateway's character could be developed, with further analysis and research, into *Historic Environment Guidance Notes* for each Growth Areas, describing, analysing and providing guidance on the conservation and utilisation of the historic environment in future regeneration projects. These could be addressed to the master planning teams and local authorities working in the Growth Areas.

Testing and analysing growth and infrastructure options: The characterisation, sensitivity model and GIS datasets will facilitate rapid assessment by English Heritage and its partners of potential major development options e.g. proposed route options for major road / rail schemes or large-scale housing / commercial developments. *Any such analysis will not be a final or definitive response to a proposal* but a first step to identifying some of the key issues. These assessments would need to draw heavily on the local knowledge of local government and English Heritage historic environment services.

Helping prepare responses to particular development options: As specific sites for development are identified, the GIS will be used, with other information, to evaluate development proposals and their impact; it cannot, however, be the only source of information. Much as the National Character Map forms the starting point for landscape impact assessments, the Historic Environment Characterisation could be used in a similar manner for historic environment assessments.

Assisting with the development of a Thames Gateway Heritage Strategy: The project has a role to play in the development of a Heritage Strategy for the Thames Gateway Sustainable Communities Plan. Such a strategy would outline policies for the historic environment, and would identify opportunities for heritage-led regeneration projects. The strategy would also explore the conditions under which development should be restricted to ensure the survival of key heritage assets.

Raising awareness of and promoting the historic environment of the Thames Gateway: Even though existing studies have identified the rich historic environment of the area, many people's perceptions of the area's historic environment are restricted to the appreciation of the significance of a number of keynote sites e.g. the Candidate World Heritage Site at Chatham, and a more general view that the Gateway is dominated by derelict areas of previously developed land and has little historic character and significance. This and previous studies have clearly demonstrated that the historic environment of the Thames Gateway is extremely rich and complex. This understanding of the significance and complexity of the area's historic environment needs to be offered to the wider public as well as to statutory and non-statutory bodies, if negative perceptions are to be challenged.

Community involvement: There is also a strong case for the development of community engagement projects based on the study. These could for instance, use the characterisation and historical development sections to develop community-led characterisation projects for local areas. The projects could also help promote a fuller understanding of the value of the historic environment to local communities and provide a better understanding what local communities value and want for their local historic environment.

Key Limitations

The study is high level and strategic in nature and is *not suitable for use on its own in site specific decision making*, nor should its results be used as the only source of evidence for decision making. More detailed analyses of particular areas and proposed developments are required to inform these more detailed decisions. When working at a strategic level the study supplies vital contextual and supporting information, creating the broad framework for decisions. This is its strength: providing a framework for decision making, and supplementing existing approaches to determining the nature and acceptability of development proposals and options. The curatorial teams at Kent County Council, Essex County Council, Southend-on-Sea, Greater London Archaeological Advisory Service and English Heritage all hold more detailed data, supported by local knowledge and understanding, these should be the first port of call when seeking additional information to support decision making processes so that the results of the study, in particular the initial outputs from the sensitivity model, can be used with appropriate caution and validity.

Conclusions

This new historic characterisation of the whole Thames Gateway area has produced a useful and broadly robust understanding of the area's historic environment in a format that can support evidence-based decision making at a strategic scale. The characterisation methodology will have wider applications across the country, alongside existing methods such as Historic Landscape Characterisation and Landscape Characterisation.

The sensitivity model developed for this study provides a novel updateable and repeatable method for assessing sensitivity to change within the historic environment at a broad strategic level. However, the approach is reliant on the availability of robust and consistent data and in this respect the initial outputs of that part of this study must be provisional, constrained by the availability and quality of data. They should be treated with some caution, and be checked and calibrated against other judgements when used within decision making. We have confidence in the method, however, and anticipate that the model will usefully be developed further and will be used in other growth areas to support strategic evidence-based decision making

Despite these caveats, and notwithstanding the speed with which the project was undertaken, its results should be able to contribute significantly to decision making. As a tool it should be employed early in the decision making process to highlight key issues, constraints and opportunities with the aim of informing the development of options and concepts and helping to implement the Sustainable Communities Plan in ways that will give future generations a historic environment to enjoy and value.

1.0 INTRODUCTION

1.1 The Historic Environment and the Thames Gateway

1.1.1 The historic environment is a central resource for modern life. It has a powerful influence on peoples' sense of identity and civic pride. Its enduring physical presence contributes significantly to the character and 'sense of place' of rural and urban environments. In the Thames Gateway this resource is rich and complex. It has developed through a history of human activity that spans over 450,000 years, and it cannot be duplicated. Some of the resource lies hidden and unrecognised beneath the ground in the form of archaeological deposits. Other elements, such as the area's historic landscape, supply a highly visible record of millennia of agriculture, industry and commerce and now form an integral aspect of peoples' daily lives. The 'built' part of the historic environment is equally rich, with towns, villages and hamlets spanning 2000 years of history, supplying vibrant characterful environments for modern communities.

1.1.2 The historic environment has much to contribute to the regeneration of the Thames Gateway through the Sustainable Communities Plan. As a fundamental aspect of the area's environmental infrastructure it has a major role to play in the creation of attractive environments that will encourage people to live and work in the Thames Gateway. At the same time, the historic environment is sensitive to change. It needs to be properly understood before change is planned so that it retains enough historic character and so that it can make its full contribution to shaping future sustainable communities.

1.1.3 The regeneration of the area therefore presents both rewarding opportunities and difficult challenges. It is important that the many opportunities for the enhancement of the historic environment are realised and that adverse impacts associated with the regeneration are minimised so as to avoid unnecessary degradation of the historic environment. The historic environment lends character to places and provides a positive template for new development. It can play a key role in creating a 'sense of place' and identity as new communities are created and existing ones enhanced.

1.1.4 The Thames Gateway Historic Environment Characterisation Project has been carried out to help achieve a sustainable future for the area by providing an overall broad understanding of the historic environment of the whole of the Thames Gateway, including the large areas outside of the individual Growth Areas. This Gateway-wide approach will help government,

its partners, and English Heritage to make strategic judgements on proposals and opportunities in a regional and national context.

1.2 Introduction to the Project

1.2.1 English Heritage, in association with Kent County Council (KCC) and Essex County Council (ECC), commissioned Chris Blandford Associates (CBA) in August 2003, to undertake a rapid high level characterisation of the entirety of the Thames Gateway's historic environment. CBA developed the project in close co-operation with a steering group composed of representatives of the following bodies:

- English Heritage: Characterisation Team
- English Heritage: London Region
- English Heritage: East of England Region
- English Heritage: South-East Region
- English Heritage: Designation Team
- Kent County Council Heritage Conservation Team
- Essex County Council Heritage Environment Branch

1.2.2 The project has built on the work of the Greater Thames Archaeological Steering Committee in developing an *Archaeological Research Framework for the Greater Thames Estuary* (Williams & Brown 1999), and on the work of English Heritage and the Museum of London in developing *A Research Framework for London Archaeology* (2002). The project has also drawn heavily on the Historic Environment Records held by Essex County Council, Kent County Council, the Greater London Archaeological Advisory Service (GLAAS) and English Heritage.

1.2.3 The project was conceived as Phase 1 of a longer term process. The principal aims of Phase 1 were to:

- provide a context for the long term involvement of English Heritage in the Thames Gateway;
- prepare an overview of the area's historic environment that sets the scene and clearly demonstrates the need for English Heritage and its partners' participation in the Sustainable Communities Plan;
- initiate a long-term three phased approach:

i) (this project) a strategic high-level overview of historic environment character and sensitivity to assist with determining the location and broad scale of development and change;

ii) later, detailed localised characterisation and analysis to help determine the character, scale and location of new development and change;

iii) as required as part of a responsive ongoing programme, very detailed assessment of particular locales to help in the detailed design process.

- establish the GIS infrastructure for later phases;
- help demonstrate to ODPM and other national and regional government departments that English Heritage and its partners aim to participate in decision making processes across the Thames Gateway in a constructive manner. In particular with regard to:
  - master planning and creating a vision for the future of the Thames Gateway;
  - identifying historic environment issues early in the development process;
  - identifying suitable locations for different types of development;
  - developing concepts for the layout and form of urban extensions and new settlements at a strategic level;
  - promoting high quality design for existing communities, including provision for new habitats and open spaces;
  - realising opportunities for using the historic environment as the cultural heart / root of new and existing communities.
- serve as a pilot project for the development of strategic characterisation and sensitivity analysis elsewhere;
- provide a broad framework within which more detailed studies can be undertaken.

1.2.4 Within the context of these aims the specific objectives of the Phase 1 project were to:

- create an integrated GIS infrastructure for English Heritage and its partners that included data from a variety of sources and could be used for future analysis of the region;
- prepare a high level characterisation of the historic environment and its three components for inclusion in a GIS for wider distribution;
- develop a model for assessing at a strategic level the sensitivity to change of the historic environment of the Thames Gateway;
- propose an agenda for future work to be carried out in future phases of the project for English Heritage's consideration.

Key Outputs and Products

1.2.5 The project has three key outputs:

i) *Technical Report* : Document outlining the method and findings of the Study (this Report);
ii) *Characterisation GIS* : Results of characterisation analysis in Industry Standard GIS Format (contained on CD with this report);
iii) *Internal GIS* : Industry Standard Format GIS data for circulation to English Heritage and its partners (copyright restrictions prevent wider circulation).

1.2.6 Future products that may be developed from the above include:

- *Character of the Thames Gateway's Historic Environment*: a relatively glossy document outlining the historic and archaeological context and presenting the results of the characterisation work in an approachable, but technically orientated, style.
- *Custom GIS tool*: an easy entry, low-tech GIS viewer and analytical product designed for widespread distribution that presents elements of the internal GIS data in an accessible format.

Study Area

1.2.7 The Study Area is shown on Figure 1.1 in relation to the approximate boundary of the Thames Gateway and approximate extent of the Growth Areas. The Study Area encompasses a significant area beyond the Thames Gateway, with the aim of generating a relevant context for the study.

1.3 Structure of the Report

1.3.1 The following outlines the structure of the report:

- ***Part One : Introduction and Context***
  - *Section 1.0 - Introduction* : Brief introduction to the aims and objectives of the project.
  - *Section 2.0 - Project Method and Approach* : Overview of the method and approach of the project. More detailed methodologies for different elements of the project can be found in the relevant sections.

- *Section 3.0 - Brief Historic and Archaeological Context* : This presents a very broad-brush narrative and thematic overview of the key themes relevant to the Thames Gateway Historic Environment.

- ***Part Two : Characterising the Historic Environment***
  - *Section 4.0 – The Character of the Historic Environment* : This section presents the result of a combined characterisation of all three separate strands of the historic environment (see Sections 5.0, 6.0 & 7.0).
  - *Sections 5.0, 6.0 and 7.0* outline the project's methodology for the characterisation analysis, highlights some of the limits and constraints of the work, and presents, in conjunction with appendices, the results of the analysis of three separate but inter-linked themes of the historic environment –
    - *Historic Landscape;*
    - *Archaeological Context;* and
    - *Urban Character.*

- ***Part Three : An Approach to Modelling the Sensitivity of the Historic Environment***
  - *Section 8.0 - Modelling the Sensitivity of the Historic Environment* : This section presents the methodology for modelling sensitivity and the initial outputs of the sensitivity analysis based on existing data in the form of maps and accompanying text.

- ***Part Four : Going Forward***
  - *Section 9.0 - Applications, Uses and Limitations* : This section emphasises the possible applications for the Phase 1 technical work as well as outlining the limitations and constraints that should be taken into account when using the results of the study.
  - *Section 10 - Conclusions* : This section presents the key conclusions arising from the study.

2.0 PROJECT METHOD AND APPROACH

2.1 General Overview

2.1.1 The project has been undertaken through a series of interrelated stages as outlined below:

Stage 1: Analysis of Historical Development
Stage 2: Characterisation of the Resource
Stage 3: Development of a Model for the Analysis of the Sensitivity of the Historic Environment
Stage 4: Preparation of the Technical Report and GIS

2.1.2 Due to the restricted nature of the project's timetable the stages have been developed simultaneously over a period of approximately eight months. The results of the four stages and the project are presented in this technical report and in accompanying Thames Gateway Historic Environment GIS.

2.1.3 The project, although portrayed as separate stages, has been developed in a highly iterative and interrelated manner with the results and progress of each stage informing and being informed by the other stages. For instance, the analysis of historical development informed, and was informed by, the characterisation work, whilst the characterisation and historic development analysis supplied some of the data necessary for the development of the sensitivity model and analysis.

2.1.4 However, in broad terms, each of the stages can be understood as a relatively independent element that, with longer time-frames, would have potentially been undertaken in a serial manner. The following briefly outlines the approach to each stage of the project and explains the role of each stage and how it relates to other stages.

2.2 Stage 1: Analysis of Historical Development

2.2.1 Key to the project was the preparation of a broad and general analysis of the historical development of the Study Area, this is presented in Section 3.0 of this report. The analysis was intended to provide the project with a wide ranging understanding of the key themes in the development of the historic environment of the Study Area and then to present these in a manner that would be accessible to a broad range of audiences. The analysis is designed to

be used in conjunction with the characterisation work, in particular with the Combined Historic Environment Characterisation (Section 4.0).

2.2.2 The analysis of historic development was extensively commented on and guided by the stakeholders involved in the project. The analysis drew heavily on the *Archaeological Research Framework for the Greater Thames Estuary* (Williams & Brown 1999).

2.3 Stage 2: Characterisation of the Resource

2.3.1 The characterisation analysis formed the core stage of the project and involved a number of distinct processes. These focussed on preparing three separate strands of characterisation, one for each of the strands of the historic environment, namely: ***Historic Landscape, Archaeology*** and ***Built Heritage*** and then weaving these together into a single combined ***Historic Environment Characterisation***. The results of the characterisation process are presented in Sections 4.0 to 7.0 of this report and in the GIS.

2.3.2 Although the approach to the characterisation of all the three strands drew on existing approaches, e.g. Historic Landscape Characterisation and Landscape Character Assessment, in terms of its scope, subjects and style, the characterisation work undertaken for this project was novel and challenging. The study was a pilot study and has demonstrated that it is possible to develop broad understandings of the historic environment within the context of geographically distinct "character areas" and present these in an accessible and usable format.

2.3.3 The combination of the three separate elements of the historic environment into a set of single combined character areas was a particularly novel element of the project. It may have applications in other areas, for example alongside or within more traditional Landscape Character Assessments at both the County and District scale where the approach could provide a more holistic view of the physical environment in both rural and urban areas.

2.3.4 The combined and separate strands of the characterisation analysis can be used together or individually and are designed to stand-alone as required. They paint a generalised and strategic picture of the area's historic environment and are intended to inform and guide the development decision-making process, but should not be used as the sole source of information to support any land-use decisions.

2.4 Stage 3: Development of a Model for the Analysis of the Sensitivity of the Historic Environment

2.4.1 The analysis of sensitivity is a difficult and challenging subject for the historic environment, especially at a strategic and regional scale. The nature of the data and the complexity of the historic environment have not traditionally lent themselves towards broad sweeping assessments of sensitivity. The approach taken in this analysis built upon earlier studies in Essex and along the M11 corridor.

2.4.2 The pilot methodology developed for the Thames Gateway project focussed on assigning numerical values and buffers that reflected the relative sensitivity of different types of historic environment assets and then, through a process of combination within a GIS environment, create a cumulative map of sensitivity scores for the different elements of the historic environment. In practice this would mean that an area with a multitude of archaeological sites and scheduled monuments would have a higher sensitivity than an area with only one site or monument. The same would also apply to areas with a multitude of built heritage assets or historic landscape features.

2.4.3 The methodology separated the three elements of the historic environment (built heritage, archaeology and historic landscape) and individually analysed their *sensitivity to major physical change*. However, their relative sensitivity is expressed on a shared scale ranging from Extremely Sensitive to Little Known Sensitivity. The methodology has maintained the separation between the three elements of the historic environment as the mitigation and design solutions required to address issues relating to impact on sensitive historic environments vary considerably depending on the nature of the resource being affected.

2.4.4 The study, using existing datasets, has prepared a number of initial outputs that provide a broad and generalised overview of the relative sensitivity of the three elements of the historic environment across the Study Area using a repeatable and updatable GIS based model. The sensitivity values used in the study are to some extent open to debate and highly dependent on the quality of available data, but the model allows for the 'recasting' of the sensitivity analysis along a number of different lines to reflect different views on the relative sensitivity of assets and the addition of new datasets.

2.4.5 **It is important to stress that the initial outputs presented by the study are in an early stage of development and limited by available data. The model is designed to assist strategic-scale decision-making and should not be used for site specific decisions.**

2.5 Stage 5: Preparation of the Technical Report and GIS

2.5.1 The outputs from the project consist of two key related products: this technical report and a GIS containing the results of the characterisation analyses. English Heritage and its partners have also been supplied with additional supporting GIS data, where copyright allowed.

2.5.2 The technical report presents the approach and methodologies used in the project and outlines the results of the analyses in hard copy format. The project was always conceived as a digital project and the attached CD presents the results of the characterisation in a GIS format. These are presented in the form of a series of ArcView 8.0 projects (*note: 'projects' when used in reference to ArcView 8.0 relate to types of files*).

2.5.3 Future products that could follow from these technical outputs include a glossy report that presents the outline historic development of the Study Area along with the combined characterisation analysis in an illustrated style designed and written to be accessible to a wide range of audiences. The Countryside Commission's National Character Areas publications would perhaps present a useful template for any such report.

2.5.4 The GIS could also be added to and re-presented in a more accessible format for distribution to a wide range of stakeholders perhaps using a specially created user interface, e.g. website-type format.

2.6 Identification of Future works

2.6.1 As outlined in the introduction to this report the project was conceived as the first stage in longer process. To assist in that process an Agenda for Future Work has been presented to English Heritage for consideration. This highlights particular actions and projects that could assist in understanding, managing, and promoting the historic environment of the Thames Gateway. The Action Plan that forms the core of the Agenda for Future Work is designed to be maintained and updated to reflect changing priorities and needs. The projects proposed in the Action Plan require further assessment to determine their feasibility. Following this detailed briefs and project designs for their implication would be required to ensure that they meet the specific needs of stakeholders and planning authorities in the region.

2.6.2 The projects in the Action Plan have been developed under four broad headings:

- *Further Understanding*
- *Development*
- *Interpretation and Promotion*
- *Partnership and Liaison with other Stakeholders*

2.6.3 These headings reflect the current broad priorities for work in the Study Area. Many of the projects, especially those related to the ongoing Planarch 2 project being undertaken by Kent County Council and Essex County Council with Interreg IIIB funding, are already in progress or due to commence in the near future.

2.6.4 Some of the projects have been proposed to address the noticeable disparity between available survey data between the Greater London and Kent / Essex areas. This disparity reflects the fact that some nationwide historic environment programmes e.g. the National Mapping Programme, have not yet been extended in Greater London due to funding and logistical difficulties. This issue has reduced the information available to decision makers and historic environment professionals in the Greater London area and should be addressed as a matter of priority.

3.0 BRIEF HISTORICAL AND ARCHAEOLOGICAL CONTEXT

3.1 Introduction

3.1.1 This section is intended to supply a broad, relatively non-technical, narrative and thematic summary of the historical and archaeological context for the Thames Gateway. The section draws heavily on existing published documentation, especially the *Archaeological Research Framework for the Greater Thames Estuary* (Williams and Brown, eds. 1999) and the *Archaeology of Greater London* (MOLAS 2000). The particular debt owed to the former publication in the development of this section is acknowledged here. The whole section has also benefited from comments and inputs from a range of specialists at KCC, ECC and EH.

3.1.2 This section of the report is organised on a chronological basis for the long period from pre-human time to the middle ages. Thereafter, in order to do greater justice to the richness of survival and knowledge of these more recent times, a thematic approach is adopted for the last millennium of the region's history.

3.1.3 The aim of the section is to present an overview of the key historic themes and features of the region. It is not a detailed assessment of every aspect of the area's historic environment. The section provides a broad context for the characterisation and sensitivity analyses and these should be used in combination with this section.

3.2 Overview

3.2.1 The Thames Gateway area has a rich and varied historical environment that has evolved out of millennia of interaction between humans and nature. Whilst the Thames Gateway contains part of London and has a key relationship with the capital, the region consists of a number of distinctive localities, each with their own histories and historical themes. This archaeological and historical context explores these themes, outlining the shared influences that have created the historic environment of the Thames Gateway area at both a regional and local level.

3.2.2 At the heart of the area's historic environment lies the Thames Estuary, which throughout history has been a vital corridor for trade, travel and industry (see Figure 3.1). The role of the River Thames has driven and been driven by the success of London as an international port over the last 2000 years; the success of London can be directly related to the importance of the Thames. This has ensured that the River has remained a valuable and popular

routeway for people and trade for thousands of years: through this time the river has been a major artery for communication between Britain, Europe and the rest of the world. However, the Thames Gateway is more than just the estuary, and encompasses marshes and inland areas, each with their own unique and compelling histories.

3.2.3 Many facets of the region's history and landscape that we take as quite recent have long antecedents: for example, the development of towns began with the Romans, with some probable earlier roots in the Iron Age Oppida of the region, and the building of a landscape of fields began many centuries before that. There has been no period since later prehistory when the land has been empty of people, their buildings or their work. Importantly, where there seems to be an absence of archaeological or historical remains, this is not because they never existed, but instead because they have not yet been found or they have been destroyed by later episodes of landscape change. The 'archaeological record' is a record of what we have found, not of what exists.

3.2.4 This rich and significant history has resulted in the Thames Gateway holding a vital store of heritage assets, the majority as yet undiscovered, consisting of archaeological sites and landscapes; historic buildings and townscapes; all set within a varied rural historic landscape. This landscape now contains a complex 'palimpsest' (combination of layers) of features dating from the prehistoric periods through to the modern day.

3.3 The Early Environment and Modern Geology and Topography

Simplified Geology and Topography

3.3.1 The topography and geology of the Study Area has strongly influenced the evolution of the area's historic environment, and as such it plays an important role in any attempt to understand the character of the Thames Gateway area. Figures 3.2 and 3.3 show the simplified topography and geology of the Study Area.

Formation of the London Basin

3.3.2 The present day Thames Estuary flows within the London Basin, whose solid geology comprises sedimentary rocks of sands, clays and siltstones, laid down principally during the early to middle Tertiary geological era c.65 to 20 million years before present. The basin is bounded to the north and south by the Cretaceous chalk outcrops of the North Downs and the Chiltern Hills. Approximately 20 – 25 million years ago Alpine earth

movements led to the uplifting and folding of these rocks with subsequent erosion creating the London Basin syncline and the associated Weald Anticline.

Early Thames

3.3.3 By the beginning of the Pleistocene epoch of the Quaternary era, approximately 1.64 million years ago, an ancestor of the River Thames formed the main route of drainage from the London Basin to the North Sea. However, this ancestor flowed much further to the northeast through Hertfordshire and Essex, approximately on a line through the Vale of St. Albans, Harlow, Chelmsford and Colchester to Clacton.

3.3.4 The Pleistocene was characterised by numerous glacial and warmer interglacial periods reflecting advancing and retreating ice sheets. During one of these glacial stages, named the Anglian, the development of a major ice sheet led to the damming of the first, original Thames Valley as ice forced its drainage progressively southwards. This ultimately led to the establishment of the modern Thames Valley.

The present day Thames Valley

3.3.5 Between the Anglian and Devensian Ice Ages, the Thames became established in its modern-day valley. This valley is characterised by a series of sand and gravel river terrace and alluvial drift deposits. These have long been known to be rich in archaeological and environmental data, and make the Greater Thames area one of the key zones for the study of pre-modern humans and the animals they hunted. The Greater Thames is also important for the survival of remains relating to the pre-Holocene modern humans, whilst waterlogged alluvial conditions have, in parts, also preserved organic materials such as wood, plant and insect remains, which are particularly important indicators of past environmental change.

3.4 Prehistoric Activity in the Thames Gateway

Palaeolithic (c.450,000 – 10,000 BC)

3.4.1 Early hominids populated the landscape of fluctuating temperatures described above. These early pre-modern humans survived by scavenging and hunting animals and gathering plants when these were available. They probably lived nomadic life-styles, tied to the migration routes of herd animals e.g. deer and bison. One of these nomadic groups used the area

alongside an ancient river channel at Swanscombe, with the result that 400,000 years later, archaeological excavations revealed the internationally famous pieces of skull of a pre-modern human, together with flint tools and a series of animal footprints which survived as impressions in the soft riverside sediments. These 400,000-year-old skull pieces are among the earliest such remains in Europe, and there is a strong potential that similar finds of similar significance may still survive within the Study Area's extensive sand and gravel deposits.

3.4.2 Modern humans, *Homo sapiens*, are known to have been present in the British Isles since at least 30,000 years ago, probably also living a nomadic lifestyle of scavenging, hunting and gathering; producing tools out of stone, bone and antler, and creating artworks carved on bone and antler. As has already been noted, the Greater Thames area is known to be an important location for the preservation of archaeological remains of our Palaeolithic predecessors.

3.4.3 The Palaeolithic ended with the start of the Holocene (c.10,000 years ago – 8,000BC), when the current climatic warm phase began. The Holocene was preceded by a severely cold phase during which it is thought that humans may have abandoned Britain, however, since the warm phase of the Holocene began, the island has been continually occupied.

Mesolithic (c.8,000 – 4,500 BC)

3.4.4 The temporary settlements of the hunters and gatherers of the Mesolithic period tend to leave little remains in the landscape, except scatters of stone debris from tool making and occasional important waterlogged deposits. The Mesolithic landscape of the Thames Gateway was significantly different from the landscape of today, largely covered with forests running up to the edge of a much-reduced Thames estuary (see Figure 3.4).

3.4.5 The Thames Gateway Study Area contains numerous sites of Mesolithic date, and has great potential to contain many more, as yet unidentified remains. The backwaters of the Thames and the basins of tributaries have been identified as a virtually untouched area for archaeological research, full of potential for future Mesolithic research. Promising areas for research include the land surfaces potentially sealed by the later peats and riverine deposits of tributaries such as the Lea Valley and Ebbsfleet; and the land surfaces sealed by the muds of the intertidal zone, which were once dry land. In addition, the marshes such as those at Crayford, Erith and Plumstead and north of Gillingham are known to seal important organic sediments, and late Mesolithic and early Neolithic sites. The river

channel and the buried sandbars of the Thames itself also have a high potential to contain Mesolithic deposits on now submerged landscapes.

Neolithic (c.4,500 – 2,300 BC)

3.4.6 During the Neolithic, the dominant culture changed from hunter gathering to a more settled existence of farming and seasonal pastoral migration, interspersed with hunting and fishing. With the exception of megalithic architecture, examples of which survive in the Medway Valley e.g. Kits Coty, the structures of this period were not built of durable materials, and left few surviving marks on the landscape. Neolithic features may survive as buried landscapes; subsoil features; surface artefact scatters or as cropmarks, e.g. the extremely rare causewayed enclosures at Orsett, and Kingsborough Farm on the Isle of Sheppey.

3.4.7 The Neolithic was a time of innovation in domestic and ceremonial architecture. The enigmatic causewayed enclosures (such as the examples at Orsett and Sheppey) are classic examples of this innovation. The causewayed enclosures generally comprise a roughly circular or oval area surrounded by one or more discontinuous circuits of ditches and banks. Their use is currently uncertain, and they have formed the basis for much speculation amongst archaeologists. Little is currently known of the full extent of Neolithic occupation of the whole area although recent archaeological excavations in advance of the Channel Tunnel Rail Link have revealed a rare Neolithic longhouse. Other equally significant deposits may lie undisturbed under areas of colluvium (soil washed down a hill into a valley) in some parts of the Study Area. The marshes and reclaimed lands of Swale, Medway and Thames also have a very high potential to contain Neolithic deposits and submerged landscapes. Sites and features are beginning to be identified across the Study Area, with significant known exposures identified in the intertidal zone at Rainham / Aveley Marsh and Erith.

Late Prehistory in the Thames Gateway

Second Millennium BC

3.4.8 The Bronze Age (c.2,300 – 700 BC)_ is notable for its barrows, some of which may even date to the Neolithic. Numerous ring-ditches, the ploughed-out remains of ceremonial barrows often used for human burial, have been identified as cropmarks around the Greater Thames estuary, and in some locations barrow mounds are still extant. Whilst early Bronze

Age settlement evidence is generally rare, late Bronze Age settlement evidence is widespread and complex in the Thames Gateway area, including sites at South Hornchurch, Mucking, North Shoebury, Minnis Bay, St. Mildreds Bay and Cliffe. Late Bronze Age settlement evidence in the area is sometimes accompanied by a variety of industrial processes, such as saltworking alongside the estuary, and also burial and ceremonial sites (such as barrows, see above). The wooden trackways found under the grazing marshes of the Thames, in particular in Greater London, e.g. Becton, are also recognised as a remarkable archaeological resource and perhaps can be considered as the area's own 'Somerset Levels'. Also of note is the fact that the concentration of Bronze Age hoards around the Greater Thames estuary is one of the largest in Britain. These hoards generally relate to metalworking practices, but also appear to have religious / ritual significance.

3.4.9 The Bronze Age saw the recognisable development of large-scale land organisation to the area in the form of field systems, with examples on the Isle of Sheppey and at South Hornchurch and Mucking. The terraces north and south of the Thames contain numerous examples of these systems in the form of archaeological crop marks. The settlements of the Bronze Age also formed part of an intricate network of exchange, and possibly trade, and numerous imported items of metalwork, precious materials, and ceramics have been identified, indicating extensive national and international contacts.

First Millennium BC

3.4.10 The Iron Age (c.700 BC – 43 AD) is possibly a crucial period in the development of the landscape structure and form of the Thames Gateway area. For instance the broad NW-SE grain of the landscape in South Essex running to and from the Thames may have its origins in this period. This structure probably reflects patterns of seasonal stock and people movement (transhumance) from inland to the coastal grazing areas. The pattern of transhumance has also seemingly influenced the grain of the historic landscape in North Kent with long drove roads leading from the Coastal Plains to the Downs and Weald; in the High Weald, some similar roads are thought to date to the Iron Age.

3.4.11 Another key aspect of the Iron Age of the Thames Gateway region is the emergence of proto-urban sites, often called Oppida. These and other settlement sites are seemingly the earliest origins for some of the towns in the Thames Gateway, including perhaps Rochester in Kent. During the Iron Age the wider landscape was also settled and enclosed.

Numerous farmsteads and settlement can be found across the area with known concentrations on the Hoo Peninsula, the Isle of Grain, Orsett and Rainham.

3.4.12 The relationship between the Iron Age and later Roman period is of great interest. Many Roman sites, such as villas, have Iron Age predecessors suggesting some continuity of existence. As well as domestic sites, some Iron Age ritual / religious sites seem to have been adapted or continued in use under Roman rule, including the significant Springhead complex on either side of the Roman Road (A2) outside Gravesend. This brings us to the development of the major East-West communications routes in the Thames Gateway. It is possible, although further work is required, that many of the Roman roads (e.g. the A2) were based on earlier Iron Age route ways. This possibility has many implications for the understanding for the area's evolution and development.

3.5 The Roman Period

3.5.1 During the Roman period the region continued to be heavily populated, and surviving archaeological remains from this period principally include settlements, roads, industrial sites and cemeteries. The Study Area was bordered by London to the west, the principal town of Roman Britain; Colchester to the north, Roman Britain's first capital; and Canterbury to the east, the tribal capital of the Cantiaci.

3.5.2 On the Kent side of the Thames, London and Dover were connected by a Roman road, which ran through the then 'small town' at Rochester, and continued on to Canterbury before reaching Dover. Settlements developed at intervals along the road, for example at Crayford and Dartford. The Darenth and Medway valleys and the north Kent plain around Faversham developed a rich economy, seemingly based on a network of estates, each with one or more villas. Pottery and salt production was widespread throughout the Greater Thames, with a well-known industry in the Upchurch marshes in north Kent.

3.5.3 On the other side of the Thames, South Essex was also a densely occupied and productive agricultural zone, but one with a distinctive dispersed settlement pattern, largely lacking small towns and villas. The marshes were extensively used and an unusual collection of imported ceramics, numerous red hills (salt working sites), cremation burials and a possible fish-processing site indicate the importance of Canvey during this period. The main Roman road from London to Colchester lay further back from the estuarine zone than the road from London to Canterbury, roughly along the line of the present A12.

3.5.4 The Roman period played an important role in the development of the region. Some of the settlements in the Thames Gateway region have their origins in the Roman period and some of the key elements of the communications network were developed and continued to evolve during this time. The area acted as an important gateway and transport corridor for the principal Roman towns. As illustrated by the Springhead site, the relationship between the Roman period and the Iron Age contains the key for truly understanding the influence of the Romans in the region, and, as previously noted, this question would benefit from further future research.

3.6 The Saxon and Viking Thames Gateway

3.6.1 The Thames Gateway area had already experienced many changes in its landscape and settlement by the year 400AD, and these changes continued during the Anglo-Saxon period. The Anglo-Saxon Kingdoms of both Essex and Kent were of high status and great political influence, as shown by the wealth in the newly excavated royal grave at Southend. Kent in particular was of great importance during the early part of the period, as the particularly rich cemeteries of early Anglo-Saxon Kent attest. The importance of the Essex side of the river is shown by the excavation at Mucking of a major settlement site and associated cemeteries and the recent discovery of the burial of one of the Kings of the East Saxons at Prittlewell. Further west in the Greater London area there are a number of early Saxon cemeteries but few known early Saxon settlements.

3.6.2 By the middle Saxon period a trading centre was located at *Lundenwic* (London, in the area now known as Covent Garden), which later became the Saxon capital. In addition to *Lundenwic*, it is likely that a number of lesser Saxon trading centres were also located along the sides of the Thames estuary, with possible sites including Canvey, Greenwich, Woolwich and Faversham. Rochester was the seat of the second oldest Anglo-Saxon bishopric in the country, whilst the network of Minster churches founded by the Christian Saxons are still visible in the landscape and form the historic origins of several settlements, including Minster on Sheppey, Barking, Tilbury, Great Wakering, and Hoo St. Werburgh.

3.6.3 The Vikings utilised the Thames as a major thoroughfare, and the Greater Thames estuary was a focus of maritime activity throughout the Viking period, with Shoebury and Sheppey both supposedly used at various times as Viking bases. At Ludenwic, pressure from raids by the Vikings led to the reoccupation of the abandoned Roman walled city of London by the 9th century, and King Alfred is credited with the reorganisation of the internal layout of the city. Several boat remains dating to this period (or earlier), including the famous

Graveney boat, have been found sealed within the Thames's riverine deposits, and it is likely that there are yet more still to be found.

3.7 The last 1000 years of the Thames Gateway

3.7.1 Whilst the preceding section illustrates the antiquity of some of the features and structures of the Thames Gateway area's landscape, it is the case that these have been further developed and solidified during the past millennium. This historic development of the landscape can be seen to be the result of the interactions of a number of broad themes of activity. Each of these is explored individually in the following text.

Agriculture and the Inland Rural Landscape

3.7.2 Agriculture has been a constant theme of history in the Thames Gateway area. Whilst urban centres have developed into conurbations, the majority of the landscape is essentially agricultural and has largely developed in form through the direct influence of changing agricultural practices. The Thames Gateway can, at its most basic, be divided into two types of agricultural landscape: inland and coastal. The coastal areas, their use for grazing and their gradual reclamation is described later. The following concentrates on the inland agricultural landscapes of the region.

3.7.3 The inland agricultural landscape of the Thames Gateway is a complex and ancient, seemingly unplanned landscape. There was little parliamentary enclosure in either Essex or Kent (the latter only having c. 6000 acres enclosed by Acts in the county) and the fields, woods and orchards reflect a pattern of considerable antiquity. A clue to this antiquity can be found north of Southend-on-Sea where a highly distinctive form of linear, grid like, field system (termed Dengie-form - reflecting its location on the Dengie Peninsula) has been conclusively dated to at least the Iron Age, over 2000 years ago. The pattern and grain of the fields in this area are reflected through the landscape of the region. The strong linear field systems running tangentially to the River are a common feature of the Thames Gateway and reflect ancient patterns of movement and agricultural exploitation.

3.7.4 Essentially the fields delineate a pattern of exploitation that saw communities reaching inland for arable production and timber and fuel, and towards the shore for coastal grazing and other food sources, in an attempt to maximise their economic / subsistence resource. This would have been achieved through transhumance, whereby members of the community, such as the young people or certain families, would travel inland with animals to stay with

them at the inland pastures, or would travel to the sea to fish and use the coastal pastures. This transhumance would often take a seasonal pattern, with movements being dictated by the resources available at different locations at different times. In addition to this physical movement of people and animals, settlements would also organise their local fields so that they took advantage of as many seasonal resources as possible, and all along the shores of the Thames, villages and settlements can be found located inland of the shoreline and situated within field systems that stretch to the estuary and back into the hinterland. This pattern dates back to at least the medieval period and probably beyond.

3.7.5 These fields only tell part of the story however. In addition to the straight regular fields there are other less regular fields, perhaps reflecting episodes of assarting (woodland clearance and conversion to farming), sub-division or enclosure of common and wastes. There is also a patchwork of woodlands, especially in the south of the Study Area on the steeper slopes of the chalk hills, and these would have formed a critical component of agricultural life, both in terms of fuel and pasture.

3.7.6 In support of the arable and pastoral agricultural role of the Thames Gateway area, food processing has long been characteristic of the area, originally carried out in windmills and watermills and, until recently, continued on a large scale. Seed crushing (for oil and animal cake) was once an important industry, with mills on the Thameside and in the Medway towns. The industry still survives at Erith Oil Works, a factory of 1913-17. Large-scale sugar refining was established around Silvertown by Henry Tate in 1871 and Abram Lyle in 1881 and continues at Tate's site.

3.7.7 Finally there is Kent's reputation as the ‘Garden of England’, with hop gardens and orchards historically being a defining feature of the landscape of north Kent, in particular along the railways and roads where easy transport to London could be achieved. Whilst both these horticultural practices declined dramatically in the second half of the 20th century, extensive areas of orchards and some small hop gardens still exist within the Thames Gateway region.

Using the Marshes and Mudflats

3.7.8 Lining the course of the River Thames and Medway are great areas of coastal marshes and intertidal mudflats. As unreclaimed environments, the marshes provide an important interface between the land and the water, and historically have been an important resource for the area’s residents, not only providing a rich and varied source of food, including fish, eels, oysters and wildfowl but also serving as the location for important early industrial

activity such as salt making and pottery production. The unreclaimed marshes also provided an important area for sheep grazing, the salt in the rich coastal marshes providing protection against foot diseases.

3.7.9 Coastal marshes have been utilised by humans in a variety of ways, ranging from simple *exploitation*, whereby the natural resources of the area (outlined above) are harnessed with minimal physical change to the environment; to *modification*, involving some construction of summer dikes and drainage ditches to allow seasonal use for arable cultivation; to *transformation*, whereby reclamation is undertaken, allowing for permanent occupation of the land. These three strategies for the utilisation of the marshes of the Thames Gateway area have been undertaken since early prehistory, to varying degrees both geographically and through time. Whilst the marshes on both sides of the Thames share similar themes in their landscape history, the details of their individual histories vary.

3.7.10 During the Roman period, the marshes on both sides of the river appear to have been used for at least seasonal occupation relating to salt production, and were probably also used for seasonal sheep grazing. Whilst in other areas of north-west Europe, the Romans embarked on modifications and transformations of the marsh environments, in the Thames Gateway area this does not seem to have been the case. Transformation appears to have been practiced in the North Kent marshes as early as the 8th century, with drainage activity mentioned in historical charters. However, whilst reclamation activity gained momentum through the medieval, providing important arable and pastoral agricultural land on both sides of the Thames, the unreclaimed marshes, largely located in South Essex, also retained an important economic value, and were highly prized for their sheep pastures. The history of Canvey Island is an important case in point, remaining unreclaimed until the 17th century and highly prized for its suitability for sheep grazing.

Salt Production

3.7.11 Since late prehistory, the marshes have been the location of one of the Thames Gateway's most enduring industries, salt production. The Greater Thames area contains a vast amount of salt working sites, dating from the late Iron Age, Roman, medieval and later periods, and some possibly dating from the Bronze Age and earlier.

3.7.12 In Essex the late Iron Age / Roman sites are known as Red Hills because of their distinctive red soil, a feature almost unique to the county. These Red Hills on the Essex side of the Thames Gateway area are mainly concentrated around Canvey Island.

Archaeological research has revealed that, during the Roman period, seasonal settlement on the marshes was associated with the practice of salt-making.

3.7.13 An abundance of medieval saltworking sites are recorded in the 1086 Domesday Book, including those at Graveney, where later 13th century salt making mounds still survive. Salt making was a particular feature of the Hoo peninsula, with sites known at Cooling and around the Medway and the Swale and a large-scale 17th century salt-working site is recorded on the Isle of Grain. Salt production still continues in the modern day, with the salt factory at Maldon, though outside the Study Area, surviving as a modern testament to the perennial importance of this valuable resource.

Sheep Grazing

3.7.14 Sheep grazing was conducted on unreclaimed areas of coastal marshland, where the regular inundation by the sea created a rich grazing environment. In addition, the salt in the marshes protected the sheep against the foot diseases usually associated with grazing sheep in wet environments. During times of inundation, the sheep would gather on the small hillocks formed by earlier salt working; this practice was commented on by the early 17th century writer, Camden, who also noted the "*most sweet and delicate taste*" of the meat of the sheep grazed on Canvey Island. The milk of these sheep was also used for butter making and for cheese.

3.7.15 The 1086 Domesday Book lays great stress on the importance of south Essex's coastal marsh grazing lands, which have been estimated to support 18,000 sheep. Unlike the prevailing modern perception of marshes as being marginal wildernesses, past residents of the area prized their rights to use the marshes and mudflats, with inland parishes holding areas of marsh for their own use. Over time, more than 12 inland parishes held land at Canvey Island, indicating how highly prized these pastures were. Whilst most of the marshlands in the Thames Gateway area were exploited by nearby inland, marsh-edge communities, Canvey Island was large enough to support entirely marshland communities, associated with the profitable sheep grazing.

3.7.16 The large number of surviving sheepfolds and other sheep related remains within the Thames Gateway marshes attest to their localised use for sheep grazing. Whilst the reclamation and hence removal of grazing marshes has been a feature of the historic of the Thames Gateway over the past 1000 years, it is sobering to note that it has been estimated that since the 1930s almost 60 percent of historically surviving grazing marshes have been

developed / lost in Greater London, the Thames Estuary and adjacent coastal areas of Kent and Essex.

Fowling and Fishing on the Marshes

3.7.17 The unreclaimed marshes and mudflats also support a wide variety of wildfowl, as attested to by the large number of modern nature reserves to protect these, often seasonal, residents. In earlier times these birds provided another important food source, and whilst this is an activity that generally leaves little evidence in the archaeological records, the post-medieval duck decoy ponds that survive along the creeks and smaller estuaries, such as the Swale, are an exception to this rule. It is not believed that the Romans indulged much in wildfowling on the marshes, though by the medieval period this resource was highly prized. The increasing reclamation of the marshes during the medieval led to the reduction of areas where wildfowling could be practiced, and the rights to hunt wild birds were carefully managed by law.

3.7.18 Fish, eels and shell-fish would have been an important food resource for earlier residents of the area throughout history and prehistory, and during historical periods these would also have been shipped to London for sale, creating an important economic resource for the local area. These practices are recorded in documentary sources, and the remains of numerous fish traps / weirs are known within the mudflats of the Greater Thames, such as the extraordinary complex found just outside the Study Area, at Whitstable. Some of the surviving fish trap complexes may be earlier than previously suspected, with radiocarbon dating proving that many elements of the numerous traps in the Blackwater Estuary (outside of the Study Area), are in fact of Saxon date. Ponds, possibly for storing fish prior to shipping to market in London, have been found in several marshes, e.g. Leigh Marsh. The creeks at the edges of the Thames would also have been used for trapping eels. The willows often used to weave these traps would have grown in abundance in this marshy environment.

3.7.19 The cultivation of shellfish, particularly oysters and mussels, appears to have been a feature of the Thames since at least the Roman period, and has been continuously practiced on the Thames since at least the early medieval to supply the demand from London and further afield. The importance of this industry is reflected in the numerous surviving clusters of oyster beds and oyster storage pits (artificial tide-washed pools) in the Kent and Essex marshes, some of which are particularly extensive and elaborate. Oyster fisheries are a

feature of the British Isles as a whole, however their concentration in the Thames Gateway area is of particular note.

Reclamation

3.7.20 It appears that the earliest reclamation of the coastal marshes in the Thames Gateway area occurred by the 8th century, and gained momentum during the medieval. This earlier reclamation was a particular feature of the North Kent marshes, where documentation suggests extensive areas of arable cultivation and freshwater pasture by the 9th century. However, current evidence suggests that this earlier reclamation in Kent was not accompanied by settlement. In contrast, the Essex marshes developed a distinct geographical division during the medieval, with Canvey Island and the marshes to the west of the Island remaining unreclaimed, and those to the east being defended and reclaimed. With the exception of the west Essex marshes, historic documentation implies that by the 14th century, flood defences were fairly widespread throughout the Greater Thames estuary.

3.7.21 The reclamation of marshland removed the natural resources of the coastal marsh, such as the abundance of wildfowl and the rich sheep pastures, and replaced it with land suitable for arable cultivation and for cattle grazing. The enormous investment in terms of sea defence construction and maintenance was repaid to the investors, often the church or wealthy individuals, through increased land values. The links between ecclesiastical institutions and the development of the marshes is particularly marked at the Cliffe marshes.

3.7.22 Perhaps the most dramatic, and latest, land reclamation project undertaken in the Thames Gateway was Canvey Island. This area once consisted of five separate silt islands, created by the currents of the Thames estuary, and on which isolated farms associated with the island's sheep grazing agriculture had been built on the human-made raised ground of the Red Hills (see above), during the later medieval; each with their own individual horse-shoe shaped coastal defence. 300 Dutch workers were brought to Canvey in the 1630s to construct a massive sea wall, with which to protect and reclaim the marshland. The contract for the project was given to Joas Croppenburg, a relative by marriage of the famous 17th century reclaimer of the Fens, Cornelius Vermuyden. Two Dutch cottages survive from this crucial period in the history of Canvey Island, one of which, on Canvey Road, was restored by the Castle Point Council and now acts as a local museum.

Deep-sea Fishing

3.7.23 Archaeological evidence for fishing includes a fish-processing site of 13th-14th century date discovered on Canvey Island. At present this site appears to be a unique discovery within the Thames Gateway, though is seems reasonable to suppose that such sites were once common. Also of note is a whale processing site located in London.

3.7.24 Deep-sea trawling from Barking goes back at least to Stuart times, and during the 19th century it was briefly the largest trawling station in the British Isles. Due to its speculative nature, whaling was a minor, but nevertheless significant aspect of the Thames fishing industry. After the mid-19th century, the increasing pollution of the Thames made it impossible to store live cod in chests at Gravesend and many Barking ship owners began the practice of landing fish at Harwich. With the coming of the railways there was a rapid decline in Barking and the corresponding development of the Humber fishing ports.

Leisure and Designed Landscapes

3.7.25 The Thames Gateway region has a modern reputation for leisure use, containing such coastal resorts as Southend-on-Sea, with its 100-year old pier (the longest in the world). However, the use of the area for leisure has a much longer history. Speed's maps of Kent and Essex dating from c.1610 show the Thames Gateway to contain several parks, notably at sites such as Cobham and Cooling on the Hoo Peninsula. These parks would have contained deer and would have been used for hunting and other leisure pursuits by a select few. There is a cluster of such country estates located within a day's ride of London.

3.7.26 In the 18th and 19th centuries the country-wide fashion for landscape gardens resulted in the development of a proliferation of designed landscapes within the Thames Gateway region. The Royal family, whose parks at places such as Greenwich were highly influential (and still survive as important leisure resources within the Thames Gateway), led the trend for the new landscape design. The World Heritage Site at Greenwich has a long history of use as a display of magnificence, with not only the Royal family but also influential courtiers building aristocratic residences at, and near, the site. Several generations and houses of Royalty developed Greenwich according to the latest fashions, with, for example, the highly distinguished French designer Le Notre redesigning the park in the 17th century. The redevelopment of the Royal Palace as the Royal Naval Hospital, planned by Sir Christopher Wren, was a key phase in the history of the site, and was one that was specifically constructed as a national show of magnificence at the 'gateway' to the capital.

3.7.27 The Thames Gateway contains a large number of significant designed landscapes that survive in good enough condition to be listed on English Heritage's Register of Historic Parks and Gardens. These range from the Grade I Greenwich; the Grade II* Cobham Park, with its 16th / 17th century deer park, grounds designed by Repton, and buildings by Wyatt; to the Grade II cemetery at Gravesend. The Grade II* landscape at Thorndon Park was designed by 'Capability' Brown in the 18th century, and is now a country park managed by Essex County Council.

Industrialisation

3.7.28 The Thames Gateway area has played a key role in the establishment and success of a number of UK industries and the development of global trade networks. Whilst the area has a long history of such uses, upstanding remains predominantly date to post-1800. Industries historically practised in the Thames Gateway include salt making (which has a heritage extending as far back as the Bronze Age), brick making and pottery, which again have been undertaken in the area since at least Roman times, and earlier. Other industries include boat, ship and barge building; armoury and munitions; cement; specialist metal processing; paper making and food production.

3.7.29 The Thames Gateway can claim to be a cradle of several industries and industrial processes, including electric power stations, oil refining, the modern chemical and pharmaceutical industries, and cable industries. The region has a number of industrial 'firsts', including the first industrial-scale papermaking (at Dartford) and the first large-scale reliable cement production (at Swanscombe).

3.7.30 The Thames estuary has been a focus for armourers since the middle ages, and in the post-medieval period for the manufacture of gunpowder and other munitions. In the post-medieval, the Thames region became the national centre for munitions production and storage. The area provided the essential water-borne transport needed for the munitions industry's hazardous raw materials, products and waste; it provided convenient water for power, and was also located close to the source of essential royal patronage, and later to the Board of Ordnance who controlled the government contracts. Latterly, isolated sites were founded to remove this hazardous industry from populated areas. Important sites include factories at Dartford, Faversham, Oare, Silvertown, Erith, Crayford, the Cliffe Marshes Armoury Mill at Lewisham and Woolwich Arsenal.

3.7.31 The Royal Arsenal at Woolwich, unmarked on historic maps due to its prime strategic importance, is considered by some to be one of the most important sites on the Thames downstream from London Bridge. The Arsenal was founded in the late 17th century as a military storage depot around the site of Prince Rupert's fort, and was conveniently close to the Woolwich Naval Dockyard. However, in 1696 the history of the site took a change of direction, with the relocation of the Royal Laboratory (a specialised manufactory for the production of munitions) to Woolwich from Greenwich, where the close proximity to the capital of munitions production and storage had been causing alarm in the city. The Arsenal rapidly gained its central role as a military munitions factory, and was expanded and redeveloped in distinct phases over the following centuries; each phase usually associated with periods of major conflict. The complex reached its peak during the Second World War when over 72,000 workers were employed there, though it slowly declined after the end of the War.

3.7.32 London's enormous enclosed docks were an important crucible for the development and industrialisation of goods handling. These docks were of an enormous scale, particularly the naval dockyards of the region which were the nation's greatest industrial establishments through the 18th and 19th centuries, though they have all now been massively reduced in size. Whilst the London docks have been considered to have been slow in the development of steam and its application as a source of power, after the 1850s, the use of hydraulic power spread quickly, particularly in the docks. The accumulator tower at Regent's Canal Dock of 1852 and the Wapping Pumping Station of 1889-92 are rare survivals of this use of hydraulic power.

3.7.33 In 1888-90, Sebastian de Ferranti built the world's first central station for the long-distance transmission of electricity in Deptford. Whilst this station has since been demolished, the Greenwich Generating Station (1902-10) is an important early survival of this industry. Other notable survivals of later electrical stations include Barking, Littlebrook, West Thurrock and Tilbury.

3.7.34 In another 'first' for the region, the UK's first oil shipments were unloaded at Thames Haven in 1880. Since that date, oil refining has spread to dominate a large area from Stanford le-Hope to Canvey Island. Other establishments exist on the Isle of Grain.

3.7.35 The Thames Gateway area also played a significant role in the development of the copperas (iron sulphate) industry. This industry provided the foundation for the development of the modern chemical and pharmaceutical industries and was also the first

heavily capitalised industry to be established in Britain. Many copperas works were established on the coasts of Essex and Kent, and include sites such as Queenborough.

Communications and Trade

3.7.36 The River Thames is now commonly perceived as a barrier for communication between the north and the south shores. However, historically this was not the case, and the Thames was the key communication and trade conduit in the region, with many well established ferries, ports and staithes. For example, when, after the Norman Conquest, the new ruling authority wished to secure and express its power with dominant stone buildings (including the Tower of London and the Castle of Rochester), these major construction projects resulted in large quantities of stone being ferried up the Thames into London, from Kent, Normandy and elsewhere. Goods were also moved between the north and south shores of the estuary, as shown by the extensive use of Kentish stone in Norman Essex churches. Movement back and forth between the Thames and the continent continued to grow throughout the medieval period, as the commercial functions of London continued to expand and develop.

3.7.37 Trading and seaborne transport flourished both within the Greater Thames estuary and with the wider world. Indeed, medieval settlements, manorial sites and church/hall complexes throughout the region were seemingly sited to give access to the intricate network of creeks and estuaries of the Greater Thames. Archaeological excavations within the moated site of Southchurch Hall have indicated how the owners were able to exploit their Thameside location to obtain a remarkable range of imported items.

3.7.38 The role of the River Thames as communications corridor was accompanied by the development of its historic wharves, warehouses and dock facilities, with a particular explosion of these taking place during the commercial expansions of the 19th century. Since the closure of the upriver docks between 1967 and 1980 much fabric has been swept away, but there are still some surviving historic structures of great significance. Further downstream more varied private structures were built, with the rural shores of the Greater Thames area being provided with a mixture of quays built by the brick and cement companies and by basic slipways and staithes from where agricultural produce would be dispatched to the capital. Out in the marshes even simpler stages were built for mud-digging crews and those tending oyster ponds. On the Medway a series of river piers were constructed in the 19th century, enabling vessels to berth in deep water at various locations along the estuary. More humble commercial warehousing was constructed at Chatham, Faversham and Gravesend, where it can be seen intermingling with light industrial

buildings. Gravesend, Chatham, Southend and Sheerness, amongst others, were all served by ferries to and from London.

3.7.39 In addition to the role of the Thames as an important communications corridor, other communications routes also developed in relation to the river and thus have played their part in the development of the region. These include roads, railways and canals.

3.7.40 The influence of the Roman road network, and possibly its Iron Age predecessor, on the development of the Thames Gateway landscape has already been noted. This network has had a strong influence on the layout of the landscape over the past 2000 years, and several sections of the network still form elements of the modern road system stretching through the Gateway from east to west.

3.7.41 Despite the central role of the rivers and estuaries of the Greater Thames to water-borne transport, a number of canals have also been dug within the area. The Grand Surrey Canal opened in 1807 and closed in 1971. Other surviving canal features include the Regent's Canal Dock (Limehouse Basin) formed in 1820 and later enlarged, and the river lock and western basin at Gravesend from the Thames and Medway Canal of 1824.

3.7.42 The 19th century development of the railway was a key driver for the suburbanisation of the Thames Gateway towns and for the development of the coastal resorts, such as Southend-on-Sea. The urban evolution of the area closely corresponds to the pattern of the railways which were a major influence of action in the spread of settlement. The first railway to be built within the region, and probably the world's first suburban railway, was the London and Greenwich line, opened as far as Deptford in 1836 and on to Greenwich by 1838. The first dock railway was opened in 1851 at Poplar Dock as the terminus of what soon became the North London line; railways formed a crucial part of all later new docks. The London, Tilbury and Southend line opened as far as Tilbury in 1854, and was subsequently extended to Southend. The corresponding route on the Kentish shore was established by the London, Chatham and Dover Railway from 1845. By the 20th century, complex networks of tramways served all the major sites for paper, brick, cement and explosives production and many military sites, on both sides of the estuary.

Urbanisation

3.7.43 Whilst the Thames Gateway is well-served with important medieval and early-modern riverside settlements, such as those at Deptford, Greenwich, Woolwich and Gravesend, the

region is probably one of the most important areas in Britain for studying the development of suburban settlement. As industry and commerce expanded, so the settlements in which people lived, worked and traded underwent prolific expansion, especially during the 19th century. As a result, along the Thames and Medway, the present landscape is a mosaic of dense urban development, commerce and industry, interspersed with tracts of rural countryside and marshland. The growth of this development can be seen on Figure 7.1.

3.7.44 The issue of health was of ever increasing importance to the urban populations of the Greater Thames estuary and the capital itself during the 19th century. The establishment of asylums and hospitals ran parallel with the creation of other institutions such as prisons, workhouses and schools. Never before were such institutions conceived on such a large scale and their establishment was the result of various commissions ordered by Parliament to consider increasing social problems. Joyce Green Hospital, Dartford is an example of such an institution. A great number of such buildings have been lost to development and it is vital that some surviving examples are retained. Rochford Hospital, an extensive and important construction of the 1930s, has recently been recorded prior to redevelopment

3.7.45 The 19th and 20th centuries saw the development of socially inspired 'utopian' settlements. Examples of these can be found across the Thames Gateway including cement workers' housing in Northfleet and the 1933 Bata Shoe Factory housing complex at East Tilbury. Planned leisure facilities such as Rosherville New Town and Southend Pier also emerged at this time. 20th century new towns and social housing are represented by the works of the GLC Architect's Department at Thamesmead, an attempt in the 1960s to turn an area of marshland into a town for 60,000 people, and Basildon was created in the 1950s as a London overspill town, to bring coherence to extensive plotland development of the inter-war years.

3.7.46 Plotland development in Essex was a brief 20th century phenomenon that occurred as a by-product of agricultural depression and cheap land. These plotlands were used for building bungalows, both as well-built retirement dwellings and as holiday shacks. From 1900 onwards, speculators bought land to divide into plots, and advertised these as weekend retreats for Londoners. In tactics reminiscent of more modern time-share selling techniques, Londoners were treated to champagne parties on special trains to encourage them to buy plots. The plots literally consisted of a piece of land, with no services, water or drainage. The development of plotlands increased dramatically during the interwar years, as people sought to escape the overcrowding, noise and smoke of the city.

3.7.47 Laindon and Pitsea was developed as plotland from 1900 onwards, and later redeveloped as part of Basildon New Town in the 1950s. An area of plotland has been conserved within Basildon, at Dunton. The 1930s Land Utilisation Survey of Britain organised by L Dudley Stamp describes the plotlands at Laindon:

"*Into this poor bramble covered region has penetrated a vast array of tiny bungalows, corrugate-iron shanties with dreadful rutted mud roads, reminiscent of the backwoods. Mankind seems to have sought relief from the rush and roar of London in the wilderness of wild nature with a few poultry, goats, rabbits and perhaps cows".*

Defending the Region and the Nation

3.7.48 The strategically important Greater Thames estuary has a rich variety of defence sites. These illustrate both the evolution of defensive systems in response to international tensions from the later Roman period onwards and developments in weapons technology, particularly after the advent of gunpowder. Indeed, the Thames Gateway has one of the finest collections of historic military architecture in the country. In addition to its iconic defensive sites, including the Rochester Castle, Woolwich Arsenal, Tilbury Fort and Chatham, the region contains a plethora of defensive heritage from all periods of the nation's history.

3.7.49 The Roman town of Rochester provides a significant example of how layers of defensive architectures can be overlaid on each other through time. Here the Roman town walls can be seen incorporated in the medieval defences, which are substantially intact. Rochester has been the site of two famous sieges - first by William II, when the city housed his rebellious uncle, Bishop Odo. The Castle at Rochester was destroyed as a result of the siege, but was soon rebuilt by the Bishop of Rochester and now survives as one of the finest surviving Norman keeps in the country. The second siege came in 1215, when rebels were again housed at Rochester Castle, until King John captured them two months later by undermining the Castle walls and the great tower. Rochester's rebellious reputation continued in the Tudor period, when the Bishop of Rochester again challenged royal authority, and was executed by Henry VIII, though this time without a siege of the castle.

3.7.50 There are several other surviving medieval defensive sites, including Hadleigh Castle; Cooling Castle (1382) with its gun ports in the towers and gates; the site of Queenborough Castle, and possible traces of village defences at East Tilbury. Queenborough Castle was built during the Hundred Years War (between 1361 and 1375) and was the only wholly

new royal castle built in England during the later Middle Ages. Though the castle was demolished during the Commonwealth, its site survives with important archaeological remains.

3.7.51 Henry VIII founded several defensive structures within the Thames Gateway, most notably the rounded bastion blockhouses at Gravesend, Tilbury, East Tilbury and Higham. Henry VIII first established a significant fleet of fighting ships to protect England's national interests, and in the latter part of Henry's reign, the Medway was increasingly used as an anchorage for the fleet. This led to the Medway also being defended against attack, including the building of three blockhouses at Sheerness, Sheppey and Grain, though no physical remains of these have yet been located.

3.7.52 One of the Thames Gateway's most important defensive sites is the moated Tilbury Fort, built by Charles II, and earlier the site of Queen Elizabeth's famous speech to the troops before their interception of the Spanish fleet in 1588. The Tilbury camp was the main base for the defending army during this Armada invasion scare. Tilbury Fort (1670) is a nationally important example of angular bastioned defences and is the best-preserved example of the work of Sir Bernard de Gomme, Charles II's Chief Engineer and Surveyor General of Ordnance, sometimes considered the English 'Vauban' (Vauban was Louis XIV's military engineer, who revolutionised the art of constructing defensive fortifications).

The Naval Dockyards and their Defence

3.7.53 The region contained four of England's six historic naval dockyards: at Sheerness, Deptford, Woolwich and Chatham. Together these four yards built more men-of-war and merchant ships than anywhere else in 17th century Europe. Chatham and Sheerness are two of the four national historic dockyards to have survived in recognisable form (the others are Portsmouth and Plymouth).

3.7.54 Sheerness Dockyard has its roots in the use of the mouth of the Medway as a naval anchorage in the Tudor period, and though a Dutch raid destroyed the first fortification there, the engineer, De Gomme, rebuilt it on a greater scale. Remains of De Gomme's work at Sheerness still survive in the later Indented Lines. The Sheerness complex was further developed in the early 1800s, extending out into the Medway using ingenious engineering techniques, and again in the late 1800s. It continued in use through the two world wars, and into the second half of the 20th century. Sheerness contains many

significant remains of the dockyard, including some important 19th century engineering structures such as the Boat Store (1858-60). The latter is a building of first-rate importance in the development of metal-frame construction, which is now ubiquitous. The dockyard is remote by land and highly accessible by water, and after its closure in the 1960s has become a thriving deep-sea port, the fifth largest in the UK for cargo and freight-handling.

3.7.55 The most complex defensive site within the region is the naval dockyard at Chatham. Founded in 1547, Chatham played a crucial role in the creation and support of Britain's Royal Navy, and by 1620 had risen to become England's premier naval base. To help protect this base, the defences were built at Sheerness and Upnor. From the construction of its finest ships in the age of sail, including HMS Victory, to the development of its earliest metal warships in the age of steam, Chatham has been vital to a Royal Navy that has done much to secure and buttress Britain's influence all over the world. Today, Chatham's extraordinary array of storehouses, offices, dry docks, covered slips, barracks, forts and bastions, constitutes the finest example of a Royal dockyard with its historic fortifications in Britain. This historic dockyard landscape is considered so significant that it is listed on the UK's Tentative List of potential Candidate World Heritage Sites.

3.7.56 During the 18th and 19th centuries the defences along the Medway and Thames continued to develop, with the use of linear bastioned defences to protect the dockyards from land-based attack and with additions to Tilbury and Gravesend. The enhancement of defences during the invasion threat of the Napoleonic period is represented on the Medway at Fort Amherst, Fort Clarence, Fort Pitt and in traces of the Delce and Gibraltar towers; and by the string of Martello towers from St. Osyth to Walton on the Naze in Essex, and the late example of Grain Tower. Quick lime was first developed at the Royal Arsenal, Woolwich for the construction of the Martello Towers and it is possible that the first such tower was constructed at Woolwich as a prototype.

3.7.57 The granite-faced and armour-plated Royal Commission forts of the 1860s are perhaps the most distinctive defence heritage features of the lower Thames marshscape, including those at Cliffe, Coalhouse Fort, East Tilbury, Allhallows, and Sheerness, and the island forts at Darnet and Hoo. These sites powerfully express the transition to the advanced systems introduced during the mid 19th-century military revolution. Also from this period are the Queenborough Lines, an advanced land defence for Sheerness, and other defences at Grain.

World War I

3.7.58 The First World War produced a burst of new defence construction including anti-aircraft batteries and pillboxes. Southend Airport has its origins as a landing ground for the Royal Flying Corps during WWI, whilst a First World War motor torpedo boat station survives in a remarkable state of preservation on Osea island, just outside the Study Area. Chattenden may have the earliest surviving anti-aircraft battery, dating from 1916.

World War II

3.7.59 The Second World War was accompanied by a further and varied range of sites designed to meet new forms of attack, such as beach and paratroop landings, mechanised thrusts across the countryside and air bombardment. In particular Chatham was a defensive nodal point, with successive layers of defence against land attack. The region also contains parts of the Eastern Command Line, GHQ Line and Outer London Defence Line. Other surviving WWII sites in the Thames Gateway include the riverside radar tower at East Tilbury; concrete control towers for river defence minefields at East Tilbury and at Shell Ness on the Swale; examples of anti-aircraft batteries including East Tilbury, Canvey Island, and on Sheppey, and many airfields throughout the entire region. WWII coastal defences have left traces throughout the Greater Thames area.

Cold War

3.7.60 Numerous civil defence and Cold War sites remain on both sides of the river including a good example of a control centre at Gravesend (1954), the Weapons Research Establishment at Foulness, several Royal Observer Corps posts and civil, military and naval command and communication centres at Chatham, Gillingham and Sheerness. The important training base and experimental range established at Shoeburyness in the 1850s continues to be used.

4.0 THE CHARACTER OF THE HISTORIC ENVIRONMENT

4.1 Introduction

4.1.1 This section combines the three separate elements of the historic environment characterised in Sections 5, 6 and 7 (Historic Landscape, Archaeological Resource and Urban Landscape) into a single characterisation. This novel approach supplies, in conjunction with Section 3.0, an easily accessible, relatively non-technical summary of key historic environment issues and characteristics for professionals and lay people alike.

4.2 Approach and Methodology

General Approach

4.2.1 There is no guidance or recognised approaches to the characterisation of the historic environment as a single theme. This has led the project team to develop a new methodology that brings the three elements of the historic environment together in a format suitable for input into strategic decision making. This has led to necessary compromises in achieving a balance between detail and completeness. However, the following principles were used to guide the process:

- The boundaries of the areas should be robust, but not absolute;
- The descriptive text should outline the broad character of the area, not just designated features;
- The descriptive text should attempt to balance all relevant aspects of the historic environment;
- The definition of the boundaries should seek to reflect key characteristics and where possible, be led, by dominant visible elements or strong archaeological context; and
- The descriptions should be concise.

Methodology

4.2.2 The development of the Historic Environment Character Areas (HECAs) involved a 3 stage process:

- Analysis of Historic Landscape, Urban and Archaeological boundaries and creation of draft areas;
- Description and Revision; and
- Review.

Analysis of Historic Landscape, Urban and Archaeological boundaries

4.2.3 The three independent sets of boundaries were overlain on a single drawing. This produced a series of boundaries, some of which corresponded, some of which remained isolated. Areas where Historic Landscape Character Areas and Archaeological Context Areas, and Urban Character Areas and Archaeology Context Areas, coincided were quickly highlighted and these formed the basic structure for the combined areas.

4.2.4 Where area boundaries did not correspond, decisions were made as to the relative primacy of different themes. For the most part the historic landscape boundaries dominated in the rural areas and urban boundaries dominated in urban areas as these reflect visible and recognisable boundaries; their edges also often tend to be more absolute than the archaeological boundaries. However there were some instances where the difference in the archaeological context between parts of the emerging HECAs was strong enough to warrant sub-division or the refinement of a boundary. This subjective approach created a complex series of c.180 draft HECAs.

Description and Revision

4.2.5 These descriptions for these draft areas were then rapidly compiled by drawing the relevant elements of each of the themes in a single description. This process highlighted a number of issues with areas were there was insufficient differentiation between the areas to justify separation, and through this process the number of areas was reduced to c.140.

4.2.6 Each of the character areas was then described using a standard format:

- *Summary*: Outlines key messages and general character.
- *Historic Landscape Character*: Presents the historic landscape characterisation of the area. This includes broad information on settlement pattern in rural areas. In urban areas this section is omitted.

- *Urban Character*: This presents the urban character of the area drawing on the urban characterisation. In rural areas this section is omitted.
- *Archaeological Context*: Presents a summary of the area's archaeological context based on the archaeological context analysis.

4.3 Results

4.3.1 Figure 4.1 shows the location and extent of the Historic Environment Character Areas (HECAs). Each of these areas is accompanied by a short description and this data is available in Appendix 1 and in the accompanying GIS. Three examples of HECA descriptions are provided below:

HECA: 001

SUMMARY

This area forms the core of the Isle of Sheppey. The historic landscape of the area is dominated by relatively modern field systems, with some evidence for an earlier structure surviving within these. The area has a generally dispersed settlement pattern centred on a number of medieval and post-medieval historic cores which would have a high potential to contain archaeological deposits. Although the clay soils tend to mask any archaeological features extensive evidence of prehistoric and more recent activity has been identified in the area which suggest that the Isle of Sheppey played a significant role in the region's prehistoric landscape. Post medieval defensive sites are also common in the area.

HISTORIC LANDSCAPE CHARACTER

An elevated area that forms the core of the Isle of Sheppey, the landscape has distinctive north-south roads leading from slumped clay coastal cliffs in the north to the lowland marshes in the south. Along the north coast there is also a belt of high density 19th / 20th century settlement, including caravan parks and camp sites. The area also contains the historic settlement of Minster and other dispersed settlements often centred on medieval or pre-medieval historic cores.

The majority of the area has a generally regular field system with a variety of sizes and types, probably of 18th / 19th century in date. A similar pattern and style of fields was noted on OS 1st Ed 6" map, although boundary loss is apparent. The fields are interspersed with pockets of scrub and occasional hedgerows, especially in low valleys.

ARCHAEOLOGICAL CONTEXT

Recent developments in the area have allowed for some archaeological excavation and study, this has revealed complex multi-period archaeological landscapes. One of only two definite Neolithic causewayed enclosures known in Kent lies within the area and three later Bronze Age enclosures have been found in its vicinity. These and other archaeology features indicate that the character area was extensively used during the prehistoric period and there is evidence for a level of large-scale landscape organisation in the Late Bronze Age. This suggests ongoing organised activity and highlights the importance of the Isle of Sheppey in the wider prehistoric landscape.

Other key known archaeological features include 19th and 20th century defensive sites, Iron Age find spots and Post-Medieval activity sites, e.g. the Fletcher Battery. The settlement of Eastchurch is seemingly a significant aspect of the local landscape and may contain significant archaeological deposits associated with the manor, church and medieval occupation of the village as well as the historic centre of Minster. Few cropmarks were noted on the NMP, this reflects the clay soil's ability to mask archaeology. Overall the area has a high archaeological potential reflecting millennia of settlement, defensive and industrial activity.

HECA: 69

SUMMARY

The area comprises a partially developed area of former reclaimed marshlands and includes the Thamesmead settlement and modern industrial development. The area contains a number of conservation areas and grade I and grade II listed buildings reflecting the area's historical and industrial significance. The area has been subject to recent archaeological excavation which has revealed highly significant archaeological and palaeo-environmental deposits. Overall, the area has a very high archaeological potential.

URBAN CHARACTER

The area encompasses large modern industrial estates on reclaimed marshland. Also included are the relatively intact grade I listed Crossness Sewage works developed in the mid-late 19th century, also designated as a conservation area. An extensive area of disused industrial land bordering the Thames containing a number of relict features including a number of grade I and grade II listed buildings, these designations reflect the historical / industrial significance of the area, including a surviving lock and swing bridge.

To the west of the site lies Woolwich with a large expanse of modern planned residential housing situated on former marshland / industrial land. This includes the Thamesmead Estate, a modern planned residential development that is the only complete new town development within Greater London. The southern half of the estate was competed to ten original plans, other areas evolved to reflect changing architectural styles.

There are pockets of surviving reclaimed marshland, but these are generally denuded of their historical pattern of ditches and creeks. Furthermore areas of scrub and rough ground represent the remains of 19th and 20th century industrial sites and waste tips.

ARCHAEOLOGICAL CONTEXT

This area of reclaimed marshland has been largely, but not completely, developed in the 19th and 20th century. The recent redevelopments have been accompanied by archaeological evaluation work, this has revealed prehistoric deposits (e.g. Bronze Age trackways and Neolithic material) and significant palaeo-environmental deposits under the former marshes. Concentrations of archaeology have been identified wherever archaeological evaluation has occurred, it is therefore likely that further archaeological / palaeo-environmental deposits lie undisturbed in the area. There is a high potential for significant archaeological sites to survive beneath some development and in the undeveloped areas. The remains of parts of the Woolwich Arsenal site extend into the western part of this area.

HECA: 91

SUMMARY

The area encompasses the historic town of Rayleigh with its medieval historic core and its expansion zones of modern development. The area forms a distinctive topographical unit of a raised ridge / plateau running E-W and N-S composed of a mixture of head, sand and gravel and clay. Archaeological sites from a range of periods have been identified in the area and there is a high potential of encountering further deposits.

URBAN CHARACTER

The area encompasses the town of Rayleigh with its historic core, which includes the castle and High Street and the modern redevelopment and infill that has happened since. The historic street pattern has survived relatively intact in the historic core of Rayleigh, but the paucity of listed buildings and lack of conservation area status perhaps indicates that much of the historic fabric has been removed.

Surrounding the core are modern industrial estates and areas of housing that developed in the late 19th and early 20th century including a small area of linear roadside housing. Furthermore there are areas of modern residential development including a large area of predominately post-WWII residential housing whose layout and form began to evolve in the late 19th and early 20th century. The area's strong linear grid-like pattern relates to its late 19th / early 20th century layout. However there is also an area to the south, which contains early to mid 20th century plot land development that was not subject to intensive development post-WWII.

ARCHAEOLOGICAL CONTEXT

The region rises above the surrounding flat clay plain and the Thames, forming a distinctive topographical unit of a raised ridge / plateau running E-W and N-S composed of a mixture of head, sand and gravel and clay. This dramatic position would have proved attractive to earlier occupants of the area and numerous Roman and prehistoric find spots have been identified.

Historic settlements developed here due to the landscape, a key example being the historic settlement of Rayleigh. The castle, church and medieval core of the town sit on the crest of the hillside overlooking the clay plain below. The majority of the area has been subject to development but it is anticipated that further archaeological deposits would be present in the medieval core of the town and other deposits may have survived in other parts of the area.

5.0 HISTORIC LANDSCAPE CHARACTER ASSESSMENT

5.1 Introduction

General Background

5.1.1 The rural landscape of England is a much treasured resource whose form and character reflects millennia of human activity and underlying topographical and geological influences. It has been well-researched but still has surprises and new findings to offer. It is a living, dynamic and changing entity that alters in response to natural factors, e.g. climate change, as well as human intervention e.g. 20th century farming practices. The landscape of an area has many qualities and values including its visual character, biodiversity, recreational uses and economic value to those who farm and own it. It is also an important historical resource that catalogues the activities and lifestyles of past communities and its structure, character and form have long been studied as a pathway into the past.

5.1.2 The Thames Gateway stretches out along the flanks of the River Thames and encompasses vast areas of rural and urban landscapes from a range of periods. This assessment has confined itself to examining the historic rural landscape of the region, the urban areas are addressed in Section 7.0. However, these two elements are closely related and where necessary themes and findings are transferred between the two sections. This section and the results of the characterisation presented in Appendix 2, should be read in conjunction with Section 3.0, which supplies a broad overview of the area's historical development.

The Historic Landscape of the Thames Gateway

5.1.3 The landscape of England has been, at its most simplistic level, divided into two broad types of landscape. The open, regular landscapes of the Central Province are dominated by nucleated villages and their enclosed fields systems representing the parliamentary enclosure of earlier Medieval open fields. The older, long-established, organic landscapes of the Western and Eastern Provinces (Southeast, East, Southwest, West and Northwest of England) have a range of irregular, locally evolved landscapes, often with roots deep into the past (See Figure 5.1). The Thames Gateway lies in this "Ancient" landscape within what has become termed the South-Eastern province.

5.1.4 The Study Area has a highly varied historic landscape reflecting a range of influences and patterns. The geological and topographic development of the area (particularly the pre-Holocene glaciations and their effect on the drainage patterns and geology of the area) is discussed in Section 3.0 as are many later human influences that have shaped the character and form of the landscape. In summary, some of the key human and cultural drivers behind the development of the landscape include:

- The use of the marshes and river throughout history as a key resource for agriculture, fishing and industry;
- The emergence, seemingly in the late prehistoric period, of a transhumance lifestyle with seasonal movements of people and animals from the lowlands and marshlands to the Downs in Kent and inland in Essex;
- The development in the late prehistoric of large-scale landscape organisation and field systems which along with the patterns of transhumance have had a strong influence on the grain of the landscape in areas of the Thames Gateway;
- The prehistoric / Roman development of the major road corridors and route ways;
- The reclamation of the marshes from the Medieval to the 17th century, possibly with some earlier activity in the Roman period;
- The development of a distinctive pattern of dispersed settlement across Kent and Essex;
- The modern growth of London and its suburbs from the 18th century, which has consumed so much of the rural landscape of the area;
- The development of the communication networks (both road and rail) out from London that helped expand the industries, market gardens, orchards, commercial enterprises and settlements that served London and the emerging towns; and
- The development in the 18th, 19th and 20th century of the resort towns to serve London and the Southeast.

5.2 Approach and Method

General Approach

5.2.1 English Heritage is implementing a programme of Historic Landscape Characterisation (HLC) that seeks to develop a relatively detailed understanding of the morphology, pattern, historic evolution and structure of the landscape. The majority of the Study Area (Essex and Kent) has been subject to HLC analysis funded by English Heritage and undertaken by the two County Councils. The level of analysis undertaken for the HLCs was, in this instance,

too detailed to serve as the overall historic landscape character assessment. Each county area contained thousands of polygons (representing small individual types of historic landscape) and it was agreed that a simplified, collated approach was required for this study. To this end it was decided that as well as combining the two separate HLC datasets (see Section 5.2.5) to form a new simpler HLC dataset there was a need to develop broader Historic Landscape Character Areas (HLCA) from the HLC data and other sources.

5.2.2 The scale of analysis used for these HLCAs reflected that undertaken for county-level Landscape Character Assessments (LCAs). Landscape character assessment is a well-established methodology and the majority of the Study Area has been subject to such assessments. Although the scale of the LCAs was suitable for the more strategic approach required for this study, the character areas themselves did not supply a suitable framework for the exploration of historic landscape values and character. This is due to the fact that although LCAs include an element of the landscape's historic dimension, they predominately focus on understanding visual character and structure of the landscape, and do not clearly reflect historic values. The LCAs did however inform the creation and description of the HLCAs.

5.2.3 Through a combination of analysing and simplifying the HLC data, drawing in other key datasets such as Ancient Woodland, historic mapping, historic parks and gardens and secondary sources, and drawing on the LCA work, it was possible to develop a series of character areas that reflected distinct combinations of HLC types and landscape character attributes. These are presented in Section 5.3 and in Appendix 2.

Methodology

5.2.4 The methodology for the creation of the HLCAs involved 5 broad stages:

- Creation of a new combined HLC (Kent and Essex only);
- Addition of supplementary datasets;
- Overlay of Landscape Character Areas;
- Creation of outline areas; and
- Description and review.

Creation of a Combined HLC

5.2.5 The country-wide HLC methodology has evolved over the last decade and modern projects deliver a highly advanced and complex GIS-based database. The Kent and Essex HLCs were, however, carried out at different times using different methodologies. The Essex HLC is still being developed and although it is in the final stages of completion its data remains to be fully verified and should therefore be treated with some caution.

5.26 The combination of the two HLCs required the simplification of their database fields. Table 5.1 outlines how the fields of the two HLCs were combined whilst Figure 5.2 maps the new combined HLC for Kent and Essex within the Thames Gateway area.

Table 5.1 - Combined HLC Codes

New Elements			Existing Elements		
New Code	**High Level Class**	**Detailed Class**	**Essex Code**	**Kent Code**	**Present in both HLCs**
CEM_1	Cemeteries	Cemeteries	ri	N/A	n
COA_1	Coastal	Saltings	sa	8.03	y
COA_2	Coastal	Wetlands and Marshes	mm	8.01, 8.02	y
COA_3	Coastal	Tidal Feature	ui, ob	8.06, 8.07, 8.08, 8.09	y
COM_1	Common	Heath	ht	2.01	y
COM_2	Common	Other	cb, cm	2.03	y
DOW_1	Downland	Downland	dw	2.02, 6.01	y
EXT_1	Extraction	Extraction	bf, de, me	12.01, 12.02	y
EXT_2	Extraction	Restored	rl	N/A	n
FIE_1	Fieldscape	Co-axial	df	N/A	n
FIE_2	Fieldscape	Regular	le, pe, te, cf	1.09, 1.10, 1.11, 1.12	y
FIE_3	Fieldscape	Irregular	if, sf	1.6, 1.07, 1.08, 1.15, 1.16, 1.17	y
FIE_4	Fieldscape	Assarts	N/A	1.01, 1.02, 1.03, 1.04	n
FIE_5	Fieldscape	Prairie	pf, pr	1.13	y
FIE_6	Fieldscape	Pasture - misc.	mp	7.01	y
FIE_7	Fieldscape	Unimproved rough pasture	rp	7.03	y
FIE_8	Fieldscape	Fields bounded by roads, tracks and paths	N/A	1.14	n
PAR_1	Historic Parkland	Historic Parkland	ip, pp	10.01,10.02, 10.03	y
HOR_1	Horticulture	Orchard	at	3.01	y
HOR_2	Horticulture	Nursery/Glasshouse	ng	3.03	y
HOR_3	Horticulture	Other	ag, mg	3.05, 3.06	y
IND_1	Industry	Disused	di	12.7	y
IND_2	Industry	Active	in	12.03, 12.04, 12.06, 8.05	y
IND_3	Industry	Water	wr	12.5	y

New Elements			Existing Elements		
New Code	**High Level Class**	**Detailed Class**	**Essex Code**	**Kent Code**	**Present in both HLCs**
ICF_1	Inland Communication Facility	Airfields	ap	13.3	y
ICF_2	Inland Communication Facility	Transport	mr	13.01, 13.04	y
MIL_1	Military and Defence	Post-medieval	dm, pm	14.03,14.04,14.05	y
MIL_2	Military and Defence	Early	he	14.01, 14.02	y
MIS_1	Misc.	Rough ground	N/A	2.5	n
REL_1	Reclaimed Land	Creeks and Fleets	N/A	8.10	n
REL_2	Reclaimed Land	Drained Irregular	dc	5.01, 5.02	y
REL_3	Reclaimed Land	Drained Regular	dr	5.03, 5.04, 8.04	y
REC_1	Recreation	Racing	st	11.01	y
REC_2	Recreation	Modern recreation	tl	11.02, 11.03, 9.11	y
SET_1	Settlement	Post-1800 urban areas	ba, pl, hs	9.02, 9.04, 9.06, 9.12	y
SET_2	Settlement	Pre-1800 urban	ba (with additional data from other fields)	9.01, 9.03, 9.07, 9.09	y
UNK_1	Unknown	Unknown	Xx		y
WAT_1	Water - fresh	Watercress Beds	wb	7.06	y
WAT_2	Water - fresh	Mills, leats, fishpond etc	mw	7.07, 7.08	y
WOO_1	Woodland	Pre-1800	aw	4.01, 4.02, 4.03, 4.04, 4.09	y
WOO_2	Woodland	Post-1800	wp	2.04, 4.05, 4.08, 4.11, 7.02	y
WOO_3	Woodland	Scarp woods	N/A	4.06, 4.07	n

5.2.7 Due to the nature of the differing structures of the HLCs it was not possible to bring the past land-use data from within the Essex HLC into the simplified HLC data as the Kent HLC lacked this field.

5.2.8 In general terms, the simplification and cross-referencing of the two HLC datasets worked relatively well. However, there were a number of issues with the original ECC and KCC HLC data. These included:

- The "*Fields Bounded by Roads, Tracks and Paths*" classification for Kent covered a variety of landscape types of seemingly different ages and forms. The classification was generally found to be problematic and the project attempted to verify and assess the blocks of this type whenever they were encountered in the characterisation process. The reclassification of this type has not occurred within the revised HLC dataset.

- The so-called *Prairie Field* type (post 1950 fields for intensive farming) was found to dominate large areas of Essex but this does not reflect the origins of the structure and form of the landscape, leading to a devaluation of the significance of earlier survivals within the Essex rural landscape.
- The comparative size of polygons between the two HLC datasets reflected differing approaches and methodologies. Essex tended to have smaller more finely grained polygons than Kent.

5.2.9 Overall, the simplified HLC supplies a generalised but broadly accurate view of the structure and morphology of the historic landscape of the area at a relatively fine grain of detail.

Addition of supplementary datasets

5.2.10 Two additional supplementary datasets were included within the analysis:

- Ancient Woodland data (from English Nature); and
- Registered Historic Park and Garden data (from English Heritage).

5.2.11 These datasets are mapped on Figure 5.3.

Overlay of Landscape Character Areas

5.2.12 As previously discussed the LCAs were felt to bring a useful added dimension to the HLCA analysis in that they supplied relevant information of the visual character and structure of the landscape as well as on the topography of an area. The LCAs for Kent, Essex and a number of Unitary and district areas were accessed in paper form. They tended to contribute more to the description of areas rather than to their definition, being a secondary influence on the boundaries of areas.

Creation of outline areas

5.2.13 The initial HLCAs were primarily derived from an interpretative analysis of the new combined HLC dataset coupled with on-screen references back to original datasets, e.g. OS mapping, historic mapping and reference to secondary surveys. Where HLC data was absent, e.g. Greater London, the analysis was based on the available dataset listed previously. This process formed the foundation for the entire characterisation. The boundaries of these areas were cross-checked with LCA boundaries and occasional revisions

were made to reflect certain characteristics or aspects. More significant however, was the analysis of digital OS historic mapping which allowed the team to analyse areas where certain HLC types were open to debate e.g. 'Fields bounded by Tracks and Paths'. This analysis allowed for the sub-division and redefinition of some areas.

5.2.14 It should be noted that the character area boundaries are 'soft' and do not exactly match the underlying HLC data. This reflects the relatively broad scale of digitisation and assessment. The analysis was undertaken at a variety of scales depending on the particular locality and situation. As the areas were developed short notes on the key characteristics were developed to guide the description of the areas.

Description and review

5.2.15 Once the initial areas had been digitised the descriptions for each area were prepared. The descriptions drew on a range of sources and attempted to reflect the reasoning behind the definition of an area and, where possible, relate that area to its wider historic context. The descriptions sought to highlight the key characteristics and HLC types in an area and identify any particular significant features or assets. The process of preparing the descriptions was also a part of the process of defining the areas and this led to the modification and deletion of some boundaries.

5.2.16 The draft character areas and associated descriptions were circulated to English Heritage, KCC and ECC for comment. Comments were received and these were incorporated into the report (see Appendix 2). These comments also led to the modification of some boundaries.

5.3 Results and Key Issues

5.3.1 The following outlines the results of the characterisation and discusses some of the key issues that need to be taken into account when using the assessment.

Outline of Results

5.3.2 Figure 5.4 shows the location and extent of the Historic Landscape Character Areas. Each of these areas is accompanied by a short description (see Appendix 2). This data is also available in the accompanying GIS. Two examples of the descriptions are provided below:

Example 1

HLCA: 102

Description:
- A distinctive elevated area that forms the core of the Isle of Sheppey
- The area has a generally regular field system with a variety of sizes and types, probably of 18th / 19th century in date
- A similar pattern and style of fields has noted on OS 1st Ed 6" map, although boundary loss is apparent
- The fields are interspersed with pockets of scrub and occasional hedgerows, especially in low valleys
- The area contains the historic settlement of Minster and other settlements. These are often centred on medieval or pre-medieval historic cores
- There is a belt of 19th / 20th century settlement along the north coast
- In the south of area, distinctive north-south roads lead from ridge top roads to marshes below
- There is a high density of modern development along the north coast including caravan parks and camp sites
- The area has slumped clay coastal cliffs to north and overlooks marshes to the south.

Example 2

HLCA: 331

Description:
- The area is characterised by a gently undulating landform and arable fields
- This area has a strong grid structure to its layout, with N-S and E-W roads and tracks, many of which dogleg around fields
- The settlement pattern consists of dispersed small villages, farmsteads and groups of cottages
- To the north of the area roads have become a focus for settlement, though this same linear pattern is not so pronounced in the south of the area
- The area contains some ponds, some of which are for fishing and some for the golf course
- The area contains a number of medieval moated sites
- There are some small blocks of woodland scattered across the area
- Though the majority of the area has been subject to field boundary loss, creating a large area of prairie fields, this area is notable for containing some survivors of the prehistoric Dengie-form co-axial field systems (named after the Dengie Peninsula where they cluster).

Key Issues

5.3.3 The Historic Landscape Character Assessment has developed a broad Thames Gateway-wide characterisation of the historic landscape based on robust and relatively comprehensive data. When used in conjunction with the Brief Historical and Archaeological Context (Section 3.0) it should supply a good introduction to the development and survival of the area's historic landscape. However, there are some issues that need to be taken into account when reviewing the assessment.

5.3.4 First, there are some restrictions on how and why the characterisation is used:

- the assessment was a moment-in-time and desk-based exercise based on readily available data, which was itself mainly derived from desk-based activity. There will be some need for updating, expansion and further verification when used to assist in more detailed work.
- This study presents a 'top-down' overview of the area that works best at sub-regional level; it does not tend to capture the 'sense of place' or physical character of particular locations.
- it includes some of the experiential and visual values of the landscape from LCA into the assessment but for the most part the HLCA has focussed on examining the historic aspects of landscape structure, development and survival.

5.3.5 The nature of the study has led to the development of descriptions and mapping that is broad and general in nature. This is suitable for strategic analysis and appraisal but further more detailed work would be required to examine issues focussed on particular places or areas. The characterisation has highlighted the time depth of the structure of the landscape and the role that this structure has played in shaping the development of communities in the region; perhaps indicating that there is a future role for these structures in the implementation of the sustainable communities plan.

5.3.6 The boundaries of the character areas are "*soft*". By this it is meant that if observers were to stand on one side, and then the other, of a boundary, they would be unlikely to notice significant differences between the two sides. Observers stepping back and looking at the two areas from afar, comparing the broad characteristics of both areas, would notice differences but the exact course of the dividing boundary would often remain unclear. The boundaries should therefore be taken as indicative and general in nature and not absolute; they work best at higher levels (ie smaller scales, larger areas).

5.3.7 The generalisation of HLC data and the inclusion of more general secondary source based understandings into the historic landscape character areas has proved to be a useful exercise. The areas should provide a relatively robust base for the development of future guidance on change in the rural landscape and should help identify priorities for further analysis and assessment.

Further Work and Analysis

5.3.8 A few areas for further investigation have been identified, these are briefly outlined below:

- *Identification of transhumance routes*: It became apparent during the characterisation that the transhumance systems of the past (at least late prehistoric through to medieval periods) have strongly influenced the grain, structure and form of the historic landscape in some areas. These routes would warrant further investigation so that they can be incorporated into future development. This would help retain the strong structure of the historic landscape.
- *Historic time depth in the marshlands*: The reclamation of the marshes represents a major theme in the development of the area's historic landscape. Further study on the evolution and development of the grazing marshes is required to inform the identification and conservation of these areas.
- *Designed landscapes of the Thames Gateway*: There is a rich resource of urban and rural post-medieval designed landscapes in the Thames Gateway. These would benefit from further investigation and promotion to highlight their historic value and modern uses.
- *Developing partnerships with nature conservation organisations*: Many aspects of the historic landscape, e.g. marshes, woodlands and downland, also have nature conservation significances that in some instances equal the historic significance of these places. These landscapes could be better served through effective partnerships at both a strategic and local level.

6.0 ARCHAEOLOGICAL CONTEXT ANALYSIS

6.1 Introduction

General Background

6.1.1 As discussed in Section 3.0 the archaeological resource of the Thames Gateway is extremely complex and varied. It represents over 400,000 years of human / hominid activity and encompasses every aspect of life from settlement and farming; to religion and ritual; and industry and commerce. The resource exists both above and below ground and includes hundreds of Scheduled Monuments and over 20,000 known archaeological sites or findspots (see Figures 6.1 and 6.2).

6.1.2 Our knowledge of this resource is also highly varied and while many places have a long history of archaeological investigation other areas have been subject to little or no research. In recent years our understanding of the archaeological resource has been enhanced by extensive archaeological research, e.g. the Rapid Coastal Zone Assessment Survey of the North Kent Coast and the National Mapping Programme. It has also been improved by the considerable quantities of archaeological investigations undertaken in advance of development under the aegis of PPG16. In some areas we now can begin to make relatively robust judgements about the nature of the archaeological resource. However, in the majority of the Thames Gateway little or no recent archaeological investigation has been undertaken, therefore, for much of the Thames Gateway we have only a fragmented and piecemeal knowledge base.

Approach to the Analysis

6.1.3 The Archaeological Context Analysis has sought to respond to this situation not by characterising the archaeological resource itself (because so much of it – perhaps the majority - remains unknown), but by characterising our current *understanding and knowledge* of the archaeological resource. This has been done through the definition of discrete geographical areas that are likely, based on current knowledge, to be distinctly different in terms of the nature, type and survival of archaeological recourses contained within them.

6.1.4 The Archaeological Context Analysis does not seek to present a comprehensive and new understanding of the archaeological resource, nor does it attempt to predict the location of individual archaeological sites. Both of these necessary and useful tasks require far more detailed and far-reaching studies, parts of which exist eg in the regional Research Frameworks, or in Planarch 2. Rather, it has sought to present our understanding of the archaeological resource in a manner that is compatible with the approaches used for the historic landscape characterisation (Section 5.0) and urban characterisation (Section 7.0) as well as being understandable to specialists and non-specialists alike.

6.2 Approach and Methodology

Outline of Approach and Methodology

6.2.1 During the development of the study it was not possible to identify any study that had similarly characterised our understanding of the archaeological resource over such a wide and diverse area. Consequently, a bespoke methodology had to be developed for the purposes of this study. The approach drew heavily on established characterisation methods, such as Landscape Character Assessment, Extensive Urban Survey and Historic Landscape Characterisation.

6.2.2 Key to these approaches is the definition of generalised areas that share definable and distinctive characteristics. This generally relies on the analysis of consistent datasets, something that its not always possibly with pure archaeological data as this has historically tended to be collected on a site-by-site basis rather than as the result of systematic and comprehensive survey. The more predictive professional-judgement based approach used in Extensive Urban Survey did, however, provide some guidance on how to take the analysis forward.

6.2.3 A number of factors were examined in an attempt to determine the boundaries of character areas. These included historic settlement pattern; extent of modern development; topography; geology; known archaeological sites and findspots; and secondary source analysis. Because the analysis was seeking to address complex patterns of survival, visibility of archaeology (in the broadest sense), past exploration and current knowledge, it was decided that patterns of modern and historic development were key to developing the extents of areas, as these have influenced both the deposition and survival of archaeological deposits.

6.2.4 Other consistent datasets relating to past human activity, including topography and geology, also formed part of the basis of the analysis. It should be emphasised that the methodology is not founded on principles of geological determinism (the belief that the nature of the geology forces people to act in a certain manner). Instead, the methodology reflects the concept that the geology and topography of an area influences the visibility and survival of archaeological deposits and the broad types of activity that may have occurred in an area at different times. The initial draft character area boundaries were therefore based on a "*bottom-up / top-down* " combination of topography / geology (bottom) and historic / modern development (top).

6.2.5 The archaeological character of each of these identified areas was then explored through an analysis of available data including historic environment record data, Scheduled Monument data, various secondary sources, historic mapping and other available digital datasets. The work also involved a considerable body of professional judgement. Through this process some character area boundaries were revised and edited, some amalgamated and new areas created.

6.2.6 The draft areas and descriptions were then circulated to key project stakeholders. The comments were used to prepare the final boundaries and character descriptions that accompany this report (see Appendix 3).

Key Stages

6.2.7 The following explores the three key stages of the analysis; namely *Analysis of Geology and Topography*; *Overlaying Modern and Historic Development* and *Description and Review*. This section highlights the key datasets used in each stage and identifies the role of the stages and individual datasets in the overall analysis.

Analysis of Geology and Topography

6.2.8 The geological data used for the analysis was extracted from 1:50,000 series British Geological Survey (BGS) Sheets for the Study Area. Figure 3.3 in Section 3.0 supplies a simplified version of that geological data. It should be noted that recent studies have identified areas where gravels extend beyond their mapped extents, this will need to be reflected in future revisions of the analysis once the revised geological data has been verified and made readily available.

6.2.9 The BGS sheets supply a complex view of the drift and solid geology of an area. Through examination of these sheets, in conjunction with an analysis of archaeological data and other sources, it was possible to identify key drift and solid deposits that could form the basis, with topographic data, for the initial character areas. These key deposits included:

- Alluvium
- Clays
- River Terrace Gravels / Deposits
- Brickearths
- Chalk
- Mixed clays, pebbles sands etc

6.2.10 Each of these geological types were analysed in broad terms as it was felt that they have different factors relating to the visibility and survival of the archaeological remains of past activity. For instance, the alluvial deposits, both along the banks of the Thames and other rivers and channels in the area, are known to contain deeply stratified archaeological and palaeo-environmental deposits from a range of periods, whilst on the surface the undisturbed areas contain numerous upstanding archaeological features such as salterns, sheepfolds, counterwalls and seawalls. Where the alluvial deposits have previously been developed, there is strong evidence to indicate that significant archaeological deposits can survive underneath these developments.

6.2.11 Also of note was the interface between the alluvial deposits of the Thames and the neighbouring gravel terraces. These interfaces contain a wealth of archaeological deposits and historic settlement activity reflecting millennia of settlement and use of the marshes. The gravel terraces are in themselves highly significant and are known to contain internationally, nationally and regionally important Palaeolithic deposits as well a numerous archaeological sites dating to later periods in prehistory. The free draining nature of the gravel terraces also makes the identification of archaeological cropmarks relatively easy and consequently numerous archaeological sites have been identified on these terraces.

6.2.12 The thin soils of the chalk areas also display similar characteristics and here archaeological sites tend to be visible on aerial photographs. In these areas the high numbers of known sites may be due to the light soils being attractive to prehistoric communities because they were easy to cultivate and clear of woodland, but it is equally possible that the high number is simply a result of ease of identification from the air. In contrast, areas of heavy water-

retentive clay soils restrict the visibility of archaeological sites on aerial photography, whether or not the theory is accepted that the heavy clays discouraged farming and settlement. A theory now widely challenged for instance in North Kent, where clay areas were seemingly subject to widespread use in the later prehistoric period.

6.2.13 The topography of an area also has a bearing on the definition of character areas as throughout human history topography has seemingly played a role in the siting of particular activities. For instance, the top of hills and steep slopes are favoured locations for Bronze Age burial sites (barrows), a pattern that can be seen across the Greenwich area and in Kent, whilst colluvial (hillwash) deposits in the bottom of valleys, in particular the chalk valleys of the Downs, can conceal archaeological deposits of earlier periods. The information on topography was derived from visual examination of Ordnance Survey Mapping and digital Meridian contour data. A broad topographical map is supplied on Figure 3.2 in Section 3.0.

Overlaying Historic and Modern Development

6.2.14 Geology and topography taken together formed the base layer for the initial analysis and definition of character areas. These 'bottom-up' layers were then overlain with information on historic and modern development. This included data on early historic settlement, e.g. locations of Saxon minsters, Roman towns and Medieval / Saxon mints; and data on modern development. The key areas for the definition of boundaries related to the developments from the mid-late 19th century through to the late-20th century. These were felt to have had the most influence on the survival of the archaeological resource. Earlier historic factors played a more significant role in the later stages of description and review of the character areas.

6.2.15 The key sources for the analysis of 19th and 20th century development comprised:

- Historic Ordnance Survey maps - 1st to 4th edition 6":1mile maps;
- Historic Landscape Characterisation data for Kent and Essex; primarily to map extents of past and current extraction, industry and settlement;
- Current Ordnance Survey 1:10,000 maps;
- Data on extraction sites, made ground and infilled ground (see Figure 6.3); and
- The results of the Urban Characterisation analysis (see Section 7.0).

6.2.16 The aim of the analysis was to broadly identify areas where archaeological deposits may have been subject to a level of disturbance / destruction or where they may have survived relatively undisturbed. The above data sources were analysed and used to sub-divide and compartmentalise the broad geological areas. For instance, a large area of gravel deposits may have been divided to reflect the fact that one area had been subject to extraction and 19th century development, which would have degraded and possibly removed archaeological deposits, whilst the other area had remained undeveloped and subsequently may contain more complete archaeological deposits. This sub-divided map was then used as the basis for the description and review of the character areas.

Description and Review

6.2.17 This was perhaps the key stage of the process where the results of the broad-brush characterisation were subject to more detailed scrutiny and examination. This involved examining a broad range of data sources including:

- Sites and Monuments Record Data;
- National Mapping Programme (NMP) cropmark plots;
- Extensive Urban Survey reports;
- Roman roads;
- Medieval Market, Fairs and Mints database;
- Secondary sources: e.g. *An Archaeological Research Framework for the Greater Thames Estuary* (Brown and Williams 1999) and *The Archaeology of Greater London (*MoLAS 2000); and
- World Heritage Site boundaries.

6.2.18 Each of the preliminary areas was then analysed and described using a combination of this data and the background geology / topographical and historic development information. This led to the creation of a number of new areas and the identification of key sites and deposits, particularly within the historic core of the urban areas. The boundaries of many areas were also revised and edited.

6.2.19 These draft areas, accompanied by characterisation descriptions, were then circulated to KCC, ECC, GLAAS and English Heritage for comment. Comments were received and these were used to prepare the final boundaries and character descriptions that accompany this report (see Appendix 3).

6.3 Results and Key Issues

6.3.1 The following outlines the results of the analysis and discusses some of the key issues that need to be taken into account when using the results of the study.

Outline of Results

6.3.2 Figure 6.4 shows the location and extent of the identified Archaeological Context Areas. Each of these areas is accompanied by a short description of the archaeological context (see Appendix 3). This data is also available in the accompanying GIS. Two examples of these are provided below:

Example Area 1

Area:	**060**
Region:	**North Thames Gravels**

Description:

- An area of relatively undisturbed gravels and other drift deposits, with a complex known archaeological record, including potential for Palaeolithic remains
- There are significant and extensive cropmark landscapes and there is evidence that extant and cropmark field systems stem from prehistoric land allotments
- Excavations prior to extraction at Mucking have revealed a complex multi-period archaeological landscape including prehistoric, Roman, Saxon and medieval elements
- Other key sites include a rare Neolithic Causewayed Enclosure and possibly related prehistoric settlement near Orsett and the medieval settlement of Orsett itself, with its small earthwork castle
- The Roman road towards Tilbury attests to the importance of this area in accessing the Thames and the historic crossing point to Cliffe
- There are significant industrial and military remains
- Overall, the area should be considered as having a high archaeological potential that reflects both the fact that the gravels have historically formed a focus for occupation alongside the Thames and that the area has been largely undeveloped.

Example Area 2

Area:	**041**
Region:	**Chalk Plain**

Description:

- The Swanscombe area and the neighbouring Ebbsfleet Valley (Area 015) is one of the most important identified areas for Palaeolithic archaeology in the UK

- Large parts of the area have been heavily developed and quarried, but significant areas remain unexcavated and the area has a high potential to contain further deposits
- The known extents of the gravel deposits in the area is being revised and expanded
- The extraction activity has identified, and subsequently destroyed, numerous archaeological deposits of early prehistoric date, further extraction activity may impact on similar deposits
- Where areas have been developed, but not extracted, archaeological deposits may survive under areas of made ground or between / within developments
- The A2 Roman road running through the area indicates that there may be a high potential for archaeological remains of this period and evidence of later activity including Saxon cemeteries have been identified in the area
- The area was also important in the development of the cement industry
- Overall, the area contains a complex mix of known archaeological deposits spanning 400,000 years.

6.3.3 The descriptions aim to give a broad indication of the nature of the known archaeology of the area as well as identifying factors that may have influenced the survival and preservation of that archaeological resource. The data is presented in a standard bullet-point format and is designed to be general in nature. The **Region** heading refers to broad groupings of archaeological context areas that based on underlying geological / topographical units forming hypothetical regions of archaeology character.

Key Issues

6.3.4 The aim of the archaeological context analysis was to supply, in conjunction with Historical and Archaeological Context (Section 3.0), a broad pan-Gateway assessment for the character of the known archaeological resource and to highlight areas of known significance. The analysis has achieved that aim; however there are a number of key issues that need to be recognised when using the results to inform decisions.

6.3.5 Firstly, the descriptions and the mapping are broad and general in nature. This reflects the both rapidity of the study and level of detail necessary for strategic analysis and appraisal. Where detail is required in the future on specific sites or even wider locales such as towns, then further archaeological investigation and consultation with the relevant authorities e.g. the County Archaeologists and English Heritage, remains a key requirement. The characterisation supplies broad data for general decision making and highlights key issues, it does not provide a comprehensive overview of the archaeological potential and character of every location within the Thames Gateway.

6.3.6 It should also be understood that the boundaries of the context areas are for the most part "*soft*" in nature. There are some exceptions to this rule, e.g. marshland edges and edges of urban development, but for the most part the boundaries used for the analysis should be treated as indicative and not absolute.

6.3.7 The study has also been constrained by the use of available data. Although the SMR and NMP datasets supply a picture of the archaeological record it has not been possible within the scope of the study to explore other datasets, e.g. the National Monuments Record (NMR). In addition, whilst within the time constraints it has been possible to review a number of key secondary sources it has not been feasible to examine the full range of survey and desk-based assessment reports available for the Thames Gateway. The results of the analysis would therefore benefit from more detailed geographical-restricted analyses to draw in this additional data. These analyses could use the Archaeological Context Areas to supply a broad geographical framework for the handling of that data.

Further Work and Analysis

6.3.8 A number of key areas for further study and investigation have been identified during the course of the analysis, these are briefly outlined below:

- *Extensive Urban Survey of Greater London* - This would supply a more detailed and comprehensive understanding of the nature of the Capital's archaeological resource.
- *National Mapping Programme in Greater London* - The extension of the NMP into the Greater London area would give a clearer picture of the archaeological resource of the undeveloped areas of the capital.
- *Surveys of the foreshores and marshlands of the Thames Gateway* - Currently areas of the Thames and Medway estuaries and Swale sea channel in North Kent are being surveyed, this could be expanded to include the remaining unsurveyed areas.
- *Mapping of Current and Past Extraction* - As part of the ongoing Kent and Essex ALSF sponsored project the extent of past and current extraction sites are being mapped. This in conjunction with existing datasets should supply crucial information on the archaeological potential of particular areas and sites. This process is not currently planned for Greater London and consideration should be given to extending it into Greater London.
- *Archaeological Desk-Based Assessment of Growth Areas* - To aid long-term decision making it would perhaps be useful to have a broad archaeological assessment of each of the Growth Areas (see Figure 1.1). This could supply detail on the character of the

archaeological resource, previous archaeological work and highlight the potential of the areas within the Growth Areas to contain archaeological deposits. These assessments could then inform the masterplanning process and planning decisions.

- *Planarch 2 Historic Environment Strategy* - This ongoing project will develop in more detail for Kent and Essex many of the themes identified by this study.

7.0 URBAN CHARACTERISATION

7.1 Introduction

7.1.1 The Thames Gateway contains extensive areas of suburban and urban landscapes. Some of these, e.g. Rochester, seemingly have their origins in the Iron Age or Roman periods whilst others, such as Basildon, were developed in the 1950s. The built-up areas have developed both organically as the result of long-term historic trends, and as the result of concentrated episodes of town planning; early examples of this include Queenborough (a medieval planned borough), whilst more recent examples include the utopian inspired 1933 Bata Shoe Factory housing complex at East Tilbury. Much of the area is dominated by 19th and 20th century suburban development linked to the growth of London and the major towns in the Gateway. These suburban estates (e.g. the Homes for Heroes of the early 20th century) are increasingly being recognised as important elements of the urban landscape and some of the finest examples are beginning to be highlighted through their designation as conservation areas and listed buildings.

7.1.2 Key themes in the development of the urban landscape of the region include:

- The early Roman and pre-Roman origins for some towns;
- The development of parts of the major road network in the late prehistoric / Roman period;
- The growth of early medieval estates and estate centres;
- The development of the dockyards, both royal and civil along the estuary;
- The growth of medieval markets and ecclesiastical centres;
- Late 19th and 20th century suburban development;
- The growth of the railway network which supported commuting;
- Growth of New Towns and other modern planned settlements;
- Plotland development in Essex; and
- The growth of the 19th / 20th century resort towns.

7.2 Method and Approach

Outline of Method

7.2.1 A key part of the historic environment characterisation project has focussed on unpicking the structure, evolution and form of the urban areas. This has been undertaken using desk-based sources and has not involved comprehensive field analysis and survey, although some areas were briefly examined on the ground during the course of the project.

7.2.2 The aim of the analysis has been to identify the broad surviving character of the discrete areas across the Thames Gateway. This involved intensive examination of historic mapping sources, SMR data, Extensive Urban Surveys, listed building data and conservation area data. The characterisation sought to define and understand the dominant architectural / structural character of an area. This has involved developing an understanding of current and past land use, evolution of the street layout and form, the identification of major episodes of change and the nature of that change e.g. planned vs organic (unplanned) development.

7.2.3 Through the on-screen analysis of a number of datasets it has been possible to compartmentalise the urban areas of the Thames Gateway into approximately 300 discrete character areas. The key datasets used in the process were:

- OS Modern Mapping;
- OS Historic Mapping (1st to 4th Epoch);
- Conservation area boundary data (as supplied by English Heritage);
- Listed building data (as supplied by English Heritage, KCC, ECC and GLAAS);
- Secondary sources e.g. *London's Suburbs* (2003); and
- Historic Town Surveys and Extensive Urban Surveys commissioned by Kent and Essex County Councils (as supplied by KCC and ECC).

7.2.4 The study involved a three stage process:

- Urban Growth Analysis;
- Characterisation and Description; and
- Review and Modification.

Urban Growth Analysis

7.2.5 The first stage in the analysis involved tracing the historic development of the region though a sequential analysis of the four epochs of historic OS mapping (supplied by English Heritage). These epochs covered the following periods:

- Epoch 1: 1858-1873
- Epoch 2: 1891-1895
- Epoch 3: 1905-1922
- Epoch 4: 1931-1940

7.2.6 The range of dates for each epochs means that any map within the epochs may date from a range of dates, therefore neighbouring maps may be a number of years apart in date, this has led to some issues with conformity between maps. The results of the urban growth analysis can be seen of Figure 7.1. Due to the lack of consistent digital data for the historic maps from periods pre-1858, it has not at this stage been possible to analyse and map earlier urban evolution within the scope of the study.

Characterisation and Description

7.2.7 The growth analysis formed a starting point for the characterisation and description. However the growth analysis did not record whether an area survived in the same form since the time of its development, this more detailed step therefore underpinned the characterisation and description.

7.2.8 Through a detailed analysis of the four epochs of historic OS mapping, coupled with other data such as EUS reports, it has been possible to identify, in broad terms, the surviving historic cores of the majority of the urban settlements in the Thames Gateway. From these cores the analysis worked its way out through the settlements developing an understanding of how the later urban form was developed, demolished and redeveloped. This has led to the definition of the character areas.

7.2.9 The character areas predominantly reflect survival of different periods of urban landscape, in terms of both the survival of the layout and form of an area as well as its built fabric. In some instances, the character areas mark the theoretical extent of a historic core, but only when the surrounding urban form has become so confused as to make more accurate definition less achievable.

7.2.10 The characterisation was accompanied by structured descriptions, which catalogued the dominant periods, uses and the nature of development e.g. planned or organic. The listed building descriptions and conservation area descriptions were used during the description process to aid understanding.

Review and Modification

7.2.11 The initial results of the Greater London characterisation were discussed at a short workshop. These highlighted a number of changes which have been incorporated into the character descriptions presented with this report (see Appendix 4).

7.3 Results and Issues

7.3.1 The following outlines the results of the analysis and discusses some of the key issues that need to be taken into account when using the results of the study.

Outline of Results

7.3.2 Figures 7.2, 7.3 and 7.4 show the location and extent of the identified Urban Character Areas. Each of these areas is accompanied by a short description (see Appendix 4). This data is also available in the accompanying GIS. Two examples of the descriptions are provided below:

Example 1

Town / Urban Area Name:	Rochester
Area Number:	1040
Predominant Period:	Mixed
Secondary Period:	
Predominant Type:	Residential
Other Types:	Commercial
Form / Pattern:	Organic

Description:

- This area represents the historic core of Rochester, focussed on the site of the Roman and later Medieval town that marked the crossing point of the River Medway.
- The core is home to a number of important historic buildings, the most prominent being the 1,000 year old Castle with its fine Norman keep and the second oldest Cathedral in the country, lying side by side at the northern tip of the City.
- Many of the buildings in the core area date from the 18th century. There are significant groupings of historical buildings, particularly along the main arteries of the High Street and St Margaret's Street dating from 16th, 17th and 18th centuries and a number of which are Pre-1500 in date.
- The core area is designated as a number of conservation areas and contains a significant wealth of listed buildings, which survive within a relatively intact historic street pattern.

Example 2

Town / Urban Area Name:	Erith, Bexley, Sidcup
Area Number:	1122
Predominant Period:	20th Century
Secondary Period:	19th Century
Predominant Type:	Residential
Other Types:	
Form / Pattern:	Organic

Description:

- The area broadly encompasses the late 19th / early 20th century extent of Sidcup and Halfway Street
- The form and layout of the area has broadly remained unchanged during this time period, although there have seemingly been areas of modern development, especially in Halfway Street.
- The historic core of Sidcup lies around the church to the south of the area and this area contains a few listed buildings.
- Halfway House contains a noticeable concentration of listed buildings and although it has undergone modern development it retains some of its historic character and form
- The area contains a number of interesting examples of late 19th and early 20th century suburban developments including the Green, Longlands Road and Old Forge Way. All of these are designated as conservation areas, as are other areas of the character area

7.3.3 The following briefly explains the content of each heading in the descriptions:

Town / Urban Area Name:	Broad name for town / urban area e.g. Chatham. This was not limited to borough areas and tended to amalgamate areas where necessary
Area Number:	Unique identifying number
Predominant Period:	The approximate age of the dominant surviving fabric. *Note:* 20th Century tends to refer to early / middle 20th century. Modern tends to refer to late 20th century.
Secondary Period:	This identifies the other periods from which fabric survives in recognisable quantities
Predominant Type:	Basic land use types e.g. Residential, Industrial
Other Types:	Secondary Land uses
Form / Pattern:	Is the area the result of a single ***Planned*** phase or the result of a more ***Organic*** evolution
Description:	Main body of text describing key features and characteristics

Key Issues

7.3.4 The key issue associated with characterisation exercise relates to the desk-based approach. This has led to necessary simplifications and perhaps inaccuracies in areas where fabric may have altered without significant changes to layout. The exercise will therefore require

appraisal on an area-by-area basis prior to more detailed use. However at a strategic level the data should be robust enough to guide decisions and will contribute to the evidence base for such decision-making.

Further Work and Analysis

7.3.5 A number of areas for further study have been identified, these are briefly outlined below:

- *Extensive Urban Survey of London* – This would provide useful information on the urban evolution of Greater London.
- *Suburban Review and Analysis* – A rapid study to identify, map and highlight suburbs of historic merit.
- *Medway Towns* – A research project to better understand the development and interrelationship between the Medway Towns.
- *Pre-1858 digitisation of map sources* – A detailed digitisation programme to prepare geo-referenced digital maps for the pre-1858 period.

8.0 MODELLING THE SENSITIVITY OF THE HISTORIC ENVIRONMENT

8.1 Introduction

8.1.1 There is no agreed or adopted methodology for assessing the sensitivity of the historic environment. Recently, there have been a number of studies that have sought to develop approaches to the assessment of sensitivity at a local and sub-regional scale, these include:

- *Sustaining the Historic Environment: Essex and Southend-on-Sea Replacement Structure Plan* (CBA 2002);
- *Historic Environment Issues in the Proposed London-Stansted-Cambridge Growth Area, with and indicative study of the Harlow-Stansted area* (English Heritage 2003); and
- *Milton Keynes Urban Expansion Historic Environment Assessment: Historic Environment considerations for the Milton Keynes and South Midlands Sub-regional Strategy* (English Heritage, Buckinghamshire County Council and Milton Keynes Council 2004).

8.1.2 The above projects all took different approaches to the assessment of sensitivity. This reflects the different circumstances under which each of the projects were developed. Key differences included:

- *Geographical scale of the assessments*: from the relatively small area examined by the Milton Keynes study through to the county-wide Essex study. This factor strongly influenced the level of detail in each of the projects.
- *Scope of assets assessed*: from essentially just historic landscape features for the Harlow-Stansted study through to a larger range of individually identified archaeological, historic landscape and built heritage assets at Milton Keynes.
- *Status of growth options*: the Milton Keynes study was responding to identified potential growth options, the other studies were more general in nature and were intended to inform the development of growth options.
- *Approach to the assessment of sensitivity:* the Milton Keynes study used an Environmental Impact Assessment method that assessed possible impacts on identified character areas and assets; this approach was only possible because growth options had already been identified. The Harlow-Stansted and Essex Studies prepared more general guidance on the potential sensitivity of areas to broad types of change e.g. large-scale development, using a GIS model to identify sensitive areas.

- *Use of GIS:* The Harlow-Stansted and Essex studies both used a similar GIS model to develop broad patterns of sensitivity. The Milton Keynes Study used GIS to develop information and material for assessment, but did not use GIS to map sensitivity.

8.1.4 None of the studies aimed to produce a map or model that sought to map the *inherent sensitivity* of the historic environment. This seemingly reflects an implicit understanding within the three studies that different types of assets respond to different types of change in different ways e.g. some assets are relatively robust and their fabric and character would not be seriously degraded by certain types of change, whereas the same scale and types of change would substantially degrade another asset.

8.1.5 However, the recently issued Countryside Agency / Scottish Natural Heritage *Landscape Character Assessment Topic Paper 6: Techniques and Criteria for Judging Capacity and Sensitivity* presents approaches to the assessment of sensitivity of landscape that address both *sensitivity to a specific type of change* and *inherent sensitivity*. The latter approach was reviewed as part of this project in an attempt to identify a way in which the theoretical inherent sensitivity of the historic environment could be mapped / modelled. The use of the Historic Environment Character Areas (see Section 4.0) was considered as a framework for this process, but given the scale of analysis it was felt that these did not provide sufficient detail to allow professional judgements on sensitivity to be made in a robust and repeatable manner.

8.1.6 As with previous studies it was felt that the complex nature of the historic environment and available data precluded the development of a model of inherent sensitivity for the historic environment. It was not possible to produce one map showing the relative sensitivity of every heritage asset to every type of change. Instead, a model was developed that could allow for the examination of a range of particular questions relating to particular types of assets or features. For example, what is the relative sensitivity of the known archaeological resource to new woodland planting? Or, what is the sensitivity of the built heritage resource to large-scale demolition and change? This reflects the fact that different types of assets and different aspects of those assets are more sensitive to different types of change. For example, sub-surface archaeological sites may be more sensitive to conversion of pasture to arable than certain types of historic landscapes; whilst some historic buildings may be able to accommodate a particular type or degree of conversion and change but some upstanding archaeological sites may not.

8.2 Outline Project Approach

Overview

8.2.1 Based on the work of previous studies, in particular the Essex Structure Plan review (CBA 2003) and the Harlow-Stansted study (English Heritage 2003) this project has developed a GIS-based model for the assessment of the historic environment's sensitivity to defined types of change, for use at a strategic / regional scale. The methodology behind the model involves, in the simplest terms:

- Identifying the nature of the change;
- Identifying assets for assessment within the context of the three strands of the historic environment;
- Using professional judgement to assign "sensitivity to change values" and buffers to those assets;
- Cumulating the sensitivity values for the assets within a GIS environment;
- Where necessary, developing filters in the GIS to alter cumulative sensitivity values e.g. to reflect land-use issues such as past development and extraction;
- Setting thresholds for the cumulative sensitivity values to reflect relative levels of sensitivity. These can then be expressed on a common scale (e.g. high, low) to allow comparison across the three strands; and
- Mapping the results at an appropriate scale.

8.2.2 This broad model could be used in any region to address a range of issues e.g. the sensitivity of historic landscapes to woodland planting related to an assessment of the sensitivity of known archaeology to woodland planting? The basic process behind that assessment would be the same as that outlined below, however the detail in terms of sensitivity to change values, types of assets and filters would be different.

8.2.3 The following explains the analysis undertaken by this study using the broad methodological model outlined above. Although future analyses may explore other issues, the basic steps, processes and ideas are likely to remain the same as those used for this assessment. It is therefore expected that the following could supply a template for similar future studies.

8.3 Nature of the Change

8.3.1 Given the context within which the project was operating, it was decided to focus the sensitivity assessment on the large-scale strategic development that was likely to emerge from the Thames Gateway programme. The initial analysis from the sensitivity model developed for the project assessed "*the sensitivity of the fabric, integrity and historic significance of the three key components of the historic environment* (historic landscape, built heritage and archaeology) to ***major physical change resulting from modern development***".

Definitions

8.3.2 *Major Physical change***:** Examples of major physical change could include:

- substantial housing development / urban expansions;
- major new industrial / commercial complexes; and
- large scale transport infrastructure, e.g. new trunk roads and rail routes.

8.3.3 It was considered that these types of major physical change best reflect the likely short-term priorities of the sustainable communities regeneration programme and should therefore be the subject of this initial sensitivity analysis.

8.3.4 *Fabric:* The fabric of a resource is the physical expression of that resource. For instance, bricks and mortar often form the fabric of a building, whilst hedgerows, ditches and woods can form part of the fabric of a historic landscape. The sensitivity of fabric relates to the inherent vulnerability of particular physical 'things'. An archaeological earthwork is very vulnerable to change therefore its fabric is very sensitive.

8.3.5 *Integrity:* The integrity of a resource relates to concepts such as completeness and complexity. For instance, the fabric of an isolated hedgerow amongst prairie fields is as sensitive as the fabric of a hedgerow within a large-scale medieval field system, however the latter hedgerow also forms part of a larger system and on this measure it is more sensitive because its loss would have wider impacts on the integrity of a field system of particular significance / value. In terms of townscapes, an area with a surviving street pattern and dominated by contemporary historic buildings has greater integrity than an area where the street pattern has altered and the relationships between buildings has changed.

8.3.6 *Historic Significance:* The historic significance of a resource reflects its comparative value / importance in historic terms. The concept of significance has been developed and used extensively in recent years in the field of conservation planning. Its use in this study is confined purely to historic significance. Factors that effect significance include rarity, complexity, association with events / people and completeness. At a strategic scale significance can be partially recognised through designation.

8.4 Sensitivity Assessment

8.4.1 Each of the three themes of the historic environment presented their own challenges with regard to assessing sensitivity. Consequently, a slightly different methodology was required for each theme. There were however, commonalities between methods, these included:

- A GIS based numerical approach to defining the sensitivity of individual assets and creating a cumulative model of that sensitivity;
- The use of professional judgement to set the numerical values;
- The use of a common scale to reflect sensitivity and allow broad cross-comparison between themes; and
- The use of 'buffers' around some resources to address the use of point data, reflect issues such as setting and the encompass likelihood of encountering similar related features to the vicinity.

8.4.2 The methodology for the assessment of each theme can be found in the following sections, along with the initial results of the analyses. These methodological statements cover the 6 stages of the assessment identified above, namely: identifying assets for assessment; assigning sensitivity to change values and buffers; cumulating the sensitivity values; developing filters to alter cumulative sensitivity values; setting thresholds for the cumulative sensitivity values; and mapping the results.

8.4.3 It should be noted that the numeric sensitivity values assigned for different assets in each of the three strands of the historic environment are not comparable between strands, for example a scheduled monument has been assigned for this analysis a sensitivity value of 30, whilst a listed building has a value of 20. These scores are only relevant within each strand; the compassion between the three strands occurs once cumulative thresholds have been set and expressed through a common-scale of sensitivity. This approach reflects differing levels of data availability and complexity within each of the three strands. In particular, the fact that

the SMR data for the archaeology strand provides an extremely complex dataset, when compared with the historic landscape and built heritage data, therefore a more complex sensitivity value scale is required within the archaeology strand to allow for differentiation within the archaeological data.

8.4.4 As previously mentioned, the relative sensitivity between the strands is expressed through a common scale:

- Extremely Sensitive
- Highly Sensitive
- Moderately Sensitive
- Sensitive
- Little Known Sensitivity
- No data

8.4.5 The archaeology assessment includes an additional element on its scale: *Potentially No Sensitivity*. This marks areas where, based on an analysis of past and current land-use, there is a significant possibility that archaeological deposits have been removed through extraction activity. This data must be checked on a site-by-site basis prior to use.

8.5 Built Heritage / Urban Character

8.5.1 The built heritage / urban character sensitivity analysis was based on the analysis of four principal datasets / asset types:

- Listed building data
- Conservation area data
- World Heritage Sites
- Urban Character Areas

Listed building data

8.5.2 Listed building data was supplied by English Heritage for the Study Area in the form of point data and grade data. The use of point data has meant that some very large listed structures e.g. Southend Pier are underrepresented in the analysis. The data was cross-referenced with data held by KCC, ECC and GLAAS. The data was found to be geographically accurate for Essex and Kent, but issues were noted with the assignment of

grid references for the Greater London data. It is therefore, decided to combine the GLAAS data set and the English Heritage data set. This has resulted in an over estimate of listed buildings in the Greater London Area. ***The sensitivity analysis for Greater London should at this time be treated with caution***.

8.5.3 For each listed building point the following buffer and sensitivity value was assigned:

- Grade I and II* buildings: 250m buffer-value 20
- Grade II buildings: 100m buffer-value 9

8.5.4 The buffer reflects the potential sensitivity of a building's setting as well as the sensitivity of the building itself. It also allows for the potential integrity of a cluster of listed buildings to gain extra sensitivity as their buffers overlap. The relative significance of the designated assets is recognised in both the sensitivity value and buffer area.

Conservation Areas

8.5.5 Conservation area data for all areas was supplied separately by KCC, ECC and GLAAS. Issues with the completeness of the GLAAS data were noted. Additional conservation areas are likely to have been designated since the creation of the GLAAS data, this would have effected the sensitivity analysis for Greater London. Limited issues were noted to the KCC data, for example conservation areas were noted to be absent from around the Chatham Candidate WHS, these were added from other sources. This absence may have been unique but other areas of Kent may also be missing data.

8.5.6 To reflect the inherent integrity of conservation areas, their relative significance and the need to respect their settings the following values were attributed:

- Conservation Areas: Buffer 250m value 20.

8.5.7 It should be noted that conservation area boundaries were merged to avoid buffer overlaps between neighbouring conservation areas which can overly inflate the sensitivity of places where numerous small areas have been designated in place of a single large area.

World Heritage Sites

8.5.8 There is only one World Heritage Site (WHS) in the Study Area, the Greenwich Maritime WHS. This is essentially a built heritage / urban complex and hence has been assessed in this section. To reflect the significance, integrity and fabric of the WHS it has assigned the following values:

- World Heritage Sites: Buffer 300m value 50.

Urban Character Areas

8.5.9 The urban characterisation analysis (see Section 7.0) analysed the broad historic character and form of the urban areas of the Thames Gateway. This has enabled an additional broad-brush layer to be added to the sensitivity analysis to cover areas that are not designated but may have some intrinsic integrity, fabric and historic significance. For the purposes of this assessment a simple analysis was applied to each urban character area as follows:

- Areas of some historic significance, that perhaps had the integrity of their fabric compromised - Value 5
- Areas of limited historic significance that survive in relatively complete or integral fashion – Value 5
- Areas with no particular historic significance, regardless of integrity and fabric – Value 1

8.5.10 This should be treated as a background layer. Further more detailed scrutiny on an area-by-area basis may be able to develop further more accurate sensitivity values and results for each of the c.300 UCAs.

Results of the Built Heritage / Urban Character Analysis

8.5.11 The generated polygons with their relevant sensitivity score were then converted to a 10m grid and merged to form a grid of cumulative sensitivity scores. Figure 8.1 shows the results of the analysis. Table 8.1 outlines the definitions used on Figure 8.1. All sensitivity scores refer to '*sensitivity to major physical change*'.

Table 8.1

Sensitivity score	Definition
Extremely Sensitive (70+)	The area is unable to accommodate major physical change without the very high likelihood of damage to highly significant and complex built heritage assets of international or national significance. *Note: Sensitivity of areas may be over emphasised in Greater London*
Highly Sensitive (20 – 69)	Major physical change is likely to have significant adverse impacts on built heritage resources of national significance as well as damaging complex relationship between such resources. *Note: Sensitivity of areas may be over emphasised in Greater London*
Moderately Sensitive (9 – 19)	Major physical change is likely to impact on heritage resources of regional significance and effect relationships between such resources. *Note: Sensitivity of areas may be over emphasised in Greater London*
Sensitive (5-8)	These areas contain no designated built heritage assets but by virtue of their historic significance or inherent integrity would be adversely effected by major physical change.
Little Known Sensitivity (1-4)	These areas contain no designated built heritage assets and are of little historic significance. Major physical change would however effect their character and form.
No data	The sensitivity of these areas has not been assessed due to a lack of data for built heritage resources. These areas may contain unidentified assets of significance.

8.6 Historic Landscape Sensitivity Analysis

8.6.1 The historic landscape sensitivity analysis was based on three principal datasets:

- Historic Landscape Characterisation (HLC) data;
- Ancient Woodland Data; and
- Registered Historic Parks and Gardens Data.

8.6.2 Registered Historic Battlefield data was not used as none lie within the Study Area.

HLC Data

8.6.3 The HLC data used in the analysis was derived from the combined HLC dataset created as part of this project (see Section 5.0 for details). ***Due to an absence of data in the Greater London area the sensitivity of the historic landscape to major physical change is under-represented and hence should be treated with caution***.

8.6.4 Sensitivity to change values were assigned to each of the new HLC codes. These values reflected the judgement of the team as to the relative sensitivity to major physical change of different historic landscape characterisation types. The relative values are presented below in Table 8.2

Table 8.2 - HLC sensitivity values

New Code	High Level Class	Detailed Class	Sensitivity Value
CEM_1	Cemeteries	Cemeteries	5
COA_1	Coastal	Saltings	5
COA_2	Coastal	Wetlands and Marshes	5
COA_3	Coastal	Tidal Feature	5
COM_1	Common	Heath	5
COM_2	Common	Other	5
DOW_1	Downland	Downland	6
EXT_1	Extraction	Extraction	0
EXT_2	Extraction	Restored	0
FIE_1	Fieldscape	Co-axial	6
FIE_2	Fieldscape	Regular	3
FIE_3	Fieldscape	Irregular	5
FIE_4	Fieldscape	Assarts	4
FIE_5	Fieldscape	Prairie	2
FIE_6	Fieldscape	Pasture - misc.	3
FIE_7	Fieldscape	Unimproved rough pasture	3
FIE_8	Fieldscape	Fields bounded by roads, tracks and paths	3
PAR_1	Historic Parkland	Historic Parkland	5
HOR_1	Horticulture	Orchard	3
HOR_2	Horticulture	Nursery / Glasshouse	2
HOR_3	Horticulture	Other	2
IND_1	Industry	Disused	2
IND_2	Industry	Active	0
IND_3	Industry	Water	2
ICF_1	Inland Communication Facility	Airfields	2
ICF_2	Inland Communication Facility	Transport	0
MIL_1	Military and Defence	Post-medieval	5
MIL_2	Military and Defence	Early	6
MIS_1	Misc.	Rough ground	3

New Code	High Level Class	Detailed Class	Sensitivity Value
REL_1	Reclaimed Land	Creeks and Fleets	4
REL_2	Reclaimed Land	Drained Irregular	5
REL_3	Reclaimed Land	Drained Regular	5
REC_1	Recreation	Racing	2
REC_2	Recreation	Modern recreation	2
SET_1	Settlement	Post-1800 urban areas	0
SET_2	Settlement	Pre-1800 urban	0
UNK_1	Unknown	Unknown	3
WAT_1	Water - fresh	Watercress Beds	5
WAT_2	Water - fresh	Mills, leats, fishpond etc	5
WOO_1	Woodland	Pre-1800	6
WOO_2	Woodland	Post-1800	3
WOO_3	Woodland	Scarp woods	5

8.6.5 Due to the relatively comprehensive and consistent coverage of the HLC dataset it was decided not to buffer the polygons as this would create higher sensitivity values around sensitive assets, where multiple polygons overlap, rather than focussing values on the particular assets. Areas of urban development were not assessed as part of this analysis as they were addressed in the built heritage sensitivity analysis (see Section 8.5).

8.6.6 Extraction (EXT 1 and EXT 2) was given a zero value as this type was not felt to be sensitive to major physical change in terms of historic landscape value. It is however recognised that industrial archaeological features or other archaeological material may lie within areas of extraction, these aspects would be addressed by the archaeological sensitivity assessment (Section 8.7). Inland Communication Facilities - Transport (ICF 2) were noted to be generally modern motorways, these were assigned a zero value.

Ancient Woodland Data

8.6.7 The Ancient Woodland data was derived from publicly available datasets generated by English Nature. Ancient Woodland is defined by English Nature as areas of woodland that have been in existence since at least 1600AD. These area were included in the sensitivity analysis as they are a key component of the historic landscape. Ancient woodlands are also recognised reservoirs of archaeological features, in particular those associated with woodland management, e.g. woodland banks, park pales and charcoal burning platforms.

8.6.8 Ancient Woodlands were assigned a sensitivity value of 14, this reflects their significance as key surviving historic assets, their designated status, their integrity, the rarity of their fabric and their longevity.

Registered Historic Parks and Gardens Data

8.6.9 The Register of Historic Parks and Gardens is compiled and maintained by English Heritage. Sites are graded according to their level of significance:

- *Grade I* – international importance;
- *Grade II** – exceptional historic interest;
- *Grade II* – special historic interest.

8.6.10 The data for Registered Historic Parks and Gardens was supplied by English Heritage in digital format and was assumed for the purpose of this assessment to be accurate. It was however noted that the boundaries for a small number of registered parks may not have been available digitally at the time of the analysis.

8.6.11 Registered Historic Parks and Gardens are a key visible component of the historic landscape. They represent a particular theme in English landscape history and many contain visible and buried features pertaining to pre-park landscapes. For the purposes of this assessment the following values and buffers were applied:

- Grade I and II* Registered Historic Parks and Gardens - Buffer 250m - Value 16
- Grade II Registered Historic Parks and Gardens - Buffer 100m - Value 14

8.6.12 Their sensitivity value reflects their inherent integrity, strong visual character and the relative rarity / uniqueness of their fabric and form. The values also highlight the importance of their historic layout and character to their overall significance. The need to conserve their setting and visual character, coupled with the fact that these sites now often occupy a smaller footprint than in the past, is reflected in the buffer assigned to them. The difference in the sensitivity vale and extent of the buffer reflects the relative significance of the Grade I and II* sites compared with the Grade II sites.

Results of the Historic Landscape Sensitivity Analysis

8.6.13 The polygons, both buffered and unbuffered, and their sensitivity value were merged and combined to create a cumulative sensitivity score. To aid processing this cumulative map was sampled using a 10m grid. Figure 8.2 shows the results of the analysis. Table 8.3 outlines the definitions of sensitivity shown on Figure 8.2. All scores refer to sensitivity to major physical change.

Table 8.2

Sensitivity Score	Definition
Extremely Sensitive (24+)	These areas are unable to accommodate major physical change without the likelihood of damage to highly significant combinations of historic landscape resources including Registered Historic Parks and Gardens and areas of Ancient Woodland.
Highly Sensitive (10-23)	Major physical change is likely to have a large adverse impact on significant historic landscape resources and compromise their integrity, importance and fabric.
Moderately Sensitive (8-9)	Within these areas major physical change is likely to compromise the integrity and fabric of assets that contribute significantly to the overall character and structure of the historic landscape.
Sensitive (5-7)	Any major physical change is liable to alter the fabric, form and nature of the historic landscape of these areas, however the assets within these areas are not necessarily of high significance although their loss would degrade the overall character of the historic landscape.
Little Known Sensitivity (1-4)	Although major physical change will alter the character and fabric of these areas, this is unlikely to fundamentally degrade the nature of the historic landscape (*note: due to the HLC classification of large areas of south Essex as Prairie Fields sensitivity in these areas is under-estimated*)
No data	The sensitivity of these areas has not been assessed due to a lack of data.

8.7 Archaeological Sensitivity Analysis

8.7.1 The archaeological sensitivity analysis was the most complex of the analyses undertaken for the sensitivity study. This was due to a number of factors including; the size of the datasets; the need to standardise the SMR data; the requirement to filter the archaeological sensitivity to identify areas where although there were no known deposits particular land uses or other factors would indicate a very high probability of encountering deposits; and also to identify areas with potentially no sensitivity due to past or current extraction activity.

8.7.2 The analysis has not produced a predictive tool or model of archaeological potential. Instead it has sought to map the sensitivity to change of known archaeological sites and features based on available, consistent data for the entirety of the area.

8.7.3 To achieve this the following datasets were used:

- Sites and Monument Record Data
- HLC and BGS Data
- Scheduled Monument Data
- Geological SSSI Data

8.7.4 An earlier version of the methodology used the simplified geological data presented in Section 3.0 to form an additional background layer to model sensitivity. However, this was felt to overly simplify the model and overemphasise the role of geology in the deposition and preservation of archaeological deposits. Although it is still left that geological data has a role to play in this form of sensitivity analysis, further assessment and study is required to identify the most appropriate method for its inclusion.

8.7.5 The following outlines how each dataset was used and its role in the overall analysis.

Sites and Monument Record Data

8.7.6 The SMR data underpinned the entire archaeological sensitivity exercise. Approximately 23,000 records for the Study Area from three separate SMRs (Kent, Essex and Greater London), were merged into a single SMR database and simplified. The simplification focussed on reducing the number of terms and dates for features; details of the simplification exercise can be found in Appendix 5. Even with this simplification over 700 discrete combinations of term and date were identified. These were then assigned sensitivity values on a range of 0 to 19, and buffers with a range of 0 to 400m. Details of these assignments can be found in Appendix 6.

8.7.7 The assignment of sensitivity values and buffers sought to reflect the relative significance of the various types of archaeological feature as well as their potential sensitivity to major physical change. For example, rare upstanding Saxon earthwork complexes received a relatively large buffer and high sensitivity value, whilst more common post-medieval houses received a small buffer and moderate to low sensitivity value. The buffer size was also used to reflect the comparative size of sites, with large complexes and groups receiving larger buffers than smaller sites such as individual find spots or buildings.

8.7.8 One key aspect to note with sensitivity analysis is that it does not distinguish between assets that remain *in-situ* and those that have been removed. It therefore reflects to some degree the likely archaeological sensitivity of an area and through the use of filters (see below) attempts to indicate how this likely sensitivity has been affected by past and current activity, e.g. extraction reducing sensitivity.

8.7.9 The SMR sensitivity is therefore only one part of the overall sensitivity model and should not be relied upon on its own to portray an accurate record on the current sensitivity of the archaeological resource. It does however give some clues to the general pattern of sensitivity. It is acknowledged that it would have been beneficial to assign sensitivity on a record-by-record basis, however this was unachievable within the scope of this project.

HLC and BGS Data

8.7.10 An important aspect of the archaeological sensitivity analysis involved the generation of simple filters to increase or decrease the archaeological potential of an area based on other known influences, in this case past and present land-use. Two key datasets were used for this analysis. Firstly the combined HLC data (See Section 5.0) was used to provide data on past land-use that may have influenced the archaeological potential / sensitivity of an area. The following filters were applied to HLC polygons:

Table 8.4 - HLC Filter

HLC Code	High Level Class	Detailed Class	Filter Effect on Archaeological Sensitivity
COA_1	Coastal	Saltings	+10
COA_2	Coastal	Wetlands and Marshes	+10
EXT_1	Extraction	Extraction	= 0
EXT_2	Extraction	Restored	= 0
FIE_1	Fieldscape	Co-axial	+5
PAR_1	Historic Parkland	Historic Parkland	+5
MIL_1	Military and Defence	Post-medieval	+10
MIL_2	Military and Defence	Early	+10
REL_1	Reclaimed Land	Creeks and Fleets	+10
REL_2	Reclaimed Land	Drained Irregular	+10
REL_3	Reclaimed Land	Drained Regular	+10
SET_2	Settlement	Pre-1800 urban	+10
WAT_1	Water - fresh	Watercress Beds	+5
WAT_2	Water - fresh	Mills, leats, fishpond etc	+5
WOO_1	Woodland	Pre-1800	+10

8.7.11 The other dataset used in the analysis was the BGS made-ground data generated for ECC and KCC. All areas of infilled ground and worked ground, e.g. quarries, identified in this data we ascribed a Zero Value in archaeological terms to reflect the fact that archaeology would have been removed during the extraction process. Another dataset supplied by GLAAS for quarries was also used in this regard.

Scheduled Monument Data

8.7.12 Scheduled Monuments (SM) have been assigned a high sensitivity value of 30 to reflect their relative rarity and significance. Given the fact that the boundaries of many SMs do not fully encompass the nationally significant remains, and that the setting of a SM is material consideration in planning terms they have been assigned a buffer of 250m.

Geological SSSI Data

8.7.13 Given the known importance of Pleistocene deposits within the Thames Gateway area the project team identified 8 SSSIs designated for their Pleistocene deposits. These were assigned a sensitivity value of 30 to reflect their relative rarity and significance. Given the fact that the boundaries of these SSSIs may not fully encompass the geological deposits they have been assigned a buffer of 250m.

Methodology and Initial Outputs of the Archaeological Sensitivity Analysis

8.7.14 The methodology for the generation of the outputs involved a five stage process:

1. Generation of a cumulative grid of buffered sensitivity values for the SMR data
2. Application of the grid filters from BGS and HLC data to the SMR grid
3. Addition of the Scheduled Monument sensitivity grid
4. Addition of the Geological SSSI sensitivity grid
5. Generation of cumulative values

8.7.15 The results of the analysis to date can be seen on Figure 8.3. Table 8.5 outlines the definitions of sensitivity shown on Figure 8.3. It should be noted that all scores refer to sensitivity to major physical change.

Table 8.5

Sensitivity Score	Definition
Extremely Sensitive (300+)	These areas have been identified by virtue of their very high known concentrations of archaeological sites / features. The areas would probably be unable to accommodate major physical change without substantial adverse impacts on highly significant concentrations of known archaeological resources, probably including scheduled monuments and their settings.
Highly Sensitive (100-299)	These areas have been identified as having very substantial concentrations of archaeological resources probably including scheduled monuments. Major physical change is likely to result in a large scale adverse impacts on archaeological resources.
Moderately Sensitive (30-99)	These areas contain regionally / nationally significant concentrations of archaeological sites and features and possibly scheduled monuments. The sensitivity of these areas may dramatically increase with further more detailed analysis. Episodes of major physical change are likely to result in adverse impacts on significant archaeological deposits.
Sensitive (10-29)	These areas contain or are likely to contain archaeological deposits or at least regional and local significance. The sensitivity of these areas may dramatically increase with further more detailed analysis. Major physical change would potentially impact on these deposits resulting in large adverse impacts
Limited Known Sensitivity (1-9)	Few archaeological deposits have been identified in these areas and no scheduled monuments have been designated. The underlying geology / historic landscape features may indicate a potential for archaeological deposits. The sensitivity of these areas may dramatically increase with further more detailed analysis. Major physical change may impact on archaeology deposits.
Potentially No Sensitivity	These areas have been identified as having no archaeological sensitivity by virtue of past or current land use. This data requires verification on a site-by-site basis.

Sensitivity Score	Definition
No Data	The sensitivity of these areas has not been assessed due to a lack of data. These areas have the potential to contain significant archaeological deposits. The sensitivity of these areas may dramatically increase with further more detailed analysis.

8.8 Issues Associated with the Three Sensitivity Analyses

8.8.1 The sensitivity analyses presented above are the initial outputs of a methodological model for analysing sensitivity to change in the historic environment. The model is based on data, consequently the quality of the outputs can only reflect the quality and coverage of the data inputted into the model. The reliability of the initial outputs presented above has been reduced by a number of data issues, including:

- Lack of polygon data for listed buildings;
- Issues with listed building data for Greater London;
- Issues with conservation area data in Kent;
- Lack of HLC data for Greater London;
- Limited numbers of registered parks and gardens not included in the digital data;
- The over emphasis in the HLC for Essex on prairie fields;
- The lack of a list of nationally important but unscheduled archaeological sites;
- The incompleteness of the SMR in certain areas; e.g. North Kent;
- The use of point data for archaeological sites, rather than polygon data; and
- The lack of complete past and present extraction data for the whole of the study area.

8.8.2 Although these issues do not fundamentally compromise the value of the model, they do currently limit the usability of the initial outputs. The three sensitivity analyses presented above are therefore NOT suitable for site allocation decisions. It should be noted that the analyses currently underestimate the sensitivity of the historic environment in the Study Area, both in terms of extent and score.

8.8.3 The sensitivity analyses presented above allow key messages about broad patterns and levels of sensitivity to be communicated. With support from other data sets and drawing on the local knowledge and professional judgement of the historic environment teams at English Heritage, KCC, ECC, Southend-on-Sea UDA and GLAAS, the analyses should be able to support and assist in strategic decision making, but not detailed decision making.

8.8.4 At this stage one of most useful aspects of the sensitivity analyses is the identification of known ‘Hotspots’ (significant concentrations of features), these hotspots have for the most part been classed as Extremely Sensitive or Highly Sensitive to effect their overall significance in the regional or national context. These hotspots are generally considered to be unsuitable for major physical change, although other forms of activity such as conversion, heritage-led regeneration or small scale development may pose less issues, to some areas. With further analysis and better quality data, it is likely that further hotspots will be identified across the area.

8.8.5 The analyses have also indicated where significant information is lacking, particularly for the archaeological and built heritage aspects. These 'no data' areas present particular risks and issues when attempting to make strategic evidence-led planning decisions. Further work on these areas and the refinement of the methodology may allow for some improvements in this regard.

8.8.6 Overall, the sensitivity model provides a broad and useful tool for assisting in evidence-led strategic decision making. However, the initial outputs provided above run the risk of being used as a tool for more detailed decision making, e.g. site allocation and development control. The use of these outputs for that purpose should be resisted. More detailed study and analysis is needed for such decisions and this should be carried out on an area-by-area or site-by-site basis in consultation with the historic environment teams at English Heritage, KCC, ECC, Southend-on-Sea UDA and GLAAS.

9.0 APPLICATIONS, USES AND LIMITATIONS

9.1 Applications for Strategic Decision-Making

9.1.1 The project has been developed to serve as a tool to assist English Heritage and its local government partners in their responses and approach to the Sustainable Communities Plan for the Thames Gateway. In this context the project and its various outputs could be used in a number of ways, including:

Forming a starting point for a Thames Gateway Heritage Strategy

9.1.2 The project and its outputs have a role to play in the development of a Heritage Strategy for the Thames Gateway to aid the implementation of the Sustainable Communities Plan. The strategy would outline policies for, and an approach to, the role of the historic environment in the Sustainable Communities Plan. The strategy would identify opportunities for heritage-led regeneration projects where significant heritage assets could be used to underpin the identity and regeneration of key areas; this is perhaps particularly relevant in the area's historic towns. The strategy would also explore the conditions under which development should be restricted to ensure the survival of key heritage assets e.g. the preservation of nationally significant archaeological remains *in-situ* and without disturbance.

9.1.3 The heritage strategy could incorporate or be linked with a historic environment research strategy for the Thames Gateway as well as drawing on the soon to be reviewed Thames Estuary Archaeological Research Framework and the recently published London Archaeological Research Framework.

9.1.4 The heritage strategy would also identify the broad thematic issues that are likely to affect the historic environment during the implementation of the Sustainable Communities Plan, these could include amongst many others:

- conservation of historic buildings;
- maintenance of historic townscapes;
- opportunities for the enhancement and preservation of the historic landscape; and
- the use of historic landscape grain and structure in future developments.

9.1.5 Any such strategy would need to be prepared in partnership with the development of the Planarch 2 historic environment masterplan project for Kent and Essex, which is being developed with funding support from ODPM and ERDF.

Supplying information on the character of the historic environment in the Growth Areas

9.1.6 The project has supplied a broad overview of the character and nature of the historic environment across the entirety of the Thames Gateway and slightly beyond. This information could be used as the basis for a series of statements on the nature and character of the historic environment within each of the proposed Growth Areas.

9.1.7 These descriptions could be developed through more detailed analysis, including consultation with historic environment teams at English Heritage, KCC, ECC, Southend-on-Sea UDA and GLAAS, into *Growth Area Historic Environment Guidance Notes* that describe, analyse and provide guidance on the conservation and utilisation of the historic environment in each of the Growth Areas. These guidance notes could then be used as a starting point for responses by English Heritage and its partners to proposed development options. They could also be distributed to the masterplanning teams and local authorities working in the Growth Areas to inform both urban development and green space strategies. It is recommended that these guidance notes are drawn up jointly by English Heritage and local government in partnership with the local delivery vehicles that will use them, so that they can meet a broad range of needs.

Testing and analysing growth and infrastructure options

9.1.8 The sensitivity model, characterisation analyses and the datasets within the GIS will assist historic environment teams at English Heritage, KCC, ECC, Southend-on-Sea UDA and GLAAS with rapid broad-brush assessments of potential major development options e.g. proposed route options for major road / rail schemes or large-scale housing / commercial developments. Such analysis would not be a definitive response to a proposal but could prove to be a useful first step to identifying some of the issues that may be related with the proposed development.

9.1.9 These rapid broad-brush assessments could be invaluable in informing studies such as strategic multi-modal transport assessments. The sensitivity analysis and characterisation studies could be drawn to together to allow English Heritage and its partners to respond to proposals at an early stage in the process, with the proviso that responses are conditional on

further analysis and assessment. This early engagement encourages transparency and engagement between the various parties involved in delivering the Sustainable Communities Plan.

Acting as an early stage in preparing a response to particular development options

9.1.10 Once development options have moved beyond the high-level strategic phase and particular sites have been identified, the characterisation analysis could from part of the first tranche of data, along with the more detailed and extensive material held by the historic environment teams at English Heritage, KCC, ECC, Southend-on-Sea UDA and GLAAS, to assist with the assessment of developments and the preparation of responses and strategies for the incorporation of historic environment issues within the development process.

9.1.11 The study does not however supply enough detail to be the only source for formulating such responses, rather it could supply a broad overview for a large site or corridor and their environs and perhaps identify key issues that would need to be addressed within the context of the masterplanning and planning process. Much as the National Character Map forms the starting point for landscape impact assessments, the Historic Environment Characterisation and sensitivity model could be used in a similar manner within the Thames Gateway.

9.1.12 Perhaps the key role that the study could play within this process would be assisting with the identification of potential key issues e.g. lack of data, or particularly sensitive sites, that can allow English Heritage and its partners to identify at a very early stage in the planning process the need for particular types of assessment to accompany the development. This early identification of key issues would prove useful in developing a positive and forward looking approach to planning for the historic environment within the context of the development process.

9.2 Other Uses

9.2.1 The project has been conceived and developed as the first phase in a longer process. Within this context the project has three broad general applications, in addition to the aforementioned potential applications for strategic decision-making, these are:

Raising awareness of and promoting the historic environment of the Thames Gateway

9.2.2 Despite considerable recent work and numerous publications, non-specialist perceptions of the area's historic environment are seemingly still restricted to the appreciation of the significance of a number of keynote sites e.g. the Candidate World Heritage Site at Chatham, and a more general view that the Thames Gateway is dominated by derelict areas of previously developed land and has little historic character and significance. This study and those that have preceded it have clearly demonstrated that the historic environment of the Thames Gateway is extremely rich and complex. This understanding of the significance and complexity of the area's historic environment needs to be communicated and promoted to a range of statutory and non-statutory bodies, as well as the wider public, if current perceptions are to be shifted.

Providing a framework for future studies

9.2.3 The project has also provided two broad frameworks for future studies. Firstly, the characterisation analyses provide a broad and robust framework for future more detailed and localised analysis in all elements of the historic environment, and in particular the built heritage and historic landscape. The future development of the Archaeological Context Areas may also provide novel approaches to archaeological resource management. The second framework resides in the GIS supplied to the project partners. This provides the basic structure for a strategic historic environment database / GIS for the whole of the Gateway. Further development of the GIS is required to ensure ongoing compatibility with established GIS databases in Greater London, Essex and Kent.

Community involvement

9.2.4 Finally, there is a strong case for the development of community engagement projects based on the study. These could for instance use the relatively non-technical characterisation and historic development analysis to develop community-led characterisation projects. The projects could also help promote a fuller understanding of the value of the historic environment to local communities and provide a better understanding what local communities value and want for their environment.

9.3 Key Limitations

9.3.1 The study supplies two new forms of data, the characterisation analyses and the sensitivity model. Whilst it is acknowledged that the study should not be used as the sole justification or reason for refusal for any single proposal or strategic concept and that further consultation with the region historic environment teams is required to support such decisions, it is clear that the study can provide significant additional information to support these decision making processes. The study has been developed to be used alongside existing more detailed and site-specific information and in effect, it provides a broad context and framework for the decision making process, but does not replace existing approaches to determining the nature and acceptability of development proposals and options.

9.3.2 The results of the study, in particular the initial outputs from the sensitivity model, should be used with caution and should be supported by extensive and focussed further assessment and analysis based on local knowledge and understandings. However, both forms of new data provide additional supportive material that has a clear role to play in English Heritage's and its partners responses to the emerging Sustainable Communities Plan.

9.3.3 The study is strategic in nature and is not suitable for use for site specific decision making. Further more detailed analyses of particular areas and proposed developments are required to inform these more detailed decisions. However, when working at a strategic level the study does supply useful information, creating a broad framework for decision making. The curatorial teams at Kent County Council, Essex County Council, Southend-on-Sea, Greater London Archaeological Advisory Service and English Heritage, all holding more detailed data, supported by local knowledge and understanding, should be the first port of call when seeking additional information to support decision making processes so that the results of the study, in particular the initial outputs from the sensitivity model, can be used with appropriate caution and validity.

10.0 CONCLUSIONS

10.1 Changing Perceptions

10.1.1 The image of the Thames Gateway and its historic environment has suffered in recent years from widely held misconceptions that, aside from a few outstanding and well known historic and natural sites, the area is dominated by swathes of derelict previously developed land. This misconception, coupled with sensational media reports that have portrayed the area as a wasteland or as one journalist put it "*A Cockney Siberia*", has allowed commentators to challenge the very notion of the Sustainable Communities Plan on the grounds that no-one would want to live in such an environmentally degraded area.

10.1.2 This project and considerable earlier work has challenged these stereotypes by clearly demonstrating that the area contains a rich, complex and fascinating historic environment. This includes considerable surviving tracts of historic rural landscape whose structures and form probably originated over 2000 years ago; some of the oldest and most important urban centres in England; and a vast hidden landscape of archaeological sites that spans over 400,000 years of human activity.

10.1.3 This rich historic environment contributes significantly to the quality of life for local communities. Its physical presence forms an integral part of peoples' daily lives, for instance, the area's historic town centres still act as a magnet for shopping and commerce, whilst the historic landscape serves people economically, e.g. agriculture, and as a major leisure destination.

10.1.4 Perhaps as important as these physical aspects are the intangible values associated with our shared heritage. The past can form the bedrock for a community's identity and it helps engender civic pride and a sense of belonging. These contributions do not stem from a few well-known historic sites and monuments, although these certainly play their part in reinforcing and maintaining an area's identity and sense of history, but rather they come from the everyday environments within which people live and work. The character of the everyday is heavily influenced by the historic environment. All aspects of the past, from the area's historic towns centres and medieval grazing marshes, through to the 1930's "*Homes for Heroes*" and surviving industrial archaeology, contribute to this character and sense of identity.

10.1.5 The historic environment therefore has much to contribute to the Sustainable Communities Plan and the future regeneration of the Thames Gateway. The enhancement, promotion and conservation of the historic environment can help shift negative perceptions of the area as well as strengthening character and creating attractive environments. All this can help encourage people to live and work in the Thames Gateway and develop the region as a premier live / work environment.

10.2 Contribution to evidence-based decision making

10.2.1 The Thames Gateway Historic Characterisation Project was not conceived purely as a vehicle for changing perceptions of the historic environment of the area. The primary purpose for the commissioning of the project was to develop a tool that could contribute to strategic evidence-based decision making on the physical regeneration of the region. To achieve this the project has developed two related but separate products namely a characterisation of the area's historic environment and a broad analysis of the sensitivity of the historic environment.

Characterisation of the Historic Environment

10.2.2 Characterisation is a well-used, and occasional misused, term that normally describes a process through which the nature and distinctiveness of a place or feature is defined, and sometimes implies its further use to help manage change. Characterisation is based on an understanding of dominant features and distinctive, but often more minor, elements. It can work at a variety of scales e.g. national, regional or local. It has been extensively used for understanding landscapes and methodologies for Landscape Character Assessment (LCA) and Historic Landscape Characterisation (HLC) are now well established. English Heritage is increasingly using characterisation techniques to help understand the archaeological remains of historic towns. The integrated and holistic characterisation of the whole historic environment, however, represented a new avenue of research and had not previously been attempted.

10.2.3 Within this context, an innovative characterisation methodology was developed by CBA for the project. The methodology drew heavily on existing methods of characterisation e.g., LCA and English Heritage's extensive Urban Surveys, in that it sought to describe the resource in terms of geographical distinct units. It began with three separate strands of characterisation; one for each element of the historic environment, namely historic rural

landscape, urban / built heritage and archaeology. These three individual strands were then woven together to form a combined characterisation of the whole historic environment.

10.2.4 This combined characterisation of the historic environment into single layer of c.140 character areas (Historic Environment Character Areas - HECAs) was a particularly novel element of the project. It has supplied a broad understanding of the character and nature of the historic environment and highlighted the diversity and complexity of the resource. As an approach it may also have applications in other areas, for example alongside or within more traditional Landscape Character Assessments where it could provide a more holistic view of the physical environment in both urban and rural areas.

10.2.5 This combined characterisation was underpinned by three separate strands of characterisation for the urban areas, rural areas and the archaeological resource. The later proved particularly interesting as the available data has traditionally not been felt to be suitable for such approaches. However, the analysis of the data did produce a broad and robust view of the area's archaeological context in a form compatible with the other strands of the characterisation. This approach has the potential in other regions and growth areas to assist with archaeological resource management.

Sensitivity Model

10.2.6 A major aspect of the study has involved the development of a methodology for modelling the sensitivity of the historic environment. The sensitivity model developed for this study provides a novel updateable and repeatable method for assessing sensitivity to change within the historic environment at a broad strategic level. The sensitivity analysis undertaken for this project assessed the ***sensitivity of the fabric, integrity and historic significance of the three key components of the historic environment*** (historic landscape, built heritage and archaeology) ***to major physical change resulting from modern development***.

10.2.7 However, the approach is reliant on the availability of robust and consistent data and in this respect the initial results of that part of this study must be provisional, constrained by the availability and quality of data. They should be treated with some caution, and be checked and calibrated against other judgements when used within decision making. We have confidence in the method, however, and anticipate that the model will usefully be developed further and will be used in other growth areas to support strategic evidence-based decision making.

10.2.8 The initial outputs from the model do not provide a complete understanding of the sensitivity of the historic environment, but does provide a generalised view that reflects current data availability. Given this constraint the use of the sensitivity analysis must be careful governed and wisely employed, for example it has not been designed for use at a site-specific level and any such use is liable to lead to inaccurate and ill-formed judgements. The model, with enhanced data, would however serve broader large-scale decision making within the context of a strategic master-planning process.

Summary

10.2.9 Overall, the characterisation and sensitivity analyses have produced a useful context and understanding of the area's historic environment in a format that can support evidence-based decision making. The work has been undertaken rapidly and at a strategic / broad-brush level and consequently should not be relied upon for site-specific decisions or as the only piece of evidence. As a tool it should be employed early in the decision making process to highlight key issues, constraints and opportunities to inform the development of options and concepts and help implement the Sustainable Communities Plan in ways that will give future generations a historic environment to enjoy and value.

10.3 Going Forward

10.3.1 The project was designed and undertaken as the first step in a longer term process and a key aspect of the work has involved preparing an separate Agenda for Future Works. Four key elements have currently been identified for this longer term process:

- Preparation of a Thames Gateway Heritage Strategy
- Implementation of a series of geographically specific and thematic studies
- Further promotion and interpretation of the historic environment
- Preparation of specific guidance to assist the implementation of the Sustainable Communities Plan

10.3.2 These need to be taken forward in partnership with key stakeholders in the Thames Gateway.

10.3.3 Key to the successful integration of historic environment issues into the Thames Gateway regeneration process will be increasing awareness of the historic environment and the maintenance of the current momentum in terms of projects and products. The ongoing Planarch 2 and ALSF projects in the Essex and Kent will supply initial momentum for the

overall process and will form one aspect of a wider picture. The proposed Thames Gateway Heritage Strategy could be key to prioritising and managing the delivery of projects, but this process will require considerable resources and commitment from the principal parties to ensure its timely delivery.

10.3.4 In the short-term two further products have been identified that would help raise awareness of both the historic environment and the integration of such issues into the regeneration process. The first is a relatively glossy but still technical report that presents the outline historic development of the Study Area (see section 3.0) along with the combined characterisation analysis. The report would be well illustrated and written in a manner that makes it accessible to a wide range of audiences. The Countryside Commission National Character Areas publications would perhaps present a useful template for any such report. This document, and its digital counterpart, could be widely distributed to agencies, developers and individuals operating in the Thames Gateway and would act as an immediate profile raiser for the historic environment.

10.3.5 Secondly the GIS could be presented in a more accessible format for distribution to a wide range of stakeholders. This would require the development of a specifically designed user interface but would give a broad range of users access to the data and results of the study in a relatively complete form. This product could perhaps be distributed alongside the proposed illustrated historic environment report.