Report No: 2008 R042

The Aggregate Landscape of Hampshire

Results of NMP Mapping

Historic Environment Service (Projects)

Cornwall County Council

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Aggregates Levy Sustainability Fund:
English Heritage Project Number
4766

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Access to photographs held by Hampshire County Council was kindly provided by Mike Proctor and the staff at the Environment Department.

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Geological data for the project was provided by the British Geological Survey.

The views and recommendations expressed in this report are those of the Historic Environment Service projects team and are presented in good faith on the basis of professional judgement and on information currently available.

Freedom of Information Act

As Cornwall County Council is a public authority it is subject to the terms of the Freedom of Information Act 2000, which came into effect from 1st January 2005.

Cover illustration

Bramshill Park in the Blackwater Valley, viewed from the northeast. Photo: NMR SU7660/1 (NMR 21856/28). 28-OCT-2002. © English Heritage. NMR

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Abbreviations

ADS	Archaeology Data Service
AHBR	Hampshire Archaeology and Historic Buildings Record
ALSF	Aggregates Levy Sustainability Fund
AMIE	Archives and Monuments in England
AONB	Area of Outstanding Natural Beauty
BGS	British Geological Survey
CCC	Cornwall County Council
CUCAP	Cambridge University Committee for Aerial Photography
EH	English Heritage
HEEP	Historic Environment Enabling Programme
HER	Historic Environment Record
HES	Historic Environment Service
HCC	Hampshire County Council
HLC	Historic Landscape Characterisation
LiDAR	Light Detection and Ranging
MLP	Minerals and Waste Local Plan
NMP	National Mapping Programme
NMR	National Monument Record
NMRC	National Monument Record Centre
PDF	Portable Document Format
OS	Ordnance Survey
RCHME	Royal Commission on the Historical Monuments of England

Summary

This report outlines the results of the mapping of archaeological sites from aerial photographs within the aggregate producing areas of Hampshire. The mapping was carried out as part of English Heritage's National Mapping Programme and formed part of a wider project comprising a survey and assessment of the archaeological resource of Hampshire's aggregate landscape.

The project was carried out between March 2006 and March 2008 by the Historic Environment Service of Cornwall County Council in partnership with Hampshire County Council's Environment Department. The project was funded by English Heritage under Objective 2 of the Aggregates Levy Sustainability Fund.

The principal aim of the project was to improve the amount and quality of available archaeological information relating to the aggregate landscape, and thus facilitate decisions regarding strategic planning, management, preservation and research of archaeological sites and historic landscapes in the aggregate producing areas.

The mapping element of the project contributed to this aim by providing significant enhancement to existing baseline data through the mapping, interpretation and recording of more than 2,000 previously unrecognised archaeological features ranging in date from the Neolithic period to the end of the Second World War.

The report presents descriptions of the project area and the methodology used, as well as an overview of the results of the mapping on a period by period basis and a series of conclusions and recommendations.

Full details of the wider archaeological assessment are contained in downloadable PDF format on the Archaeology Data Service (ADS) website.

The project outcome includes the formulation of a Resource Assessment and Research Agenda for the aggregate landscape. These highlight gaps in knowledge of the archaeological resource, the research potential of the resource, and the identification of prioritised research topics. The agenda will feed into the regional Solent Thames Research Framework, which is currently being formulated.

Summaries of the aims, methodology and results of the project can be found on the English Heritage and Hampshire County Council websites.

1 Background to the project

1.1 Circumstances of and reasons for the project

The Aggregate Landscape of Hampshire project comprises a survey and assessment of the archaeology of the aggregate mineral producing areas within the county of Hampshire. It was carried out by the Historic Environment Service (HES) of Cornwall County Council (CCC) in partnership with staff at Hampshire County Council's Environment Department. It was funded under Objective 2 of the Aggregates Levy Sustainability Fund (ALSF) and was commissioned by English Heritage (EH) on the basis of a project design submitted in February 2006.

The principal aim of the project was to improve the amount and quality of available archaeological information relating to the aggregate producing areas, and thus allow more informed advice regarding the archaeological impact of aggregates extraction to be given at:

- Future Minerals Local Plan reviews.
- Reviews of existing minerals planning permissions.
- Assessment of new applications for minerals planning permission.

The project was carried out between March 2006 and March 2008. It comprised a desk-based assessment of data contained in Hampshire's Archaeology and Historic Buildings Record (AHBR) for the archaeology of the aggregate producing areas of the county. In nine of these areas AHBR data was enhanced by a programme of digital mapping of archaeological features from aerial photographs. Based on the results of the assessment a research framework for the archaeology of the aggregate landscape was developed. A detailed report on the project (Young et al, 2008) is available in PDF format on the Archaeology Data Service (ADS) website.

Mapping from aerial photographs was carried out as part of the National Mapping Programme. The National Mapping Programme (NMP) is a project devised by the Royal Commission on the Historic Monuments of England (RCHME), now part of English Heritage (EH), and is funded by EH. The aims of NMP are 'to enhance our understanding of the past, to help conserve, promote, and broaden access to the historic environment by providing primary information and synthesis for all archaeological sites and landscapes visible on aerial photographs from the Neolithic to the twentieth century' (Bewley, 2001, 78). The objective of NMP, which has been ongoing since 1993, is to map, interpret and record all archaeological sites visible on aerial photographs in England to a consistent standard.

1.2 Overview of NMP methodology

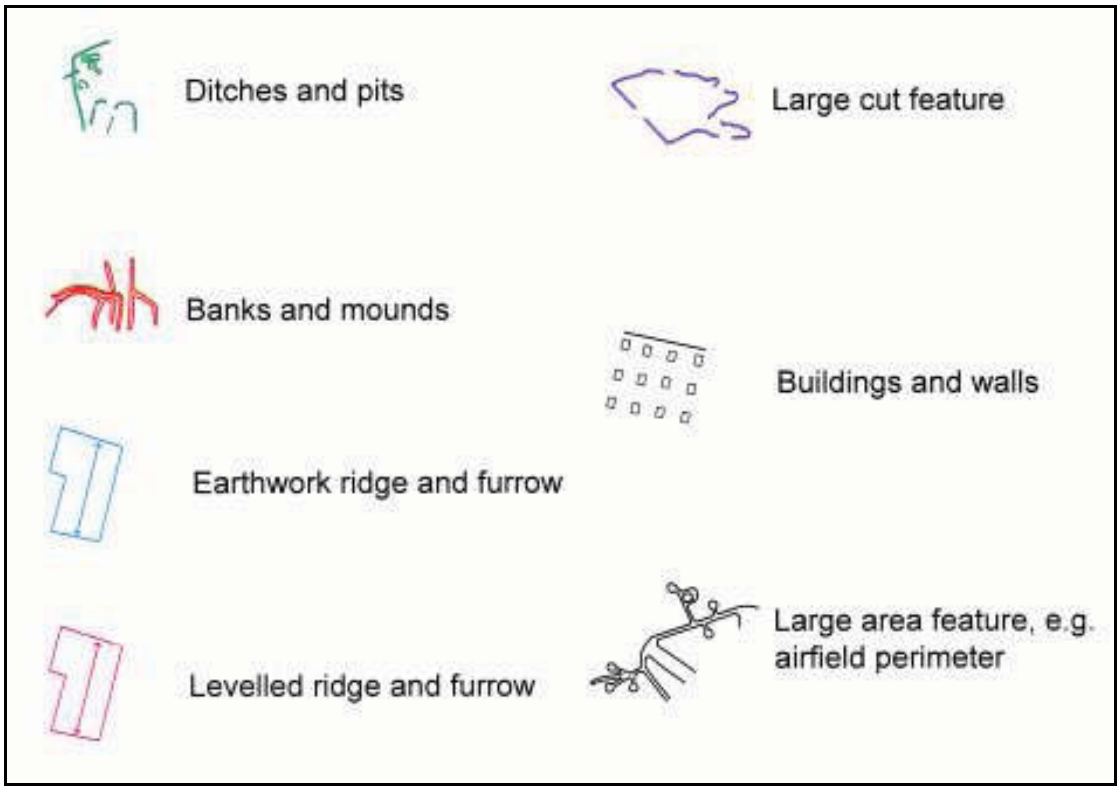
The NMP applies a systematic methodology to the interpretation and mapping of archaeological features visible on aerial photographs. This includes not only recording sites visible as cropmarks and earthworks but also structures, such as those relating to twentieth century military activities. This comprehensive synthesis of the archaeological information available on aerial photographs is intended to assist research, planning and protection of the historic environment.

The Hampshire Aggregate Landscape project followed standard NMP methodology and involved the systematic examination of all aerial photographs available from the National Monuments Record (NMR), the Unit for Landscape Modelling (ULM) at Cambridge University (formerly the Cambridge University Committee for Aerial Photography), and the Planning Department of Hampshire County Council. Archaeological features were digitally transcribed using the AERIAL5 rectification

programme and AutoCAD. Each archaeological site was recorded in the project's Access database.

Full details of the methodology for interpretation, mapping and monument recording carried out during the project are contained in Appendix 1.

1.3 Conventions used on Hampshire NMP maps



2 Aims and objectives

2.1 Aims

1. The overarching aim of the Hampshire Aggregate Landscape project was to facilitate decisions regarding strategic planning, management, preservation and research of archaeological sites and historic landscapes in the aggregate producing areas.
2. The principal aim of the NMP mapping was to provide a fuller awareness of the range and extent of archaeological remains in the aggregate producing areas through a survey of the landscape by aerial photographic transcription.
3. The outcome of the survey will inform strategic and local management policies, and enable informed decisions to be made on the appropriate protection of the archaeological resource and historic landscape in the aggregate producing areas of Hampshire.

2.2 Objectives

These aims were achieved through two primary objectives.

1. To produce a series of AutoCAD drawings depicting archaeology visible on aerial photographs using the conventions and standards of NMP (RCHME 1994).
2. To provide an interpretation of all sites recorded as part of the survey and enhance the Hampshire HER and the NMR Archives and Monuments in England (AMIE) database through the integration into those systems of information generated by the project.

3 The project area

3.1 The aggregate landscape

The principal geological resources used for aggregates in Hampshire are superficial (drift) deposits of sand and gravel and solid (bedrock) deposits of sand, which occur in various parts of the county. Hampshire currently produces 2.7 million tonnes of land-won sand and gravel for use as aggregates per annum and this level of production is set to continue until late 2008 (Hampshire County Council, 1998).

Historically the main focus of gravel and sand extraction has been in southwest Hampshire, in particular the Avon valley, and this situation is expected to continue as the largest reserves of sand and gravel occur in this part of the county. It is, however, seen as essential in the Minerals Local Plan (MLP) that a spread of sand and gravel production is maintained across the county to enable local markets to be supplied and to limit long distance movements of aggregates by road. Therefore when considering the likely potential threat to the historic environment from future extraction it was assumed that quarry sites may be distributed throughout *any* of the aggregate producing areas in the county.

For this reason a cornerstone of the philosophy behind the project was that all the aggregate producing mineral deposits should be seen as the potential resource, although they may not be treated as such in the MLP, which considers only the aggregate requirement for a limited time-span.

The main sand and gravel deposits are summarised in the MLP as:

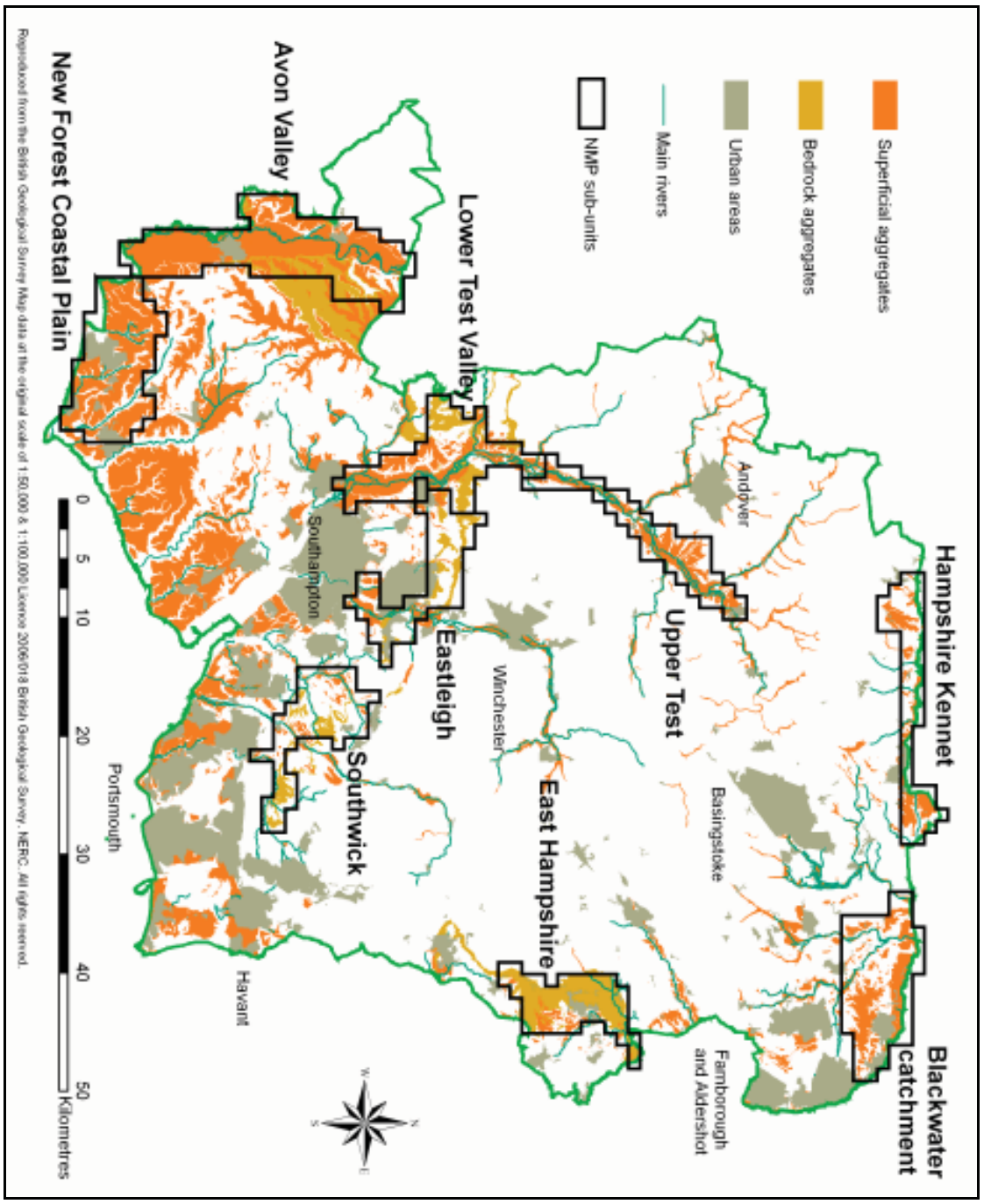
- Lower terrace sand and gravel deposits occurring particularly in the Avon, Test, Itchen and Blackwater river valleys
- Upper terrace or plateau gravels, present within parts of the London and Hampshire Basin areas, especially in Ringwood Forest, adjacent to the coast and Southampton Water, around Romsey, and in the Eversley/Bramshill area
- Solid sand deposits, occurring within the Wealden Edge area and at locations within the Hampshire Basin, particularly in Ringwood Forest and around Romsey and Fair Oak

The extent of the aggregate landscape was defined using data provided by the British Geological Survey (BGS) and Hampshire Mineral Planners, and amounts in total to 789 square kilometres (Figure 1). Given time constraints on the project it was not possible to carry out NMP mapping of this entire area. Therefore a number of smaller areas (or 'sub-units') were targeted; four in 2006/2007 and five in 2007/2008.

Each sub-unit comprises a coherent block of landscape based on 1km squares and, as far as practicable, contains roughly contiguous areas of aggregate-producing geologies. The defining of the survey area also took account of environmental constraints on mineral extraction. The principal constraints are area designations – the New Forest National Park and Areas of Outstanding Natural Beauty (AONB) - because future mineral extraction is far less likely to take place in these areas than elsewhere (HCC, 1998, 4.7). Although the New Forest National Park and the AONBs were not excluded from the survey area, the defining of the sub-units consciously avoided these designated areas as far as possible.

Guided by these criteria, nine sub-units were defined (Figure 1). Together the sub-units cover a total area of 612 1km squares. They provide a representative sample of both superficial and solid deposits, and reflect a variety of landscape contexts, including major river valleys, a coastal area and tracts of heathland.

Figure 1. The project area showing the extent of the aggregate landscape and the NMP sub-units



3.2 The NMP sub-units

3.2.1 The Avon valley

This sub-unit comprises 122 1km squares in total. However some of these squares straddle the county boundaries with Dorset and Wiltshire, and only the area within Hampshire is included in the survey. In effect this means that the survey area comprises roughly 116 1km squares.

The Avon valley is a broad river valley running north-south and, in places, forms the county boundary with Dorset. It contains extensive contiguous deposits of river valley gravel and sub-alluvial deposits. The valley is flanked by higher level plateau gravel deposits both to the east and west, but more noticeably to the west. To the northeast and northwest of Ringwood there are also extensive deposits of Bracklesham sand.

For the most part the Avon has a broad, flat flood plain flanked by similarly wide flat terraces just a few metres higher. Only in the northeast of the sub-unit, especially between Ringwood and Fordingbridge, are the valley sides steep; here the land rises abruptly to the New Forest plateau.

Much of the Avon valley is a farmed landscape, with grazing on the flood plain and arable on the terraces. In many areas, particularly to the north of Fordingbridge, the flood plain is characterised by extensive systems of water meadows. The eastern part of the sub-unit, where it includes part of the New Forest, is characterised by heathland. This generally unenclosed landscape comprises a diverse range of habitats: open, treeless heaths with areas of ancient woodland, and a mosaic of grassland, mires, ponds, and the fringes of encroaching scrub.

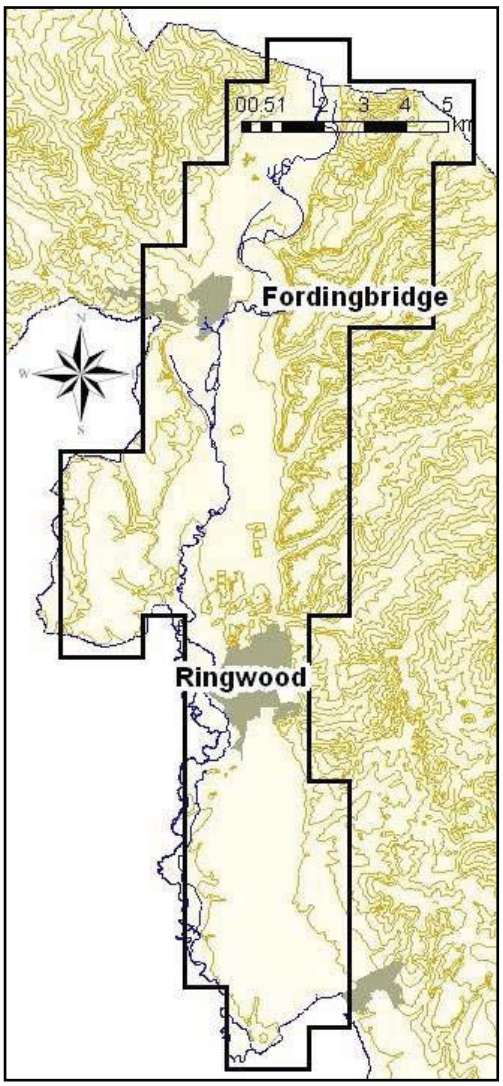


Figure 2. The Avon valley sub-unit

The heathland landform comprises flat or undulating plateaux with steep-sided valleys, especially at Rockford, Gorley and Hyde Commons. The heathland in the Ringwood Forest area is characterised by extensive conifer plantations.

Parts of the sub-unit, in particular the northwest quadrant, are within the New Forest National Park. Despite this constraint the forest edge area has been included in the sub-unit because there is a history of gravel extraction here.

3.2.2 East Hampshire

This sub-unit consists of 50 1km squares in total. However some of these squares straddle the county boundary with Surrey and only the area within Hampshire is included in the survey. In effect this means that the survey area comprises roughly 44 1km squares.

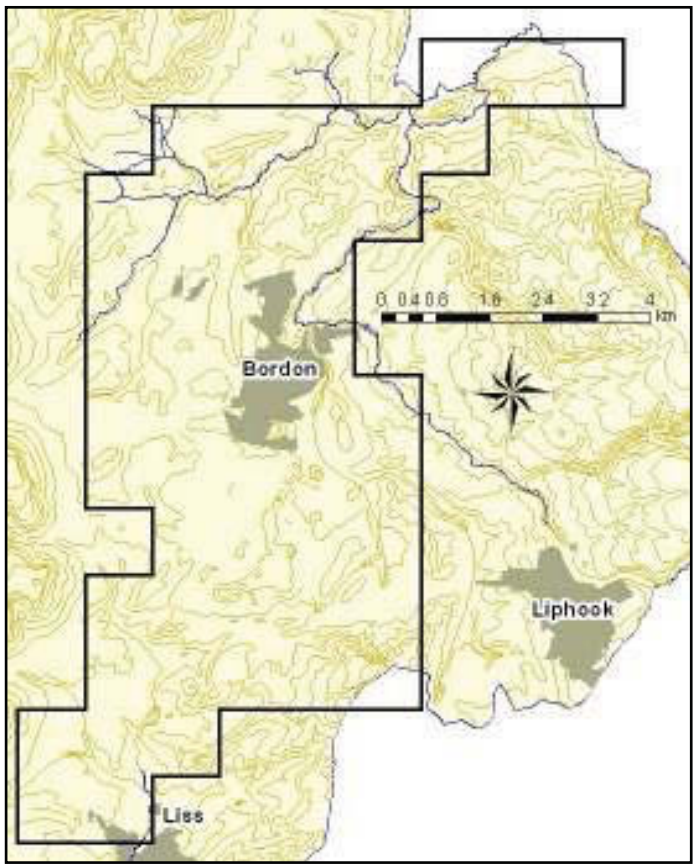


Figure 3. The East Hampshire sub-unit

The sub-unit contains extensive contiguous deposits of Folkstone Formation sand and some deposits of river terrace sand and gravel (Godalmin and Wey terrace deposits).

Much of the landscape, especially in the central part of the sub-unit, is made up of broad expanses of heathland with woodland, scrub and forestry plantations. Extensive MOD ranges occur in this central area. In the north of the sub-unit, and around Liss, the landscape is formed from former heathland and comprises an undulating terrain of grazing land in a patchwork of small fields in a well-wooded setting.

Four 1km squares on the southwest corner of this sub-unit lie within the East Hampshire AONB. This designation represents a significant environmental constraint on mineral extraction. The sub-unit, however, is formed by a geographically well-defined deposit of aggregate-producing sand and the decision was taken to include all of the deposit as a coherent unit.

3.2.3 New Forest Coastal Plain

This sub-unit comprises 84 1km squares in total. However a significant percentage of some squares along the coast comprise sea, reducing the total area. In effect this means that the survey area comprises roughly 70 1km squares.

The sub-unit contains extensive, contiguous deposits of river terrace sand and gravel, mainly plateau gravel associated with the ancient Solent River. The coastline is characterised by a combination of mudflats, saltmarsh, shingle beaches and low, eroding cliffs. The landscape beyond the coastline can be viewed as three distinct zones. Immediately inland the coastal plain comprises a wide expanse of open arable farmland, with some history of horticulture and market gardening. The zone is dominated by the towns of New Milton, Barton-on-Sea, Milford-on-Sea and Lymington; smaller settlements are widely scattered and isolated.

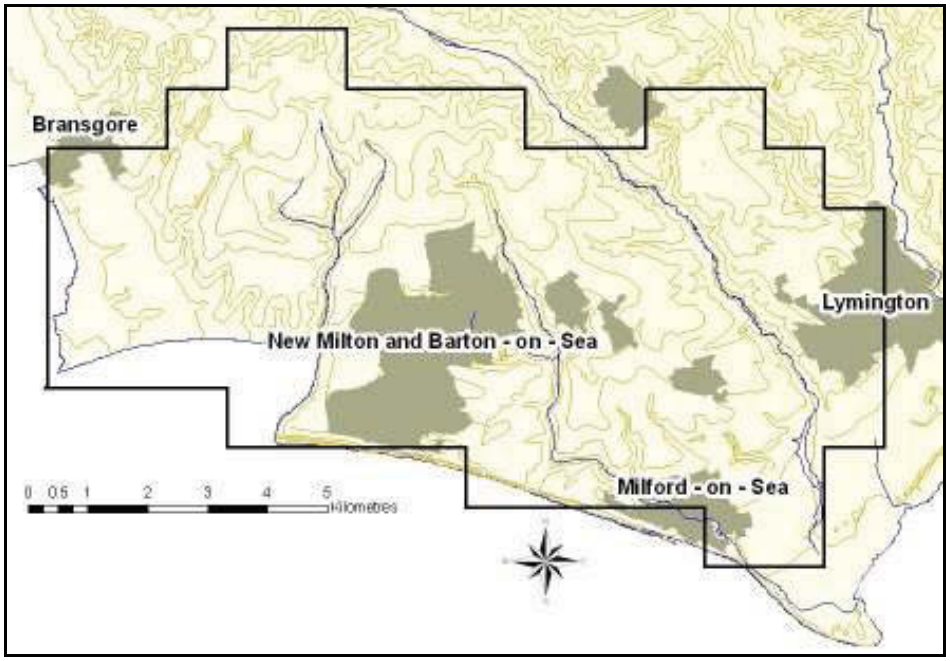


Figure 4. The New Forest coastal Plain sub-unit

To the north is an enclosed undulating plain of mixed farming interspersed with areas of woodland which include a mixture of plantations and ancient woods. Along the northern edge of the sub-unit the land is heathland in character, comprising a well-wooded enclosed landscape of unintensively grazed pasture with small roadside settlements set in winding lanes.

The northernmost part of the sub-unit, where it includes part of the New Forest, is characterised by heathland. This generally unenclosed landscape comprises a mixture of open, treeless heaths with areas of woodland plantation. This part of the sub-unit is within the New Forest National Park. Despite this constraint the forest edge area has been included in the sub-unit because there is a history of gravel extraction here.

3.2.4 Lower Test valley

This sub-unit consists of 72 1km squares in total.

The Lower Test valley lies within the South Hampshire Lowland landscape. Here the narrow valley bottom sub-alluvial deposits are flanked by higher river terrace gravels some of which are plateau gravel. The gravels are also accompanied by Lambeth sand deposits in the Romsey area.

The Test in the southern part of the sub-unit has a broad flat flood plain. On its eastern side the associated terraces are similarly flat and wide and only a few metres higher. On the western side the terraces form a plateau which rises more steeply from the river valley. In the northern part of the sub-unit the valley narrows and is flanked by chalk downland and in places the valley sides are steep and abrupt.

The landscape comprises a gently undulating terrain of mixed arable and grazing land interspersed with woodland, hedges and hedgerow trees. In the areas on Lambeth sand there are tracts of former heathland characterised by unintensively grazed pasture in a well-wooded setting.

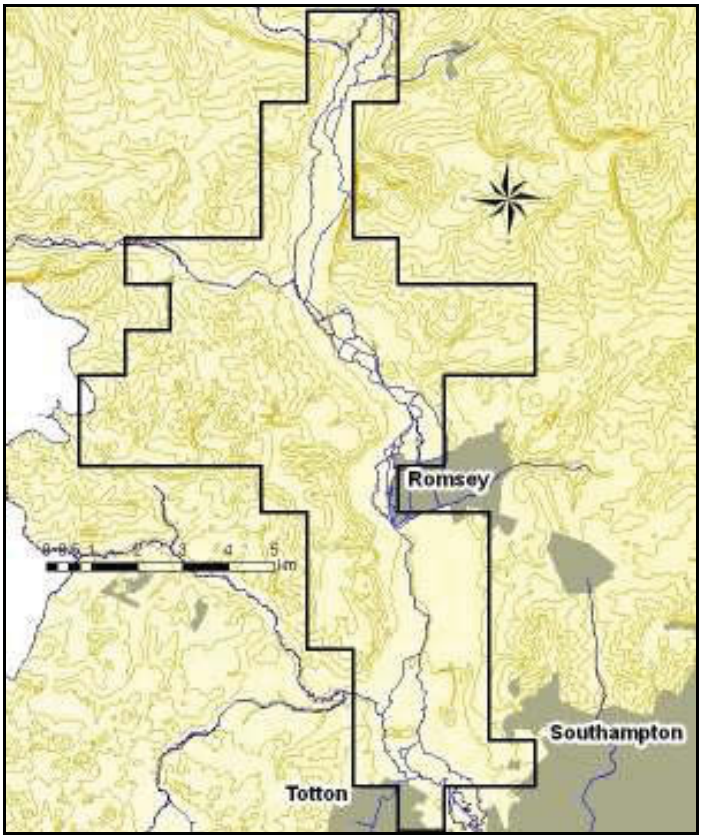


Figure 5. The Lower Test valley sub-unit

3.2.5 Hampshire Kennet

This sub-unit comprises 53 1km squares in total. However some of these squares straddle the county boundary with Berkshire and only the area within Hampshire is included in the survey. In effect this means that the survey area comprises roughly 41 1km squares.

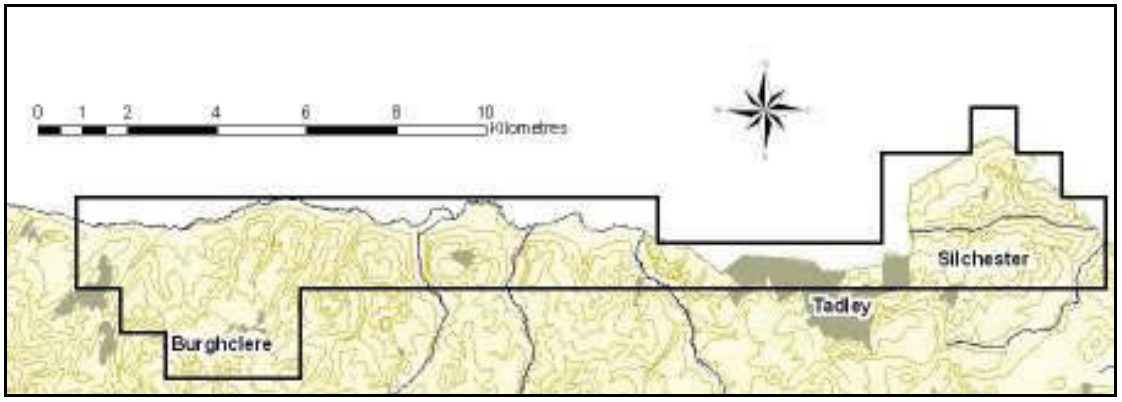


Figure 6. The Hampshire Kennet sub-unit

The aggregate resource of the Kennet valley in Hampshire area is made up entirely of plateau gravels associated with the Kennet and its tributaries. The gravels occur predominantly in the eastern part of the sub-unit, where there are extensive deposits around Silchester, and in the west, around Burghclere. Elsewhere the deposits are confined to a narrow band running along the county border with West Berkshire.

The northern part of the area is characterised mainly by heath associated pasture and woodland – a mixture of unintensively grazed pasture in a well wooded landscape derived from former heathland. Around Silchester there is an area of

heathland and forest which is intensively wooded. Further south the landscape takes the form of an undulating terrain of mixed arable and grazing land with many woodlands, hedges and hedgerow trees.

3.2.6 Blackwater catchment

The Blackwater catchment sub-unit covers 81 square kilometres in total. However some of these squares straddle the county boundaries with Berkshire and Surrey and only the area within Hampshire is included in the survey. In effect this means that the survey area comprises roughly 72 1km squares.

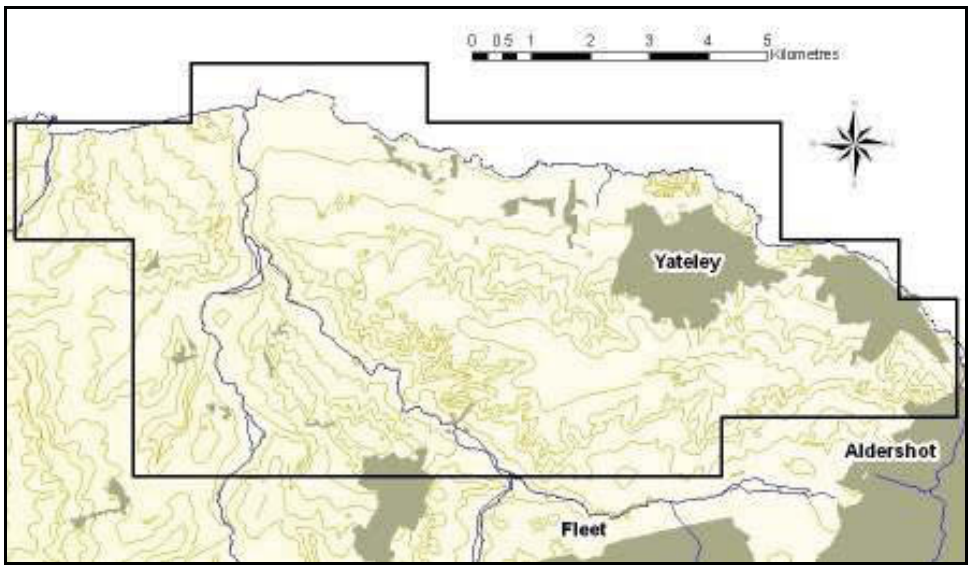


Figure 7. The Blackwater catchment sub-unit

The Blackwater terraces stretch in an east-west band of plateau gravels to the south of the valley. There are also a number of dendritic tributary valleys containing narrow ribbons of sub-alluvial deposits. A small deposit of workable Periglacial Head is identified in the BGS Mineral Resource map between Fleet and Aldershot.

The western tributaries for the most part cut through an undulating landscape of well-wooded mixed arable and grazing land over loamy or clayey soils. There is one area of open arable landscape in the clay lands north of Loddon.

In the east the predominant landscape types are heathland and forest, and heath associated pasture and woodland. There are quite extensive areas of plantation, especially in the area to the north and northwest of Fleet. The heathland areas in the resource area are extensively used by the army as a training area.

3.2.7 Southwick

The Southwick NMP secondary sub-unit covers 58 1km squares. The aggregate minerals in the sub-unit comprise roughly equal proportions of Whitecliff sand and river gravels associated with terraces of the Hamble, Lower Meon and Wallington River.

The river gravel deposits associated with the Hamble and Meon are generally narrow and fragmented. In the southern part of the sub-unit the narrow sub-alluvial deposits in the valley bottoms are flanked by higher river terrace gravel deposits

For the most part the landscape is one of mixed farmland and woodland, characterised by an undulating landscape of mixed arable and grazing land with numerous woodland, hedges and hedgerow trees.

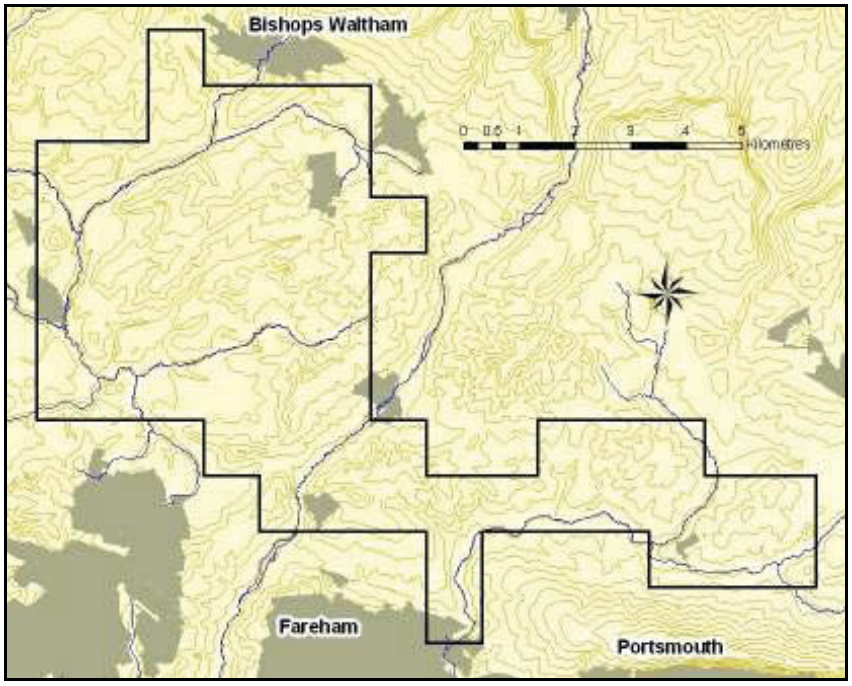


Figure 8. The Southwick sub-unit

3.2.8 Eastleigh

This sub-unit comprises 58 1km squares. The aggregate minerals in the sub-unit are composed of one third bedrock sand and two thirds river gravels associated with terraces of the Itchen and Test. The bedrock deposits comprise roughly equal proportions of Whitecliff and Lambeth sand.

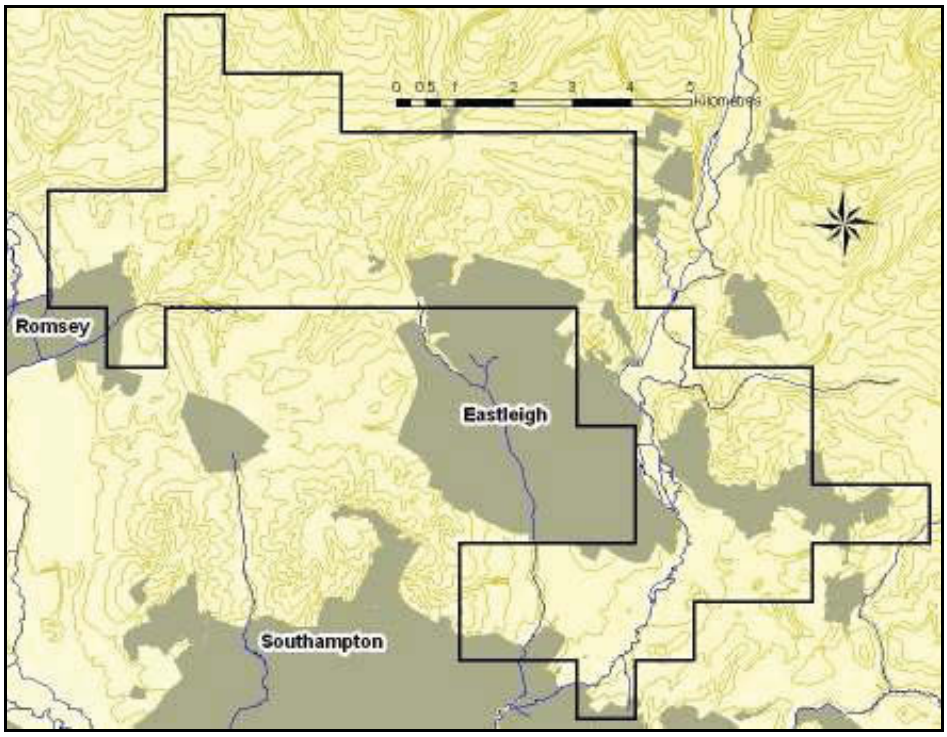


Figure 9. The Eastleigh sub-unit

The Itchen feeds into the Solent and its associated gravel deposits are generally narrow and fragmented. Where it runs through the South Hampshire Lowland

landscape, the narrow sub-alluvial deposits in the valley bottom are flanked by more extensive higher river terrace gravel deposits.

This is a varied landscape characterised by an undulating terrain of mixed arable and grazing land within a backdrop of numerous woodlands, hedges and hedgerow trees. The Whitecliff and Lambeth sand deposits are also located in the southern lowland zone and the landscape associated with them is 'heathy' in character (HCC, 1993).

3.2.9 Upper Test

This sub-unit comprises 54 1km squares. River gravel and sub-alluvial deposits are associated with the Upper Test valley. However the river runs through chalk downland and the gravel deposits are generally narrow, eventually becoming a ribbon confined to the valley bottom, although towards Whitchurch there are some more extensive deposits of terrace gravel.

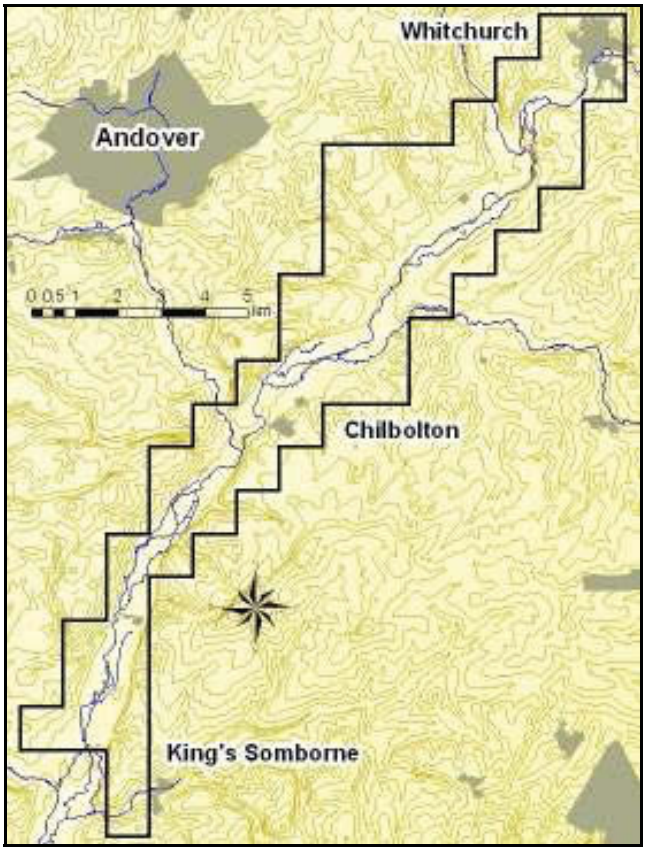


Figure 10. The Upper Test sub-unit

The valley of the Upper Test is relatively broad and is characterised in the main by water meadows, with some miscellaneous pasture, marshy ground and woodland. The valley cuts through chalk downland and the surrounding landscape comprises a gently undulating landform supporting arable farming in a broad and open setting, which is accentuated by trimmed hedges and few hedgerow trees.

4 Overview of the aerial photographs

More than 80 years of vertical and oblique photography have ensured that there is extensive aerial photographic cover of Hampshire's aggregate landscape. Available aerial photographs comprise specialist oblique photography, extensive programmes of vertical photography carried out at regular intervals from the 1940s onwards, and a small number of oblique photographs taken by the Ministry of Defence in the years during and after the Second World War. Details of available photographs are contained in Appendix 1.

4.1 Specialist oblique photography

The earliest oblique aerial photographs consulted during the project are from the Crawford collection and cover the period from 1925 to 1930. Although these photographs are of considerable historic interest they proved of limited value to the project and no sites were mapped from them. Flights undertaken by Cambridge University Committee for Air Photography (CUCAP) from the 1950s onwards are an excellent source and have produced many photographs recording sites or details of sites not visible on any other images. More systematic programmes of reconnaissance carried out by the NMR since the 1970s provide the bulk of the oblique coverage; 90% of all sites mapped from obliques were transcribed from these NMR photographs.

Although oblique photographs taken in slanting sunlight during the winter moths are an ideal medium for defining earthwork monuments, there is little winter-flown coverage of the project area. The sites mapped and recorded from oblique photography are almost exclusively levelled features visible as cropmarks. Whilst cropmark sites in the project area have been photographed since the 1950s substantial numbers of previously unrecorded sites were mapped from photographs taken over the last decade (Figure 11). This demonstrates that there is considerable potential for further discovery of sub-surface remains through continuing programmes of reconnaissance in the summer months.

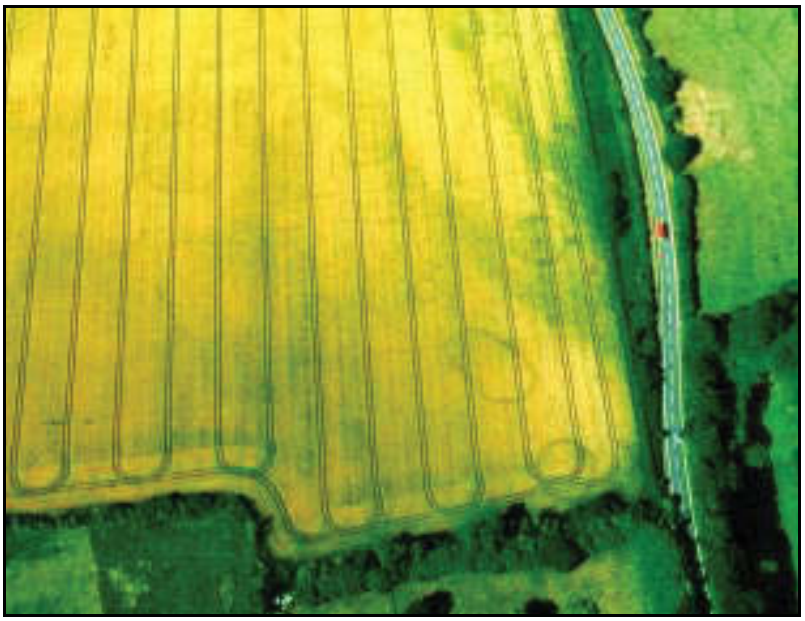


Figure 11. A previously unrecorded Neolithic oval barrow lies close to a Bronze Age barrow cemetery at Upper Burgate in the Avon valley. This site was discovered during recent reconnaissance. Photo: NMR SU1516/24 (NMR 23120/26) 03-JUL-2001 © English Heritage. NMR

A number of civilian and military airfields are located in or close to Hampshire and access to airspace in some parts of the county is restricted. Because of this there are gaps in the specialist oblique cover of the project area. In particular there is restricted airspace over the southern part of the Avon valley because of Bournemouth airport, over the area between Southampton Water and Winchester because of Southampton airport, and over the area between Basingstoke and Farnborough because of military airfields at Odiham and Farnborough and the civilian airport at Blackbushe.

As a result few flights have been possible in the southern part of the Avon valley sub-unit, in the southern part of the Lower Test valley sub-unit, in the Eastleigh and Southwick sub-units and in the southern part of the Blackwater catchment sub-unit.

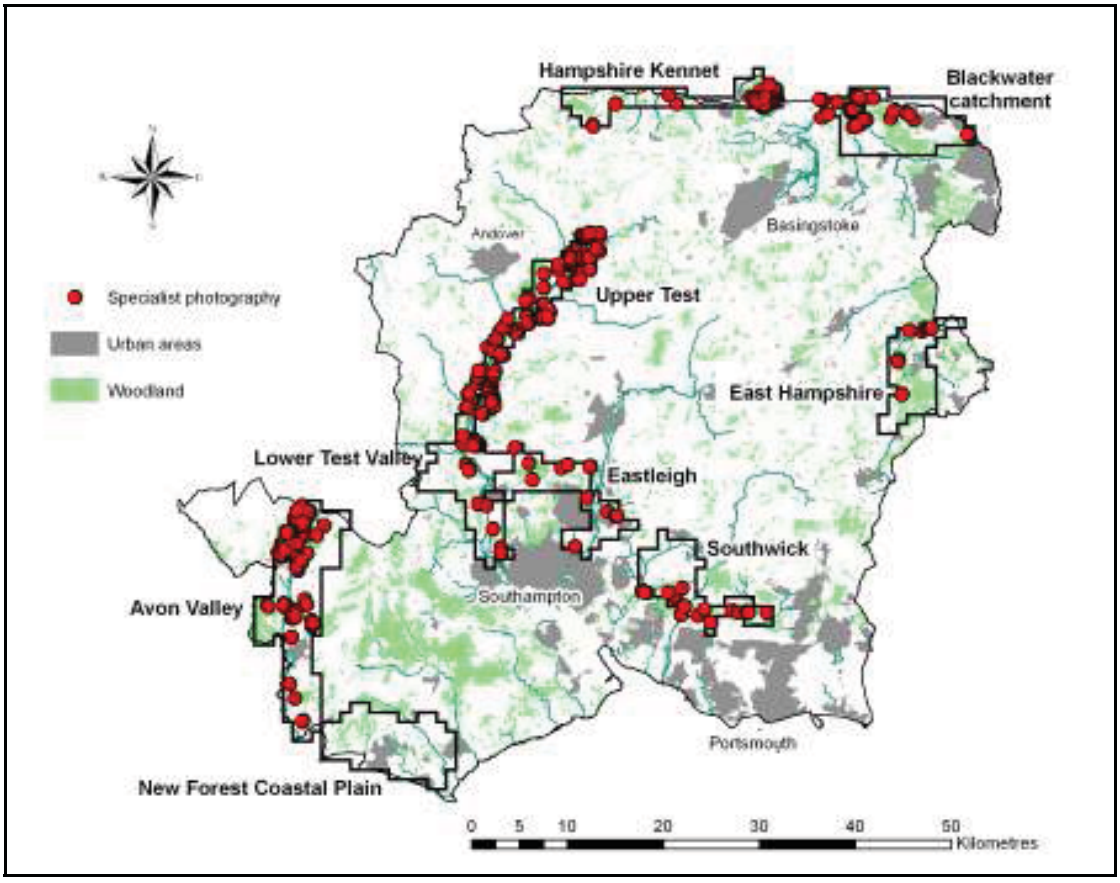


Figure 12. Distribution of sites in the project database mapped and recorded from specialist oblique photographs.

The distribution of sites recorded from specialist oblique photographs (Figure 12) reflects the pattern of specialist photographic coverage over the project area as a whole. It also reflects the wider aerial reconnaissance history in this part of southern England. The three areas with the most intense coverage are the vicinity of Silchester Roman town in the Hampshire Kennet (an obvious target for reconnaissance), the northern part of the Avon valley (this is immediately east of Cranborne Chase which has been flown many times), and the Upper Test which cuts through the Hampshire chalklands (these are characterised by extensive well-drained arable farmland and produce abundant cropmarks). In contrast little reconnaissance has been carried out in areas such as the East Hampshire heathlands and the New Forest Coastal Plain. Examination of vertical coverage of the blank areas in the distribution shown in Figure 12 suggests that in places there is potential for the discovery of sub-surface remains and previously unrecognised earthwork sites through targeted oblique reconnaissance.

4.2 Vertical photographs

Vertical photographs provide coverage of all parts of the project area and were taken at regular intervals from the early 1940s through to the late 1990s. As part of the routine NMP process all the vertical photographs were examined using a stereoscope to provide a three-dimensional view of the landscape, including any extant archaeological features. The advantage of vertical photography is that large areas are usually surveyed; a potential disadvantage is that they are not always taken at the most favourable times of day or year to maximise the visibility of archaeological features. Nonetheless the value of vertical photography to the project cannot be overstated; 75% of all sites recorded in the project database were identified and transcribed from vertical photographs.

A range of archaeological sites were recorded from vertical photography. RAF photographs from the 1940s were the principal source of information for sites relating to twentieth century military features of which there are substantial numbers in Hampshire. Verticals were also the main source for the identification of earthwork remains in heathland areas, particularly the western fringes of the New Forest and Wealden Edge in the East Hampshire sub-unit. Large numbers of cropmark features were identified and transcribed from Ordnance Survey and Meridian Airmaps vertical photographs taken during the summer months, particularly those from 1972, 1975 and 76, 1986 and 1996. In some cases the cropmarks visible on these photographs are as clear and detailed as those on oblique photography.

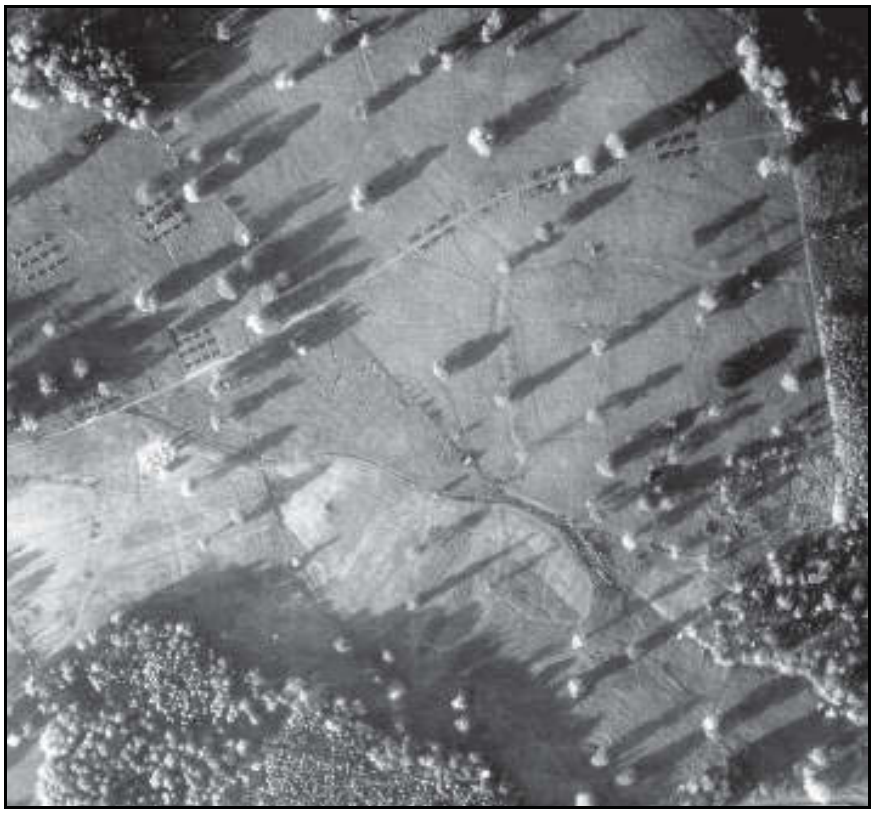


Figure 13A. Stratfield Saye Park in the Blackwater catchment. Earthwork remains and wartime buildings visible in 1946. Photo: RAF CPE/UK/1827/3238 (04-11-1946). © English Heritage. NMR (RAF photography)

One of the great values of vertical photographs is that they provide a record of landscape change, for instance details of earthworks and structures which have since been plough-levelled or removed. For example at Stratfield Saye Park in the Blackwater catchment, field boundaries, woodland enclosure boundaries and trackways are visible as earthworks in photographs taken in 1946 (Figure 13A).

Fifteen years later most of these features had been plough-levelled. Clusters of wartime buildings (forming part of a military camp or depot) are still standing in 1946 but had been removed by 1961 (Figure 13B).

Figure 13B. The same view of Stratfield Saye Park in 1961. The wartime buildings have been removed and the earthworks plough-levelled. Photo: RAF 543/1426/F43/0235 (28-Aug-1961).

5 Results of NMP mapping

5.1 Overview of results

In general terms the nature of archaeological evidence available from aerial photographs determines the type of sites recorded as part of NMP. Usually these are relatively large ditched or banked features visible above ground as earthworks, or as cropmarks of sub-surface features. Historic photography provides details of earthworks and structures which have been denuded or levelled by ploughing, or otherwise destroyed or removed in the last 60 years.

During the project 2,297 new monument records were created and 279 existing records for archaeological sites were updated. Prior to the mapping project a total of 2,732 records existed in the Hampshire AHBR for archaeological sites and artefacts within the project area. Thus the results of NMP mapping constitute an 84% increase in the record for the archaeology of the aggregate landscape. There are inevitable gaps in the distribution of sites in wooded areas, especially in the Blackwater catchment, Hampshire Kennet and Eastleigh. There are further gaps in towns, most notably New Milton and Barton-on-Sea in the New Forest Coastal Plain (Figure 14).

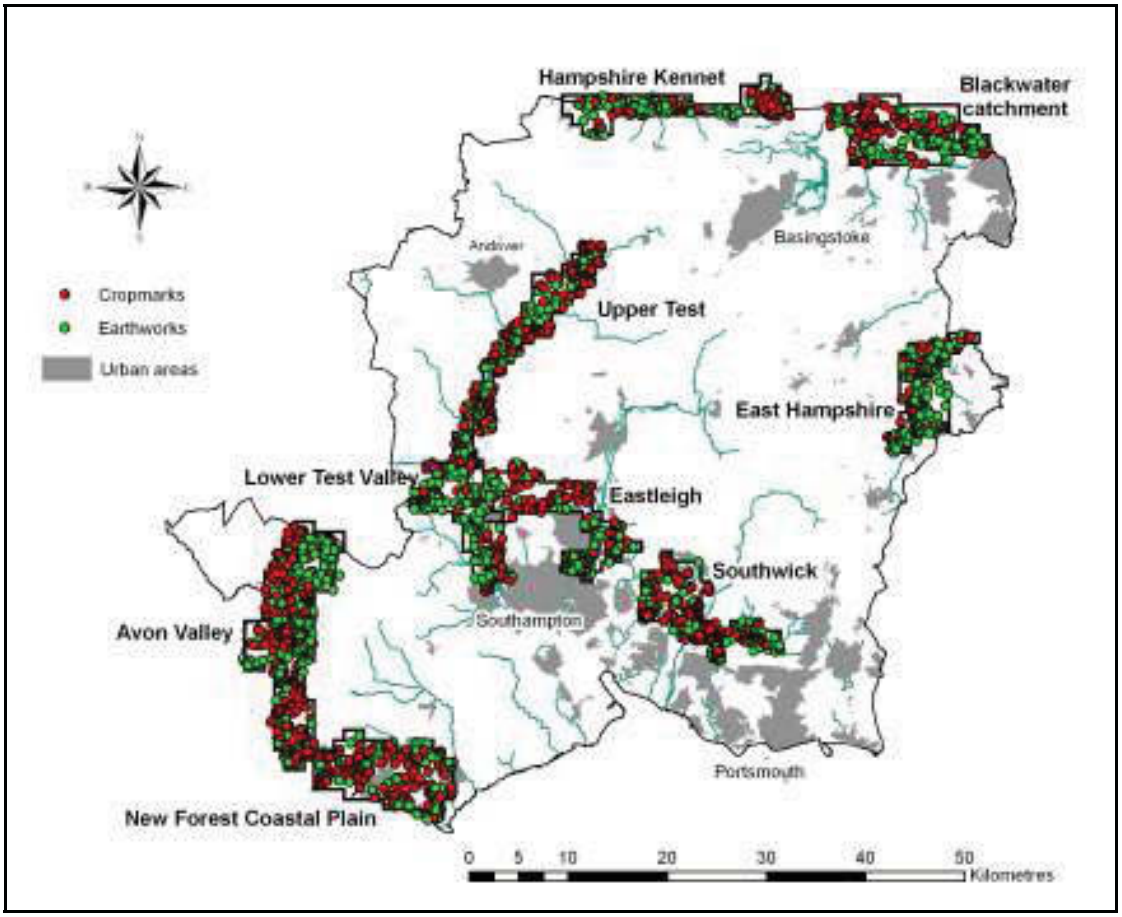


Figure 14. Distribution of all monuments recorded during the project

Sixty three percent of the monuments recorded were levelled and were visible as cropmarks. The densest concentrations of cropmark sites were recorded from the broad flat gravel terraces found in the Avon valley, around Silchester in the Hampshire Kennet and in the north-western part of the Blackwater catchment, and from the chalk fringes of the Upper Test sub-unit. However it is significant that cropmarks were recorded in considerable numbers from all the sub-units with the exception of East Hampshire (where cropmarks are confined to the edges of the

central heathland). In areas such as the new Forest Coastal Plain and the southern Avon valley the identification of cropmark sites from vertical photography suggests that programmes of oblique reconnaissance would produce more evidence of sub-surface archaeological remains.

Earthwork sites were also recorded from all parts of the project area but particularly from the New Forest edge in the Avon valley, from the East Hampshire heathland and from the Lower Test valley. There is good potential for more earthwork photography in the New Forest edge, where previously unrecognised sites recorded during the project include Bronze Age barrows, post medieval pillow mounds and features characteristic of the New Forest's unique heritage such as Holmsley Ridge type enclosures (small banked enclosures, sometimes known as 'bee gardens', designed to protect clusters of bee hives from cattle). The same is true of the East Hampshire heathland; this landscape has long been used as a military training area and contains numerous training features dating from the Boer War onwards and it is likely that many of these remain unrecorded.

With a few exceptions (most notably barrows on the fringes of the New Forest and in East Hampshire and some Iron Age and Roman sites in the Silchester environs) the prehistoric and Roman features are levelled and survive only as sub-surface remains. Sites from these periods were recorded from all of the sub-units but there are notable concentrations in the Avon valley, parts of the Test valley, the northern part of the Blackwater catchment and around Silchester.

Few traces of medieval or post medieval settlement sites were recorded but cultivation remains from these periods are very numerous. In particular extensive post medieval water meadows were recorded from all the river valleys in the project area.

Because of its proximity to the Channel, its location to the west of London and the long-standing military presence at Portsmouth, Hampshire is very rich in twentieth century military and defensive remains. Many new sites from this period were recorded, most notably from East Hampshire, the fringes of the New Forest, from the Blackwater catchment and from the northern outskirts of Southampton in the Eastleigh sub-unit.

6 NMP results: prehistoric and Roman sites

During the project 549 prehistoric or Roman sites were identified, amounting to 21% of all site records in the project database. Four hundred of the records are for new sites, representing a significant enhancement of baseline data for the prehistoric and/or Roman archaeological resource in the aggregate landscape. Sites of these periods were recorded from all parts of the project area. There is a notable concentration in the northern part of the Avon valley, and considerable numbers of new sites in parts of the Blackwater catchment, the Test valley, the lower Avon valley and the New Forest Coastal Plain.

Roughly half of the records are for sites interpreted as prehistoric (undated). For the most part these are enclosures, field systems, pits and other features likely to be Iron Age in date but which may have originated in the Bronze Age or at least have Bronze Age antecedents. The vast majority of these prehistoric (undated) sites were double-indexed as alternatively Romano-British in the project database, taking into account the possibility that their use may have continued into the Roman period or that they might be post Iron Age in origin.

There are in addition nearly 200 sites of uncertain date recorded in the database. Some are miscellaneous features such as isolated ditches, groups of pits or trackways which do not relate to any visible, datable features in the landscape. On the other hand a large proportion of the uncertain date sites may reasonably be inferred to be prehistoric or Roman. These include field systems and lynchets which may be medieval or pre-medieval in date, and enclosures thought to be prehistoric or later in origin.

6.1 The Neolithic and Bronze Age

Neolithic settlement in Hampshire is implied by features such as hearths, pits and post holes. A small number of these features have been discovered within the aggregate landscape as a result of watching briefs or excavations of later features. There are three settlement sites which might date to the Neolithic: Broom Hill, Braishfield, in the Eastleigh sub-unit; Fairbourne Copse, and Nursling, both in the Lower Test Valley.

No new Neolithic settlement features were identified during the project. It is possible that some cropmark pits and ditches that were recorded may be of this date, or that traces of Neolithic activity may be overlain by later prehistoric features (the hearth excavated beneath the ramparts of the hillfort at Buckland Rings, Lymington serves as an example).

There is a more limited range of Neolithic communal monuments in Hampshire than in neighbouring counties. There are no cursus monuments or causewayed camps and only a single henge, recently identified in the northwest (D. Hopkins, pers. comm.). The most visible field remains of Neolithic communities are earthen long barrows. Forty three of these monuments are recorded in the county AHBR, of which 39 are included in a RCHME survey (RCHME, 1979).

6.1.1 Ceremonial monuments

One new site interpreted as a possible long barrow was identified during the project This site is partially visible as a cropmark ditch on river terrace gravel at Hordle in the eastern part of the New Forest Coastal Plain sub-unit. The eastern end of this feature is obscured but it is 11m wide and at least 36m long (Figure 15).

Figure 15. A possible long barrow at Hordle, New Forest Coastal Plain. Photo: OS 66 066 V 083. © Crown copyright. Ordnance Survey (17- 05-1966)

Further work, possibly including evaluative excavation, is needed to confirm the interpretation of this feature but it is a potentially significant finding. Only one other long barrow is recorded from non-chalk areas of Hampshire and the only other long barrows on the Hampshire coast are those on Portsdown Hill, a very prominent topographical location overlooking the Solent coastal plain. The barrow at Hordle is particularly unusual in that it is located neither on chalk nor in a notably prominent landscape position.

Three other sites recorded by NMP mapping were interpreted as Neolithic monuments. The first is a possible pit circle consisting of a crescentic arrangement of pits visible as cropmarks. It is part of a larger complex of pit features (interpreted as prehistoric undated) at North Charford Down, in the northernmost part of the Avon valley sub-unit. Pit circles are generally interpreted as late Neolithic/early Bronze Age and no others are recorded in the Hampshire AHBR. Technically this feature is not within the aggregate landscape; it is located on chalk, but is included in the assessment because it is within the boundaries of the sub-unit. The location of the site is close to the Cranborne Chase area, where a very wide range of Neolithic sites are known, and this isolated feature perhaps represents an extension of a distribution pattern centred outside the project area.

The other two sites are elongated or oval barrows, generally regarded as being slightly later in date (mid to late Neolithic) than long barrows (e.g. Bradley, 1992), and both are located on gravel terraces. The first, situated within a group of round barrows, is at Upper Burgate in the Avon valley (Figure 11) and the other lies a little to the east of the Roman amphitheatre at Silchester in the Hampshire Kennet. Elsewhere in Hampshire oval barrows have been recorded exclusively from the chalk downland where it is not unusual for them to be associated with round barrows (Palmer, 1984).

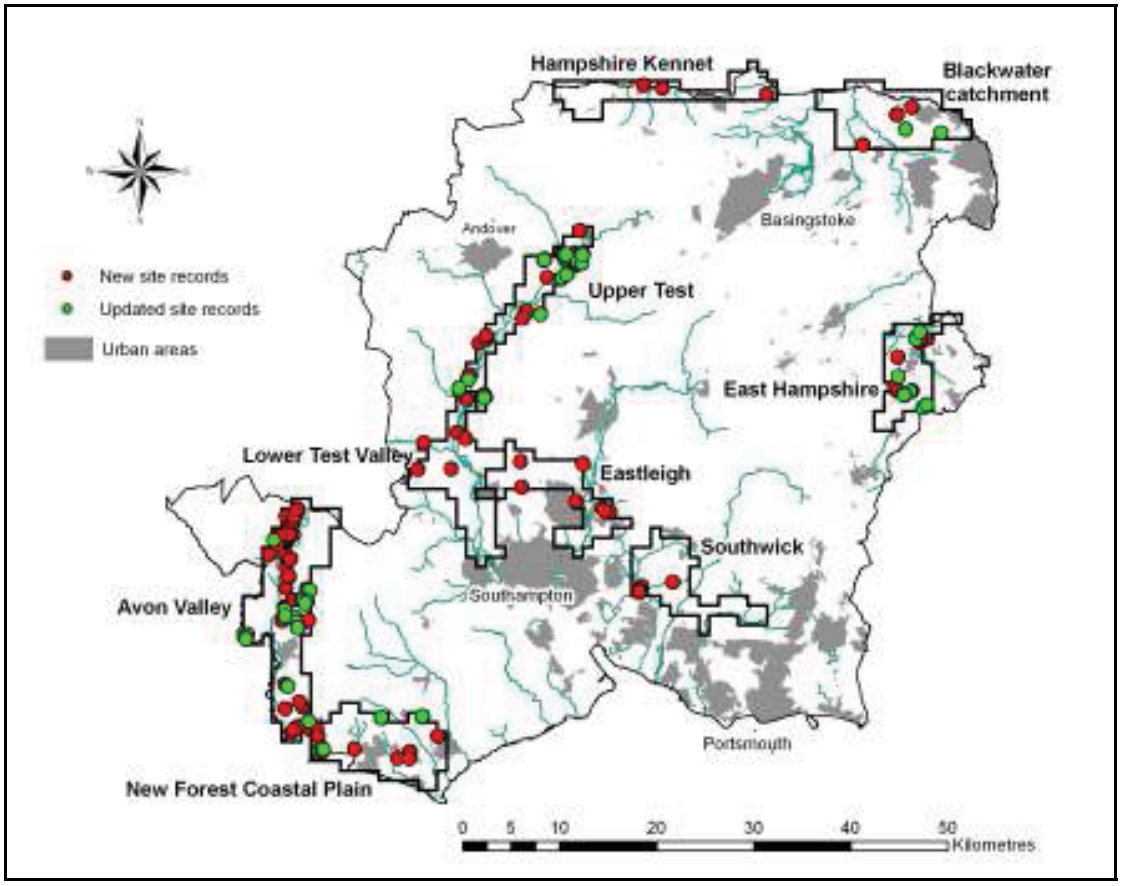


Figure 16. Distribution of Bronze Age barrows recorded during the project

Extensive activity during the late Neolithic and earlier Bronze Age (3000–1500 BC) is indicated by the large number of round barrows recorded in the county (more than 2,000 in total). The distribution of round barrows contrasts sharply with that of Neolithic long barrows, which are virtually confined to the chalk areas. An expansion during the Bronze Age from the chalk into new areas, such as the New Forest, the Avon valley and northeast Hampshire, is suggested by the presence of numerous barrows in these areas. This is consistent with environmental evidence suggesting that today's heathlands may have begun to be formed towards the end of the earlier Bronze Age as a result of woodland clearance (Fasham and Schadla-Hall, 1981). The middle and later Bronze Age (1500–800 BC) is characterised by changes in pottery style and by a change from inhumation to cremation burials, including flat graves. Their distribution replicates the expansion of activity from the chalk into the heathland, river valleys and the coastal areas suggested by the distribution of barrows.

During the mapping project more than 200 Bronze Age features were identified, almost all of which were interpreted as round barrows, and 129 of which are new sites. All but five of the new sites are plough levelled; the majority are visible as ring ditches although roughly a quarter are cropmark mounds. Barrows were recorded from all the sub-units, with notable concentrations in the Avon and Upper Test valleys (Figure 16). As a result of the project the distribution of known barrows in the Avon valley has been extended, with considerable numbers of barrows identified in the lower part of the valley and to the north of Fordingbridge; in both areas few or no barrows were previously known.

Many of the barrows were recorded either as individual features in the landscape, in pairs, or in small ill-defined groups. At a number of locations, however, the barrows form more coherent groups or cemeteries. One example near Botley in the

Southwick sub-unit is shown in Figure 17. Here, on a gravel terrace of the river Hamble, there are two closely associated cemeteries. The first, close to the riverside, consists of four mounds (one previously recorded and marked on the OS map) and three ring ditches arranged in linear formation roughly following the course of the river. This group is situated within a fragmented field system associated with three small enclosures interpreted as prehistoric (undated). The second group, set further back from the river, comprises a cluster of four mounds, the largest of which is surrounded by a berm and fragments of an outer ring ditch.

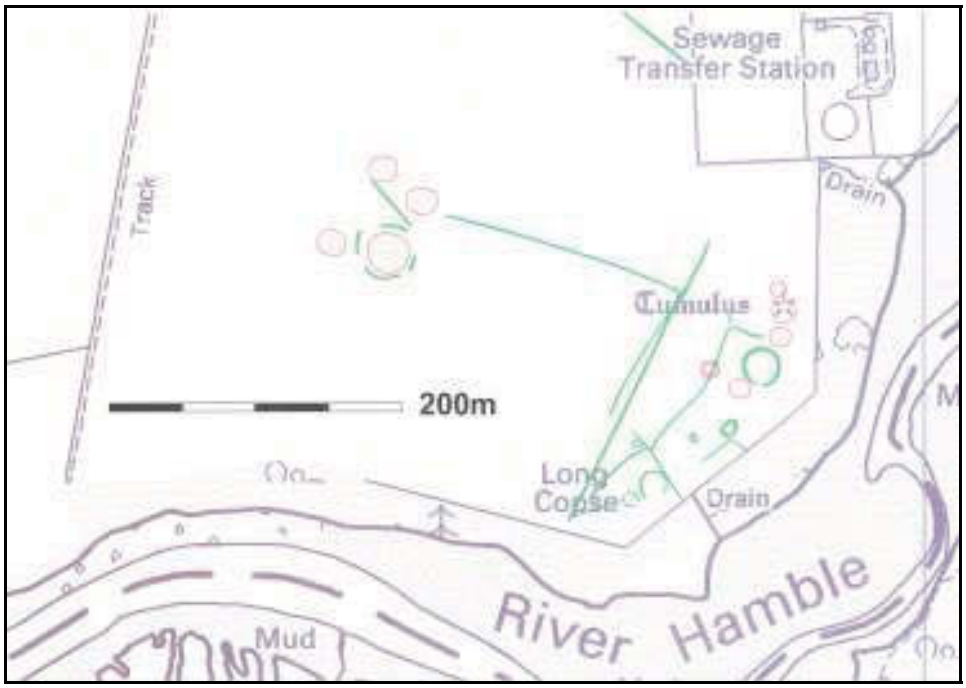


Figure 17. Barrow cemeteries on the west bank of the Hamble near Botley. The barrows are accompanied by prehistoric field boundaries and other features.

Proximity to rivers is an aspect of the location of barrow cemeteries highlighted by the mapping project. In two notable cases, near Fordingbridge in the northern part of the Avon valley and at Hurstbourne Priors in the Upper Test valley, the recent ploughing of post medieval water meadows on the flood plains has revealed the presence of barrow cemeteries beneath. The Fordingbridge example consists of three large ring ditches; the cemetery at Hurstbourne Priors is more extensive. Here nine barrows had been previously recorded from gravel terraces of the Test and a further 10 new ring ditches were identified (Figure 18). Eight of these barrows are on the flood plain and are overlain by water meadows. These findings are significant because although riverine barrows are known from elsewhere in southern England (e.g. Taylor and Woodward, 1985) these are currently the only known examples in Hampshire.

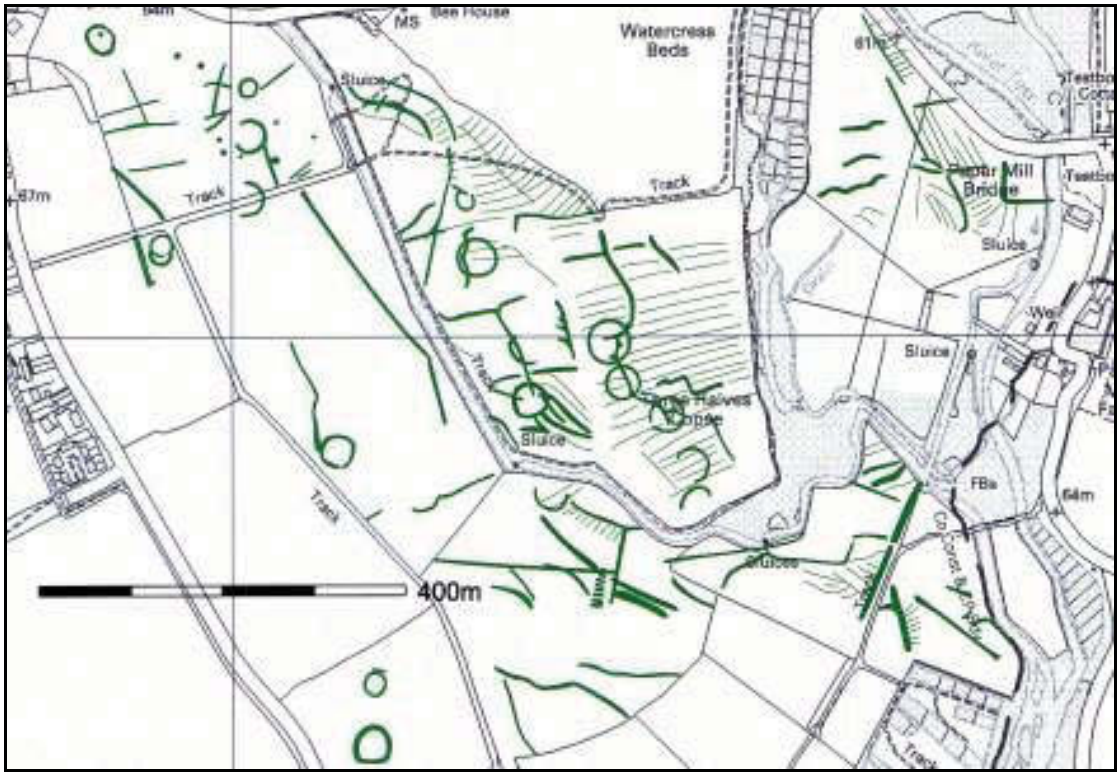


Figure 18. Barrows visible as ring ditches at Hurstbourne Priors in the Upper Test valley.

6.1.2 Settlement sites

Whilst barrows are evidence of extensive Bronze Age activity throughout the county, tangible settlement evidence is less forthcoming. Generally speaking Bronze Age settlement in Hampshire has been revealed mainly during the course of watching briefs and ensuing excavations. Where Bronze Age settlements have been identified they are generally small, consisting of only a few buildings. Some are represented by enclosures, such as that at Martin Down, Martin (Pitt-Rivers, 1898), but most are unenclosed, like the groups of round houses at Chalton (Cunliffe, 1970) or Winnall Down (Fasham, 1985). The main reason for the lack of identified settlements is the inherent difficulty in locating them, given their small size and the fact that they are often unenclosed.

Within the aggregate landscape there is a late Bronze Age and early Iron Age site at Silchester, an unenclosed settlement found in advance of gravel extraction on Rockford Common in the Avon valley, and at Trotsford Farm near Kingsley in East Hampshire, where excavation revealed settlement evidence in the form of an enclosure containing gullies, pits, post holes and a possible hearth. This site was dated to the later Bronze Age and early Iron Age (Figure 19).

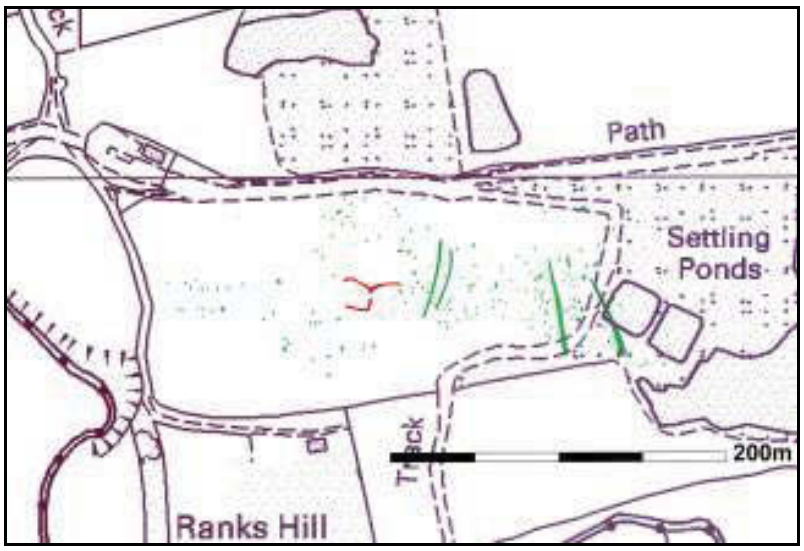


Figure 19. The late Bronze Age and early Iron Age settlement at Trotsford Farm, East Hampshire. Settlement evidence consists of numerous pits and a small enclosure; linear features to the east of the enclosure may be associated.

Scatters of pits associated with small enclosures similar in appearance to those at Trotsford Farm were identified and mapped at a number of locations in the project area, but mostly in the Avon valley. These could be evidence of further Bronze Age settlements, but the possibility that they may just as likely be Iron Age in date has led to their interpretation as prehistoric (undated) in the database.

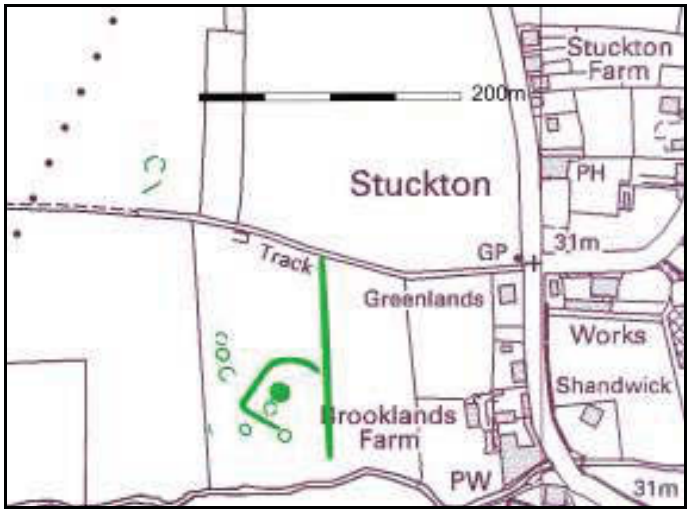


Figure 20. Ring ditches and a possible enclosure at Stuckton in the Avon valley.

Other possible evidence for Bronze Age settlement takes the form of small ring ditches which can reasonably interpreted as round houses forming the remains of unenclosed settlements. These again have been indexed as prehistoric (undated). The problem of interpretation lies in the difficulty in distinguishing between plough-levelled round houses and small plough-levelled round barrows, in addition to differentiating between Bronze Age and Iron Age round houses. Nearly 50 small ring ditches were mapped, most of them in the Upper Test valley, Blackwater catchment and Upper Avon valley. Interpretations of small ring ditches as round houses are more convincing where there are nearby enclosures or associated ditches,

trackways, field boundaries and pits which may also be taken as settlement evidence (Figures 20 and 21).

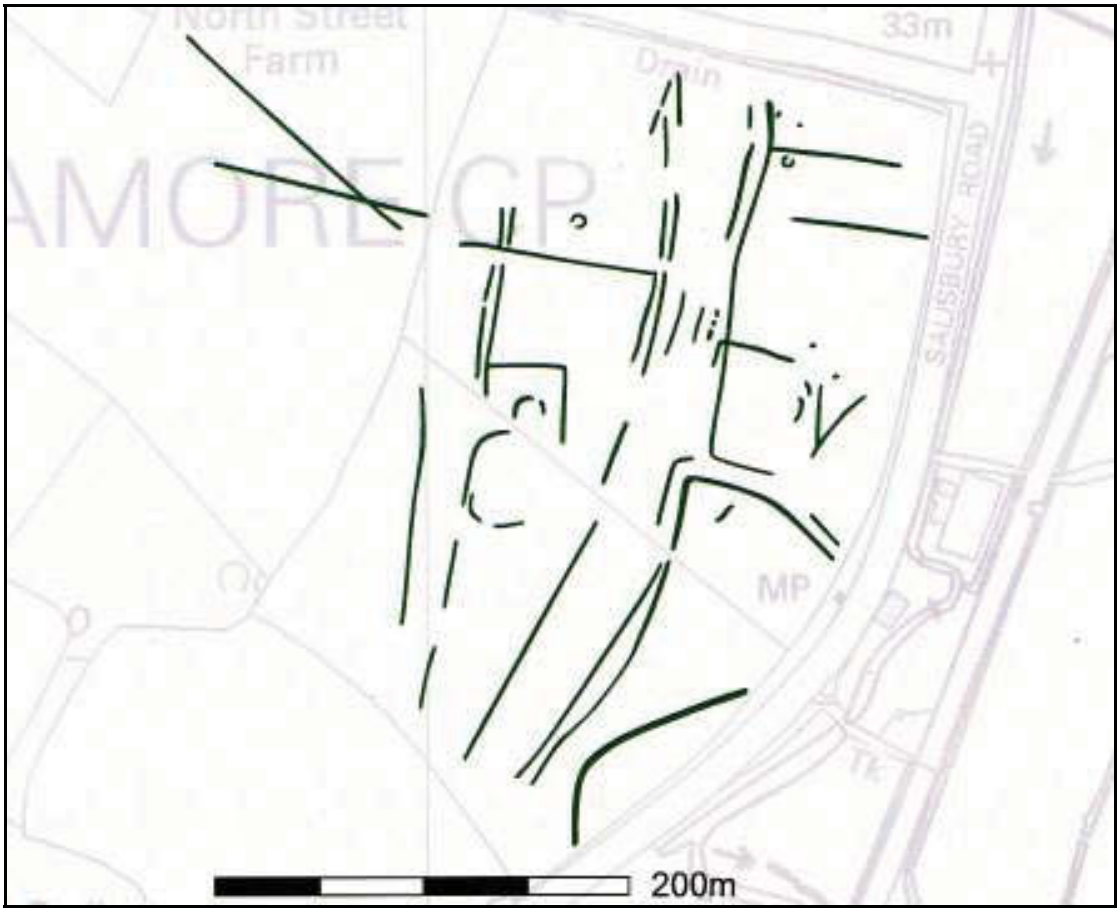


Figure 21. Small ring ditches associated with field boundaries, trackways and pits near Breamore in the Avon valley.

6.2 The Iron Age and Roman periods

There has been extensive research into the Iron Age in Hampshire. The bulk of this work has been concentrated on the chalk areas of the county and in comparison to the chalklands the Iron Age of the aggregate landscape is poorly understood. In particular little is known about the settlement pattern and the organisation of the landscape. Prior to the mapping project fewer than 10% of the Iron Age settlements and only 4% of the Iron Age enclosures in Hampshire were recorded from the aggregate producing areas.

It is likely that this disparity represents a failure to identify these features rather than a real gap in the settlement pattern. This is suggested by the distribution of hillforts in the aggregate landscape. Hillforts are substantial features and generally survive as earthworks, in contrast to smaller settlement sites whose remains are invariably denuded or totally levelled. As many as a third of the county's hillforts are located in the aggregate producing areas and in places the density of their distribution (particularly in the New Forest and the area to the north of Southampton) is comparable to that on the chalk.

The limited nature of the evidence available on aerial photographs can sometimes present difficulties distinguishing between later Iron Age features and those of Romano-British origin. Only the six hillforts located in the project area and features

relating to the *oppidum* at Silchester were interpreted as definitively and exclusively Iron Age. Similarly few sites away from Silchester were interpreted as exclusively Roman – all of them visible sections of known Roman roads (in total the earthwork or cropmark remains of seven previously projected stretches of road were identified). However, more than 70 sites were classed as Iron Age and /or Roman during the project. The distribution of these sites is shown in Figure 22.

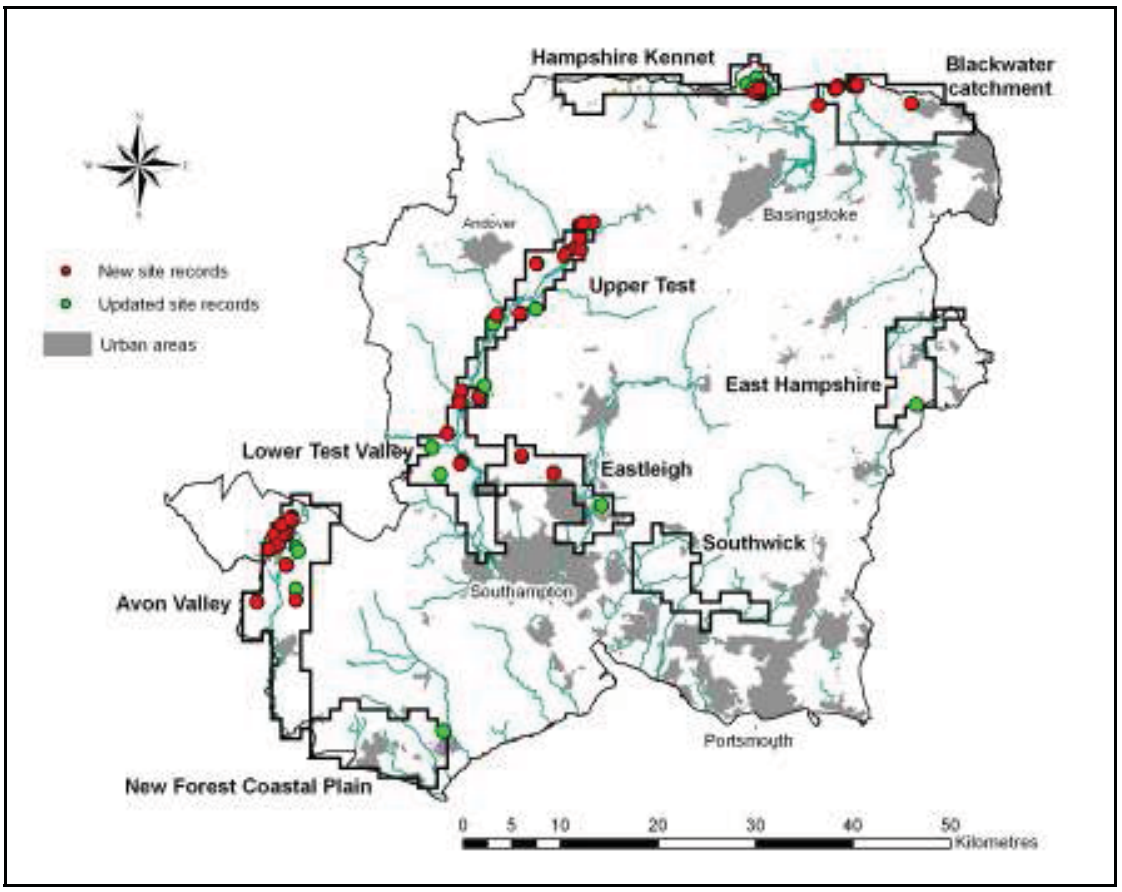


Figure 22. Iron Age and Roman sites recorded during the project.

6.2.1 Settlements and enclosures

These sites consist predominantly of settlement features, and a smaller number of field systems. The evidence is largely confined to the Upper Avon valley, Upper Test valley and in the northeast, around Silchester and in the Blackwater catchment. Of particular interest are a number of enclosure complexes in the Upper Avon valley. These findings are significant because the nature of Iron Age and Roman settlement in the northern Avon valley was unclear prior to the mapping project. The only Iron Age settlement previously identified was at Crystal Hollow, near Fordingbridge; evidence for Roman settlement was limited to the later phases at Crystal Hollow, a building at Nea Farm, Ellingham, and a number of settlement sites inferred from pottery scatters.

Four completely new settlement sites were recorded during the project, including the rectilinear enclosure complex at South Gorley (Figure 23). Enclosure complexes such as South Gorley are recorded in considerable numbers on the Hampshire chalklands but none had previously been recognised in the river valleys. As well as identifying new settlements NMP mapping has added significant detail to previously recorded sites, allowing their reappraisal. Cropmarks at Fryern Court, for instance, had previously been recorded in the AHBR as prehistoric enclosures. These features

were reinterpreted as an Iron Age or Roman settlement enclosure complex with associated trackways and fields (Figure 24).

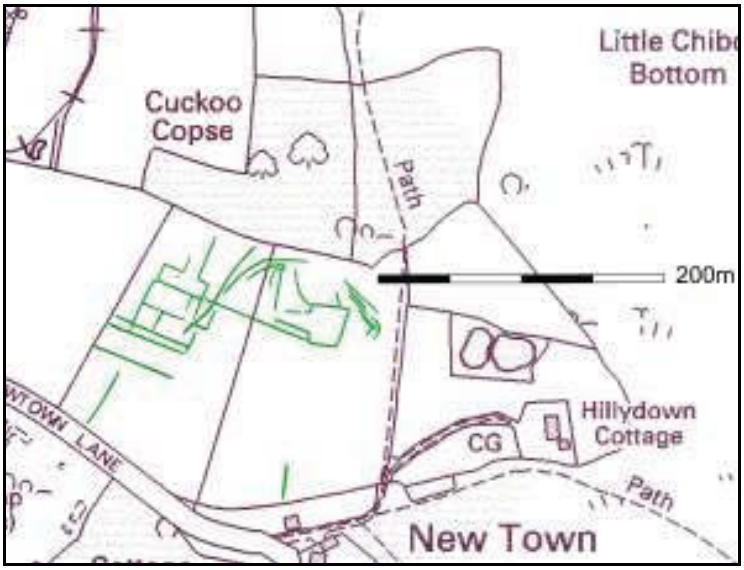


Figure 23 Iron Age and/or Romano-British enclosures at South Gorley, Avon valley.

Figure 24. Iron Age and/or Romano-British enclosures at Fryern Court, Breamore, Avon valley.

Sites consisting of clusters of enclosures like the South Gorley example are recognised as suggesting settlement continuity and enlargement, whilst superimposed complexes of enclosures, like those at Fryern Court might suggest abandonment and rebuilding. Complex enclosures of these types are generally interpreted as later Iron Age and Roman (e.g. Palmer, 1984). Further evidence of continuity of occupation into the Roman period is provided by two conjoined enclosures identified at Ampfield in the Eastleigh sub-unit. Previous small scale excavation at this site had revealed the stone foundations of a Roman building

interpreted as a probable villa site and the enclosures recorded during the project are likely to represent an earlier phase of occupation. Evidence of continuity is a not unusual feature of the Iron Age and Roman interface. Well known examples are Grateley South (Palmer, 1984) where a complex of rectilinear enclosures was followed by a phase of masonry buildings; Bramdean, where a villa developed on the site of a middle Iron Age settlement; and Houghton Down, where a villa was preceded by a ditched enclosure of Iron Age form (Cunliffe, 1993).

Examples of superimposed enclosures were also recorded from the Upper Test valley and also from the Blackwater catchment (Figures 25 and 26).

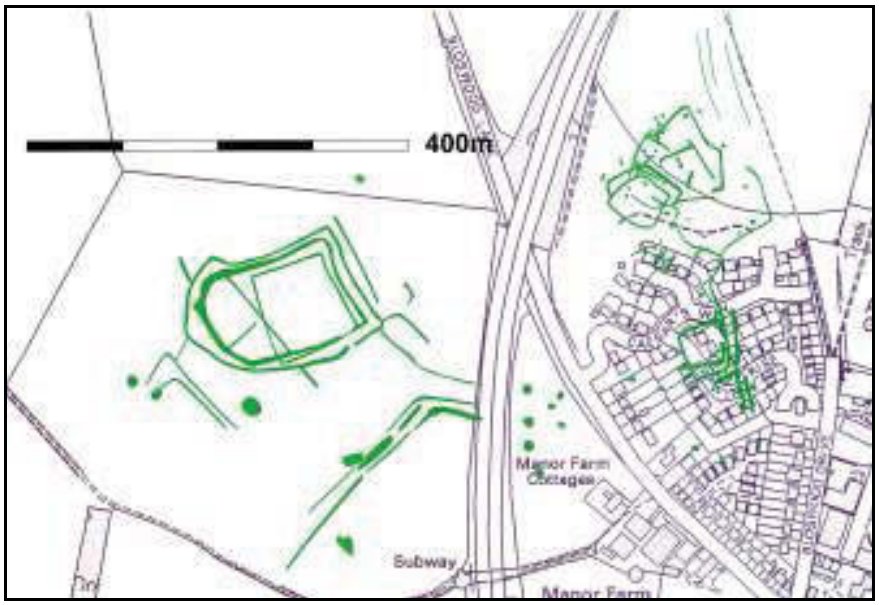


Figure 25. Superimposed enclosures at Bloswood Lane, Whitchurch, Upper Test. **© Crown Copyright 2006HCC 100019180**. Reproduced from the Ordnance Survey map with the permission of the controller of Her Majesty's Stationery Office

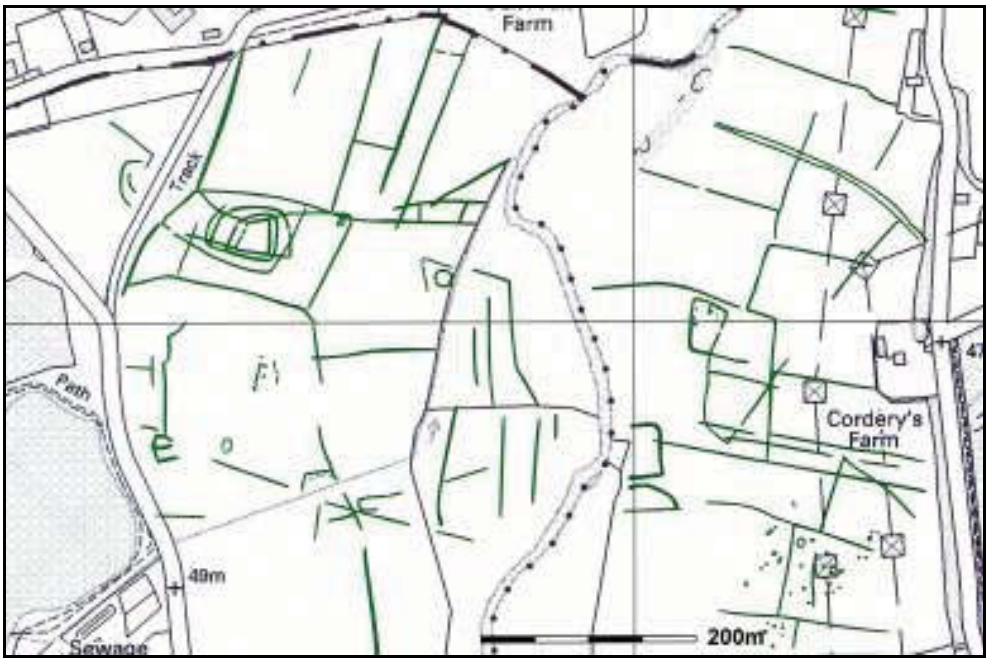


Figure 26. Late prehistoric or Roman enclosures, ditched field boundaries and pits near Riseley, Blackwater catchment. **© Crown Copyright 2006HCC 100019180**. Reproduced from the Ordnance Survey map with the permission of the controller of Her Majesty's Stationery Office

6.2.2 Field systems

The enclosures near Riseley (Figure 26) are accompanied by rectilinear ditched fields most of which are likely to be contemporary (although those in the vicinity of Oak Fruit Farm are probably post medieval in date). Similarly rectilinear ditched field systems of this date were recorded elsewhere in the project area, such as around Silchester and in the Upper Avon (Figure 27).

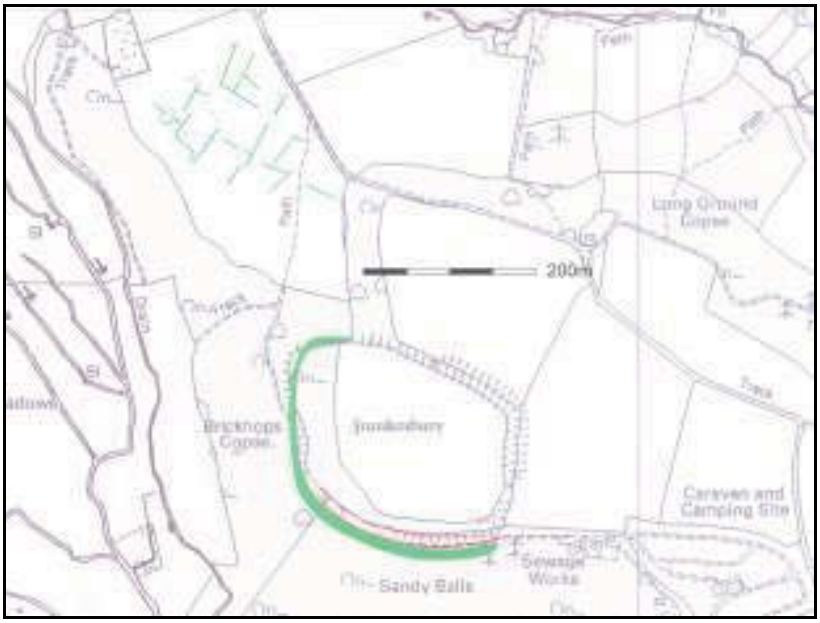


Figure 27. The cropmark remains of a rectilinear ditched field system at Frankenbury hillfort, Avon valley. **© Crown Copyright 2006HCC 100019180**. Reproduced from the Ordnance Survey map with the permission of the controller of Her Majesty's Stationery Office

The aggregate landscape around Silchester, in the Blackwater catchment and in the Upper Avon valley is characterised by extensive, relatively flat gravel terraces. In the Upper Test valley, where the river cuts through chalk downland, the valley sides are steeper and the gravel deposits narrower. For the most part the Iron Age and Romano-British features recorded from this sub-unit are on the very edges of the gravel deposits or on the chalk of the valley sides. Here a number of Celtic field systems were mapped, some surviving as earthworks (Figure 28).

Figure 28. Earthwork remains of Celtic fields on Hazel Down and in Longstock Park, Upper Test sub-unit. RAF CPE/UK/1927/1021 (04-11-1946) English Heritage. NMR (RAF Photography)

In some cases new detail was added to previous mapping of these field systems depicted on the Hampshire cropmark layer or on maps published by the Danebury

Environs Project (Palmer 1984). In the Stockbridge area, for example, a small previously unrecorded group of rectilinear fields containing a possible round house were identified on the west side of the valley. Contour lynchets to the immediate north are part of the field system at North Houghton interpreted by Palmer as Iron Age and/or Roman. On the eastern side of the river newly mapped cropmark banks have extended the previously recorded area of another field system (Figure 29).

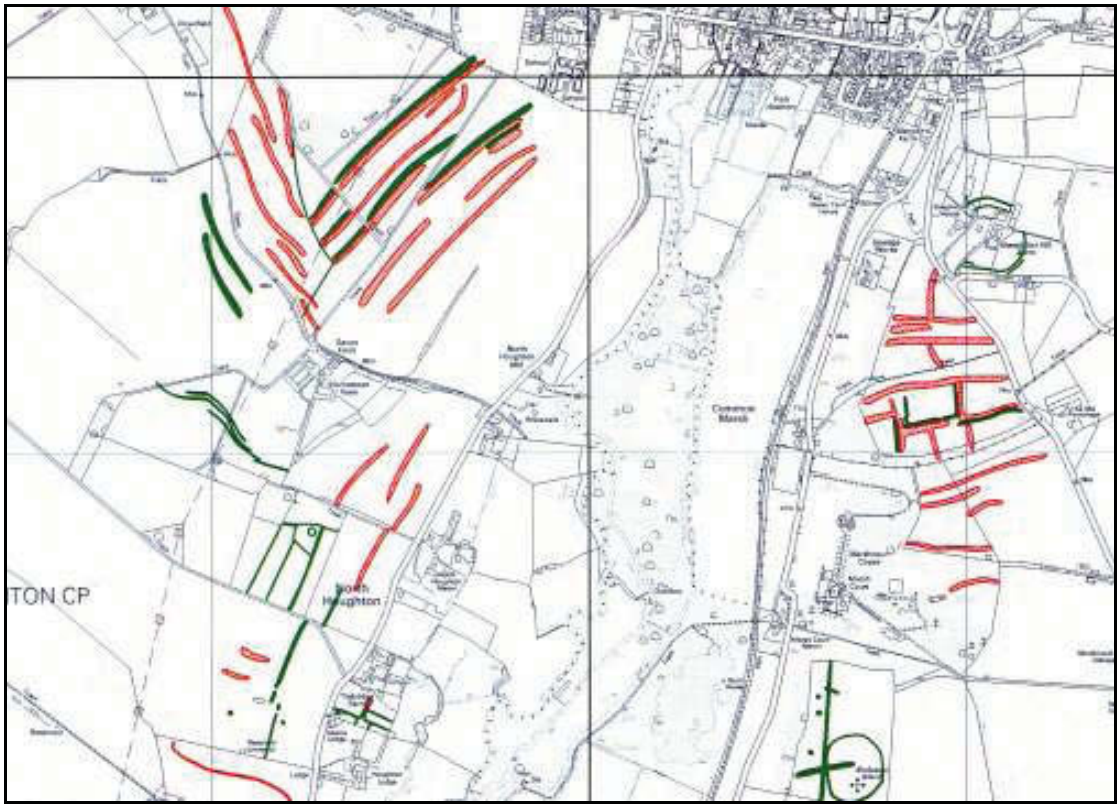


Figure 29. Iron Age and/or Roman fields in the Stockbridge area, Upper Test sub-unit.

6.2.3 Prehistoric (undated) site records

More than 200 features were attributed a generic prehistoric date ('prehistoric undated'). Prehistoric undated features comprise a range of site types; enclosures, field boundaries, pits and ring ditches. Often two or more of these site types appear to be in association with one another. Frequently sites recorded as prehistoric undated were double-indexed in the project database as being alternatively of Romano-British date (and it is possible that some features recorded in this way may be Saxon in origin).

It is difficult from aerial photographic evidence to assign a more specific date to fragments of ditched field systems and associated pits. Small ring ditches might reasonably be interpreted as round barrows but in some instances are equally likely to be round houses (Figures 20 and 21). The majority of enclosures classed as prehistoric undated might be assumed to be Iron Age or Romano-British in date. However assigning a generic date acknowledges the possibility that some enclosures may be late Bronze Age or that there may be Bronze Age activity at the site; a good example is the settlement at Trotsford Farm (Figure 19).

One outcome of this approach to dating is that the site distribution shown in Figure 23 probably understates the Iron Age and Roman settlement pattern. The distribution of Iron Age and Romano-British sites juxtaposed with prehistoric undated sites

probably reflects the true pattern and extent of late prehistoric and Roman activity in the aggregate landscape (Figure 30).

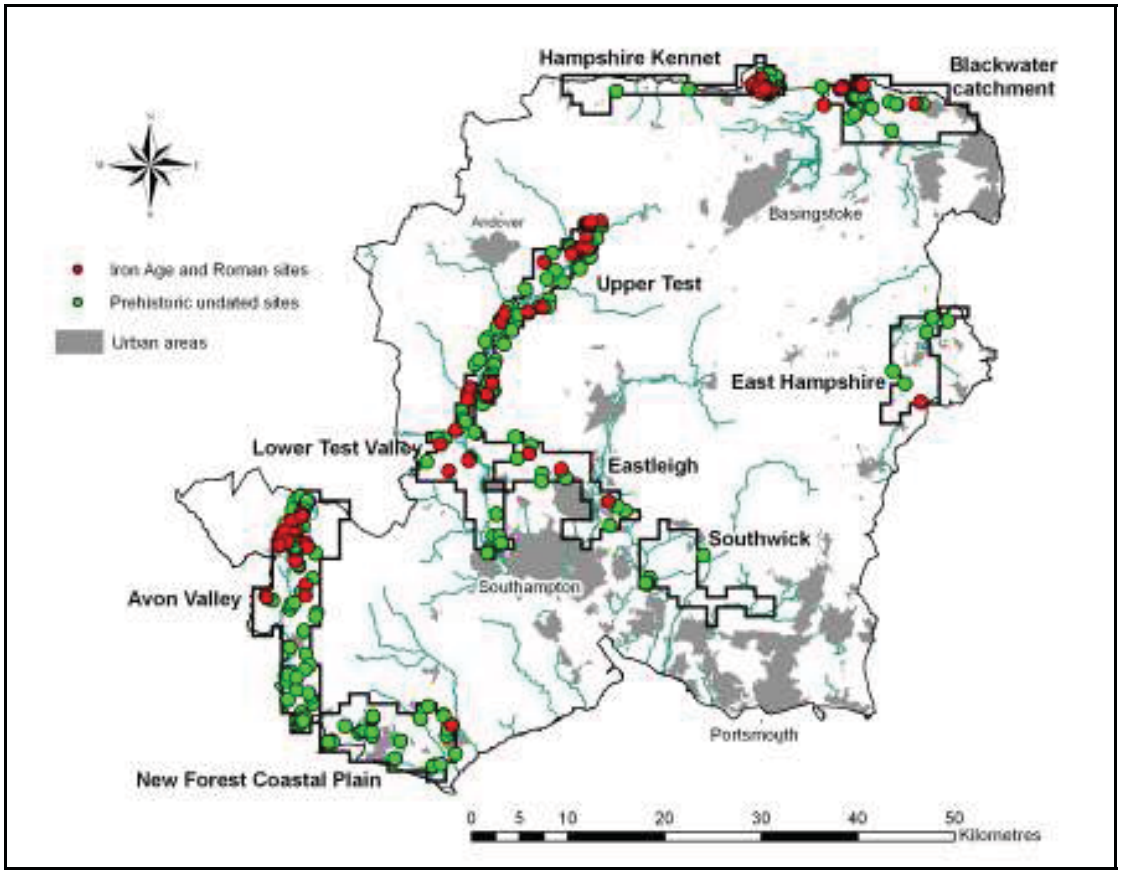


Figure 30. Distribution of Iron Age, Roman and prehistoric undated sites

Whilst the density of sites is greatest in those areas where Iron Age and Roman features were recorded, the most notable feature of this distribution is the presence of prehistoric undated sites in areas where few or no Iron Age sites were identified. Sites were recorded in East Hampshire, in the Southwick sub-unit, in parts of the Lower Test valley and Eastleigh sub-units and especially in the New Forest Coastal Plain and the Lower Avon valley.

Notwithstanding the observations above regarding site distribution the approach to dating provides a useful distinction between types of enclosure and, by inference, the nature of prehistoric settlement. The development of complex ditched enclosures has been recognised as a feature of the late Iron Age/Romano-British landscape on the chalk. Interpretation of enclosures as Iron Age or Romano-British during the project (Figures 23 – 26) was generally made on the basis of their complexity and by analogy with the firmly dated chalkland examples. Simple, discrete enclosures were interpreted as prehistoric undated (Figure 31).

The nature and distribution of these enclosures poses interesting questions. It is possible, for instance, that further research might reveal some of the apparently simple enclosures to be more complex than aerial photographic evidence suggests. On the other hand discrete enclosures may represent different settlement types to the complex enclosed settlements. Such variation in settlement type might reflect differences in function, economic status and landscape exploitation rather than chronology. The contrast between the limited distribution of complex enclosures and the more widespread simple enclosures is most marked in the Avon valley. The densest concentration of complex enclosures anywhere in the project area is in the Upper Avon, whereas there are none in the southern part of the valley. The

differential distribution of enclosures may reflect different settlement and economic systems in the upper and lower parts of the valley.

Figure 31. A simple enclosure at Heckfield Place, Blackwater catchment. Photo: NMR SU 7361/13 (NMR 15107) 05-JUL-1994 © Crown copyright. NMR

6.3 Overview of prehistoric and Roman features

The mapping carried out as part of this project has identified and broadly categorised the prehistoric and Roman sites visible on aerial photographs in the aggregate landscape. The nature of aerial survey has influenced the range of site types recorded: for the most part these are ceremonial monuments, enclosures and field systems. In some areas (most notably the Upper Avon valley) where large numbers of sites were recorded, the mapping provides an opportunity to explore the development of the landscape from the later Neolithic through to the Romano-British period.

Few Neolithic monuments were identified but the known distribution pattern of those that were was extended beyond the limits of the chalklands. The identification of a pit circle in the Avon valley suggests that more intensive investigation (such as geophysical survey) might reveal further similarly insubstantial or ephemeral features.

Many new Bronze Age barrows were recorded especially in the Avon and Test valleys. Of particular interest is the relationship of barrow sites to water sources, with some barrows sited in the flood plains of the Avon and Test. A small number of possible round house settlements were mapped and these may be evidence of Bronze Age settlement. It is possible that areas where barrows were recorded but where there is no evidence of settlement, such as the East Hampshire heathland, were utilised by seasonally mobile populations operating from settlement bases elsewhere. In these areas the burial mounds are signalling rights of access and exploitation rather than settled occupation. Exploitation of the New Forest by peripheral populations based in the Avon Valley is one possible model.

In places NMP mapping enables an initial characterisation of the Iron Age and Romano-British settlement pattern. Enclosures and settlements were identified mainly in the river valleys. There are some similarities with the nature and pattern of settlement on the chalklands: a few enclosure complexes were recorded as well as some ordered rectilinear field systems. But there are also differences; no banjo

enclosures were identified and the field systems comprise ditched boundaries rather than lynchets. The lynchetted Celtic field systems of the central chalkland do not extend significantly beyond the edge of the gravel terraces of the Test.

Over the aggregate landscape as a whole the predominant settlement type visible on aerial photographs is the simple discrete enclosure. It is possible that in the areas where more complex settlements were identified the nature of the archaeology is related to distribution patterns beyond the aggregate landscape: in the Upper Test valley we are seeing the edges of the characteristic Hampshire downland pattern; in the western part of the Upper Avon the pattern might reflect the archaeological distributions characteristic of the chalk downs of east Dorset and southeast Wiltshire.

It is worth drawing attention to two apparent gaps in the prehistoric and Roman record. Many burnt mounds have been recorded through fieldwork in the New Forest fringe in the north eastern part of the Avon valley sub-unit but only one mound was identified during the mapping project. Similarly many kiln sites and waster mounds relating to the Roman pottery industry are known from the same area and from East Hampshire, but no pottery sites were recorded during the project. There have been few specialist reconnaissance flights in either area and it is unclear whether we should conclude that aerial photography is not an effective method for locating such sites or whether targeted oblique flying might reveal new examples.

7 NMP results: medieval and post medieval sites

During the project 1,516 medieval or post medieval sites were identified, amounting to 55% of all site records in the project database. All but 100 of the records are for new sites, representing a significant enhancement of baseline data for medieval/post medieval archaeology in the aggregate landscape. The sites are predominantly associated with cultivation and subsistence and were recorded in large numbers from all parts of the project area; the only significant gaps in distribution are in wooded areas and the larger towns.

7.1 The early medieval period

This is defined in the database (following the definition in the Hampshire AHBR) as being from AD 410 to the Norman Conquest in 1066. There were no features which could be positively identified as originating in the early medieval period during the project. Three groups of cropmark pits were tentatively interpreted as possible Saxon *grubenhausen* although they could equally be prehistoric features. Other groups of pits interpreted as prehistoric might in fact be Saxon. There may also have been early medieval activity at the site of former Romano-British settlements; for instance Saxon material was found at the Bloswood Lane settlement (Figure 25).

7.2 Medieval and post medieval periods

The medieval and post medieval periods are here defined as 1066-1540 and 1540-1901 respectively. The nature of much of the evidence recorded during the project means that it is difficult to ascribe a more precise date than medieval and/or post medieval for many sites, particularly for cultivation remains.

The vast majority of medieval and post medieval sites mapped during the project are cultivation remains. Although some lynchets and tracts of ridge and furrow were recorded, the bulk of the records are made up of banked or ditched field systems. Water meadows played an important role in the agricultural economy and very extensive water meadow systems were mapped in all the river valleys in the project area. Other widely occurring features are drainage or irrigation systems some of which are difficult to distinguish from simple water meadows. Timber also contributed to Hampshire's economy and a number of woodland enclosures were recorded from parts of the project area, notably the New Forest fringe and the Blackwater catchment.

7.2.1 High status sites

There are a number of important monuments in the aggregate landscape loosely grouped here under the label 'high status sites'. Ecclesiastical establishments include Mottisfont Abbey, the priories at Breamore and Ellingham in the Avon valley, and the Cistercian nunnery at Wintney in the Blackwater catchment. At Mottisfont Abbey and St Michael's Priory at Breamore, new information was added to existing knowledge of both sites.

Figure 32. Buried walls at Mottisfont Abbey, Lower Test valley, visible as parchmarks. Photo: NMR SU 3226/11 (NMR 15518.27). 31-JUL-1996 © Crown copyright. NMR

At the Augustinian Priory of St Michael at Priory Meadow, Breamore a number of linear banked features are visible as cropmarks on aerial photographs taken in 1947 and these were interpreted as enclosures and building foundations connected with the priory. To the north of the main priory complex a new rectilinear banked enclosure with adjacent linear banks was identified and interpreted as possibly relating to the grange associated with the priory (Figure 33).

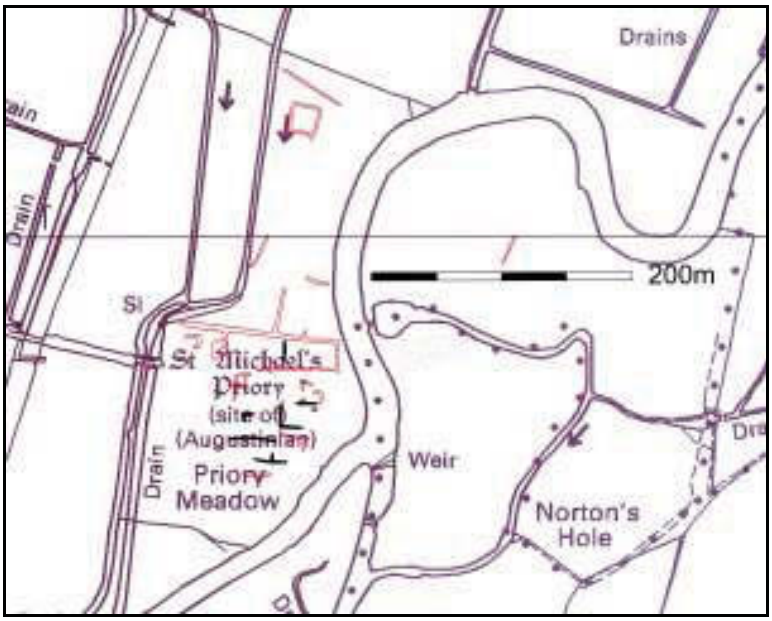


Figure 33. Earthwork remains at St Michael's Priory, Breamore in the Avon valley. © **Crown Copyright 2006HCC 100019180**. Reproduced from the Ordnance Survey map with the permission of the controller of Her Majesty's Stationery Office

Earthworks were also mapped at John of Gaunt's Palace at Kings Somborne in the Upper Test valley. The earthworks relate to the manor house which was documented in 1362 when it was passed on to the wife of John of Gaunt (Figure 34).

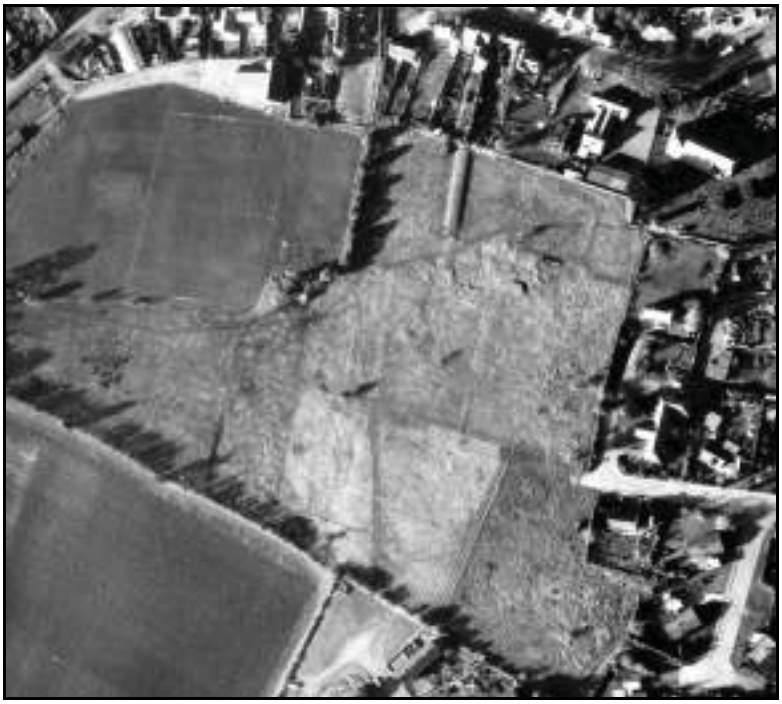


Figure 34. The earthwork remains of John of Gaunt's Palace at Kings Somborne, Upper Test. Photo NMR SU 3530/1 (NMR 1864/359) 12-NOV-1980. © Crown copyright. NMR

Two previously recorded moated sites were recorded, at Moorcourt in the Lower Test valley and Holdshott in the Blackwater catchment (Figure 35). Most of Hampshire's moated sites date from the thirteenth century onwards and most (but not all) contained building complexes. The distribution of moated sites is largely confined to those areas of the county where heavy clay soils are found, firstly because of the need for the moat to hold water, and secondly because these areas were heavily wooded and the moat would have provided a degree of security (Stamper, 1996). Much of this woodland was heavily assarted in the thirteenth and fourteenth centuries, suggesting that the moated farmsteads were the settlements of freeholder farmers establishing new farms in areas of woodland clearance. A third possible moat in the form of a cropmark ditch was identified at Park Farm, Heckfield Place in the Blackwater catchment (Figure 36).

Figure 35. Earthwork remains of the moat at Moorcourt, Lower Test valley. Photo: OS 89 268/013. © Crown copyright. Ordnance Survey (13-JUN-1989)

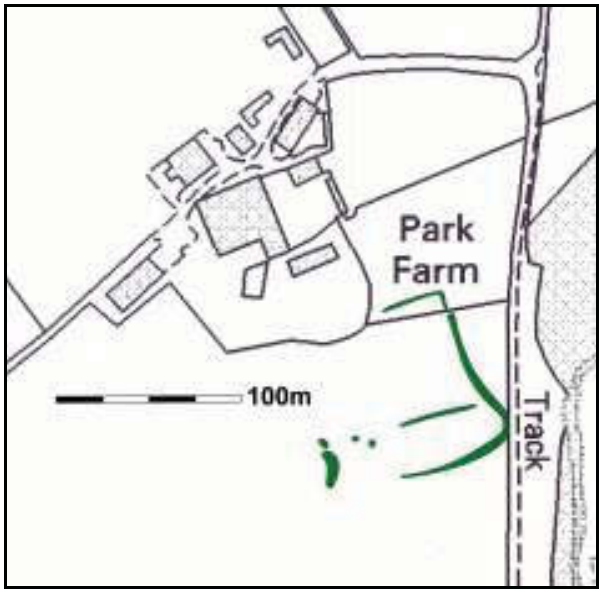


Figure 36. A possible moat, visible as a cropmark ditch, at Park Farm, Heckfield Place.

7.2.2 Medieval and post medieval settlement

There has been a lack of large scale excavations of rural sites in Hampshire. This, coupled with the rarity of ridge and furrow and terraced lynchets compared to other areas of the country, means that the full complexity of Hampshire's medieval landscape cannot be fully appreciated (Hinton, 1996). A range of village plans, however, can be identified. The broad distribution of rural settlement consisted of nucleated villages in the central chalklands and in the west, and elsewhere a combination of villages, hamlets, and dispersed farmsteads (Hughes, 1981). In the project area concentrations of these dispersed settlements occur especially in the Avon valley.

Nucleated villages usually contained the parish church, a manor house and a cluster of farms and dwellings. Other villages comprise one-street settlements with the occasional side street; many of this type of village occur along the banks of the Avon, Test and Itchen. There are numerous hamlets in Hampshire and they are found all over the county except on the central chalk downs. Many originated as individual farms and attracted further settlement through time. Hamlets are frequently found as satellites to larger villages and have sometimes been incorporated into villages that were expanding.

There is evidence for settlement contraction and change. Settlement mobility and shift is apparent in places where medieval churches or manor houses are located away from present day village centres, or where archaeological investigation has provided the evidence. A variety of factors is likely to have caused settlement contraction and, although some settlements may have been in decline towards the end of the medieval period, many became depopulated only in the second half of the sixteenth century or later (Hughes, 1981 and 1994).

A significant number of settlements were depopulated as a result of the creation of parks and the building of country houses between the fifteenth and eighteenth centuries. This is likely to have been a gradual process and in many instances, the settlements may already have been in decline. Examples of settlements which were emparked in the post medieval period are Bramshill in the Blackwater catchment, Breamore in the Avon valley, and Little Somborne in the Test valley (Hughes, 1994).

At an earlier date the creation of deer parks (there were nearly 80 by the end of the fourteenth century) may have affected a similar episode of depopulation, and in the New Forest 34 settlements are recorded as being depopulated, possibly as a result of forest law enforcement when the Royal Forest was created by William I.

There are roughly one hundred records for deserted or shrunken medieval settlements in the Hampshire AHBR. Approximately half of these are in the chalklands where an additional factor in depopulation was the change from arable to a pastoral economy as the profits to be made from wool increased; this led, in some cases, to settlements being given over to sheep pastures. Despite the bias in the distribution towards the chalk areas it is, perhaps, surprising that very little evidence of desertion or shrinkage was identified during the project. This evidence amounts to only a handful of sites with none recorded from Southwick, East Hampshire or the Blackwater catchment.

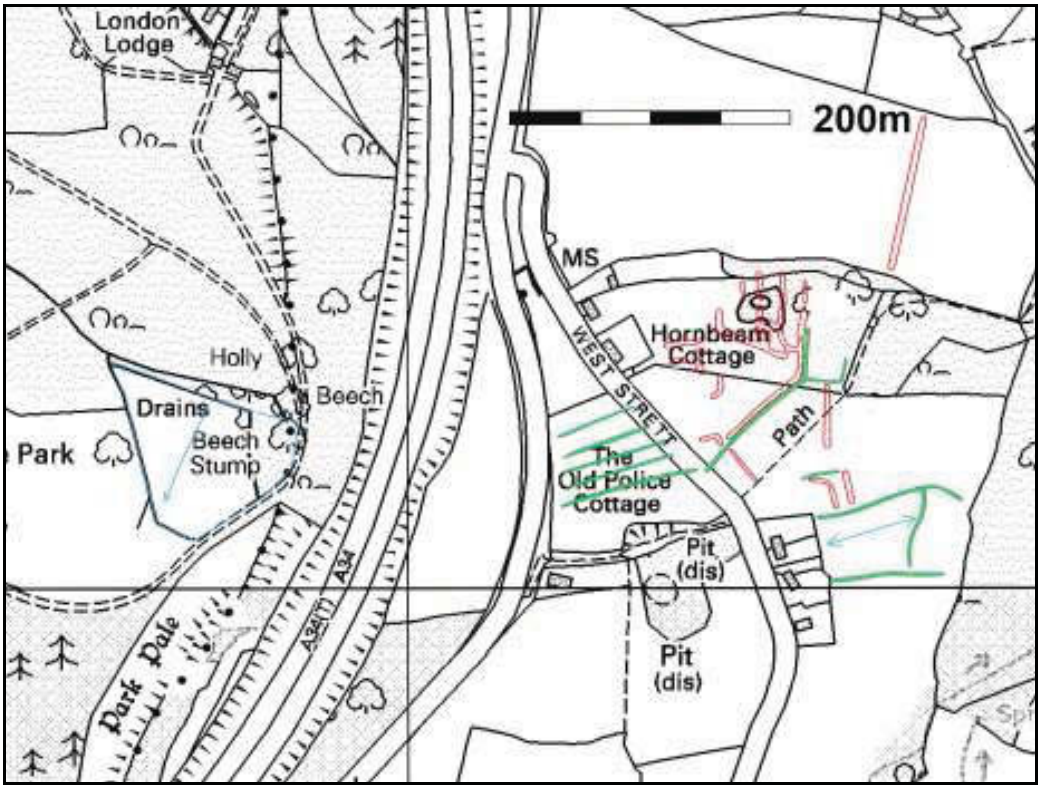


Figure 37. Settlement remains near Burghclere in the Hampshire Kennet sub-unit.

One of the best examples is at West Street, to the south of Burghclere in the Hampshire Kennet sub-unit (Figure 37). Here a trackway leads to a cluster of small earthwork enclosures which are probably the remains of tofts although no building platforms are visible within them. In a number of locations possible settlement evidence is suggested but was difficult to clearly define from the photographs. To the north west of Rownhams in the Lower Test valley, for instance, faint traces of the medieval hamlet of Lee, which was part of the possessions of Romsey Abbey until the dissolution, are visible as cropmarks set amid cultivation terraces (Figure 38).

Figure 38. Cropmark remains of a deserted settlement and associated fields at Lee in the Lower Test valley. Photo: NMR SU 3518/1 (NMR 21004/12) 19-JUL-1971. © Crown copyright. NMR

The lack of specialist flights targeting earthwork sites is probably a contributory factor to the small number of deserted and shrunken settlements recorded during the project. The difficulty of identifying building remains from cropmark photography is well illustrated by the settlement at Kent, in Harbridge parish in the Avon valley. This settlement was only recently abandoned (it is marked on the 1880 First Edition OS map). The fields and enclosures associated with the settlement are detectable as cropmarks but there is no trace of houses which were marked on the 1880 map (Figure 39).

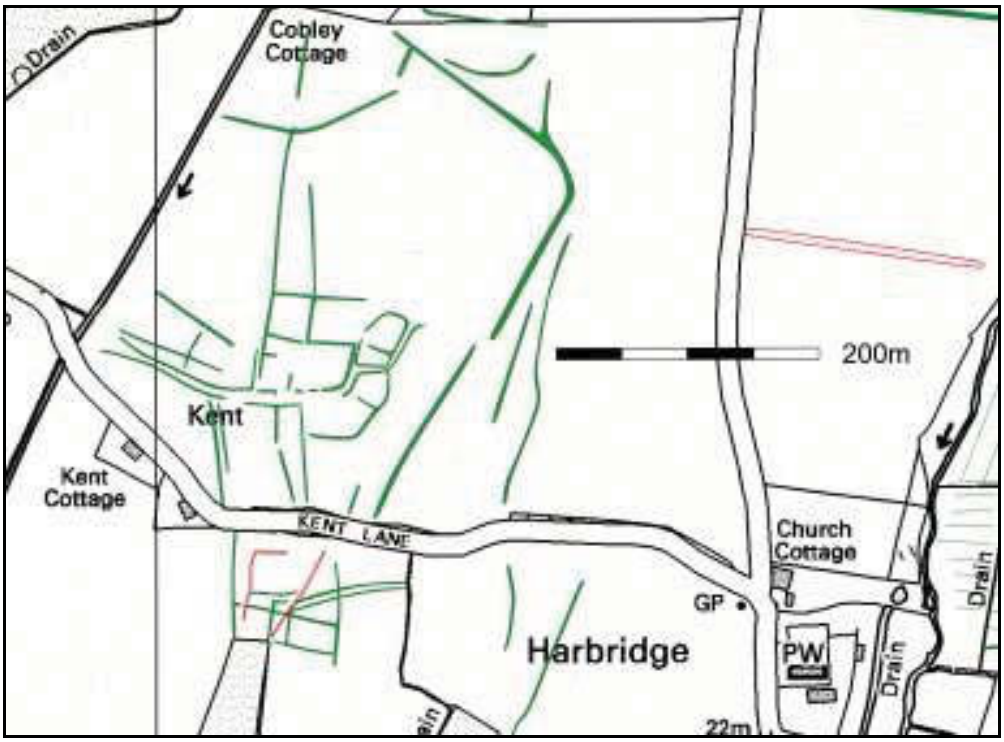


Figure 39. The deserted settlement at Kent in the Avon valley. **© Crown Copyright 2006HCC 100019180**. Reproduced from the Ordnance Survey map with the permission of the controller of Her Majesty's Stationery Office

7.2.3 Field systems

The vast majority of cultivation remains recorded during the project are banked or ditched field systems. The only examples of contour lynchets identified are confined almost entirely to the chalk valley sides on the Upper Test and some were interpreted as probably pre-medieval in origin. Whilst ridge and furrow is comparatively rare in the open field systems on the chalklands (maybe because the light soils did not require this cultivation technique [Hughes, 1994]), it was recorded throughout the heavier soils of the project area. Field systems containing ridge and furrow were recorded throughout the project area but rarely do they cover extensive areas.

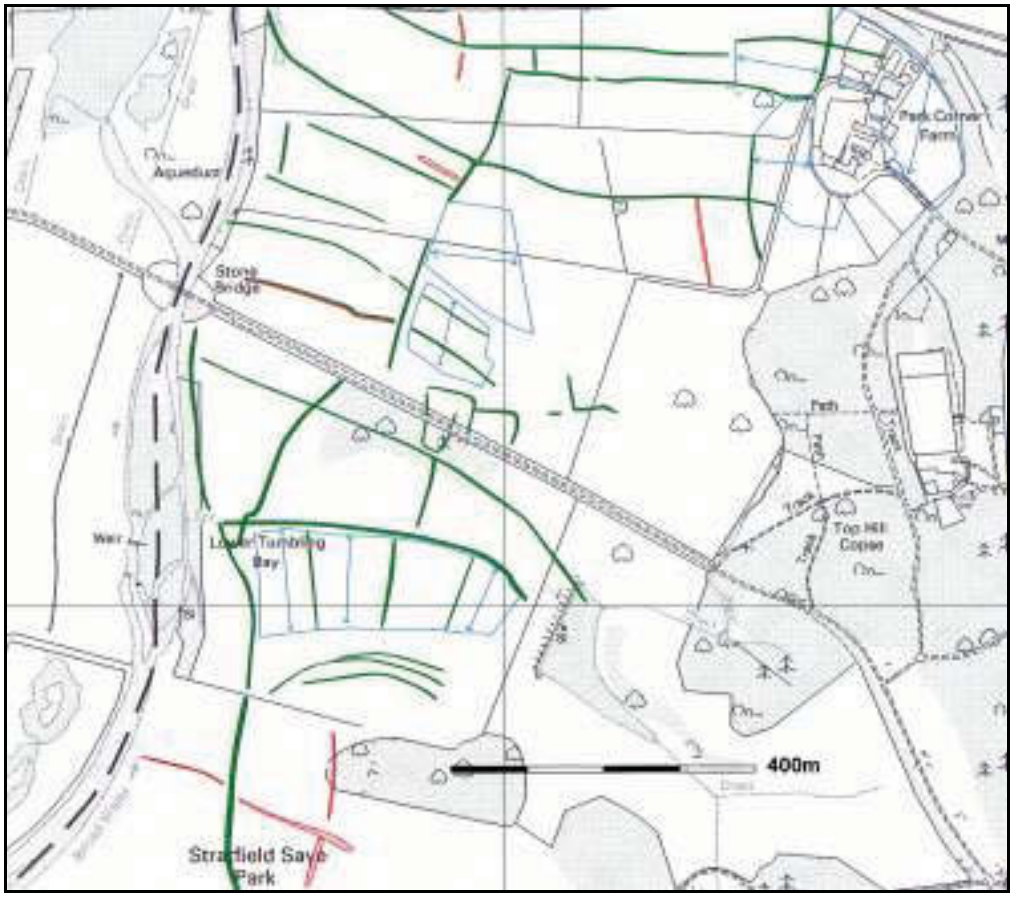


Figure 40. Medieval field boundaries, trackways and ridge and furrow at Stratfield Saye Park, Blackwater catchment.

One of the best preserved examples of a medieval field system with ridge and furrow is in the grounds of Stratfield Saye Park in the Blackwater catchment (Figure 40). These features are visible as earthworks on photographs taken in the 1970s; they presumably owe their survival to the lack of intense ploughing within the park.

One difficulty faced in dating field systems more precisely than medieval/post medieval is that in parts of the project area the process of enclosure began at a relatively early date. For example farming land in the Southwick area which formed part of the Titchfield Abbey estate had been enclosed by 1381 (Hare, 1994). By the early sixteenth century, whilst the chalk downlands were still characterised by open fields, in the project area the landscape was one of villages and dispersed settlements with enclosed fields. Leland noted (*Itinerary*, pp 275, 284-5, 269) the contrast in the 1530s between the open field landscape between Salisbury and

Winchester and the enclosed fields between Winchester and Southampton and around Wickham, Southwick and Bishop's Waltham.

At Stratfield Saye the field system is probably a relict medieval landscape. The present day park is on the site of a former deer park first recorded in 1260/61 and the field boundaries shown in Figure 40 are likely to predate the creation of the park. Bishop's Waltham, on the edge of the Southwick sub-unit, offers a contrast (Figure 41). A deer park here (one of the largest in Hampshire) belonging to the Bishop of Winchester is recorded in 1086. The park pale marking its western boundary survives as a substantial earthwork and is shown in magenta against the 1880 First Edition OS map background in Figure 41. The field boundaries in the right hand side of the illustration are within the former deer park and most are likely to post date its abandonment. They are classed in Hampshire's Historic Landscape Characterisation (HLC) as Parliamentary type enclosures.

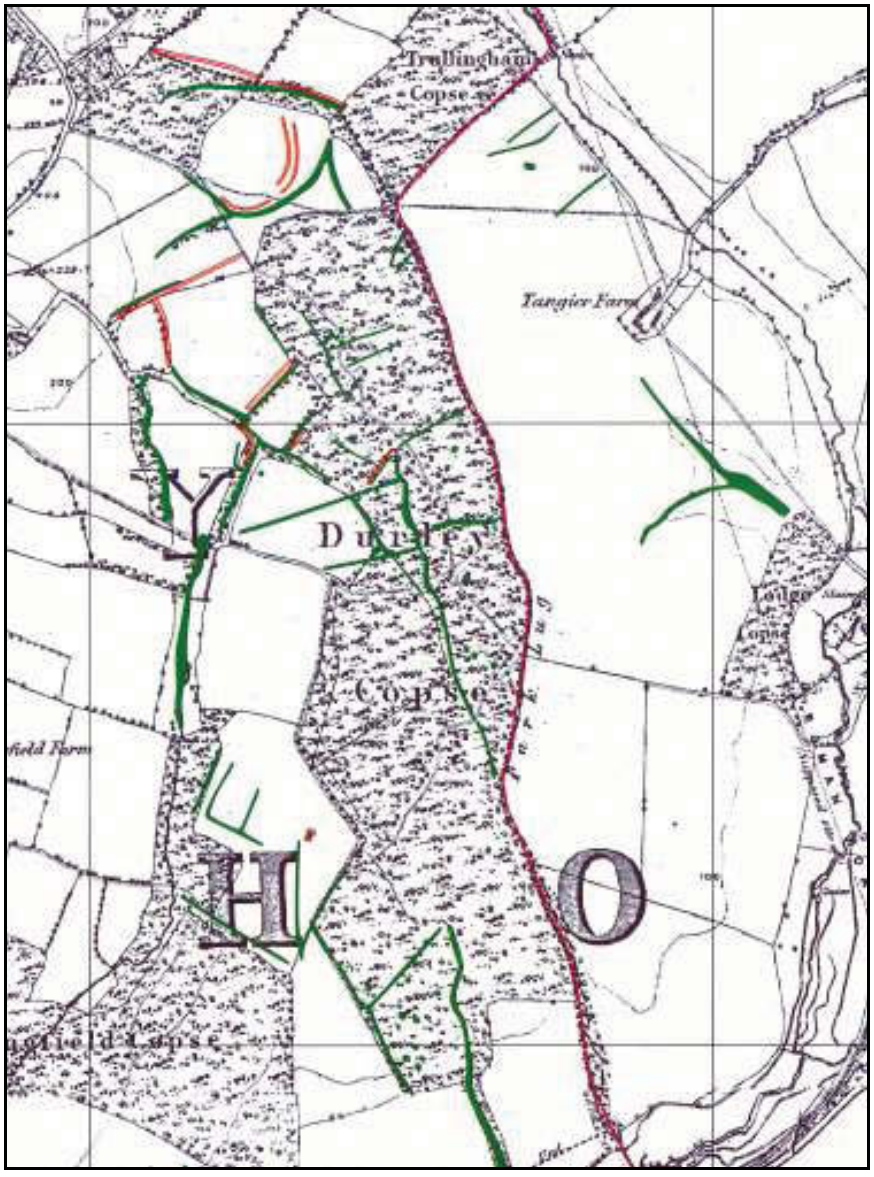


Figure 41. Cropmark field boundaries adjacent to Bishop's Waltham deer park, Southwick sub-unit. Scale is provided by the 1:10,000 grid squares.

To the west of the park pale there has been widespread twentieth century boundary removal and most of the woodland strip abutting the park pale on the 1880 map has been cleared. This woodland strip is clearly assarted and the field boundaries mapped in the wooded area might be assarts which had been replanted prior to 1880. The curvilinear bank and ditched enclosure towards the top left is likely to be a woodland enclosure contemporary with the fields and this whole complex of fields and enclosures is likely to be late medieval in date.

Another example of a complex cropmark landscape is shown in Figure 42. The remnants of a rectilinear banked field system cover a large part of the area (to the north of Fareham) shown in the illustration. The principal boundaries of this field system fit relatively well into the field pattern shown on the First Edition OS map of 1880. In the centre of the illustration these fields are classed in Hampshire's HLC as 'wavy fields', and in the north 'irregular assarts'. Wavy fields generally have sinuous boundaries; they are likely to derive from late medieval and early post medieval enclosure or rationalisation of earlier field patterns. Irregular assarts are generally assumed to be medieval in date. Thus it is reasonable to interpret the cropmark fields as probably late medieval in origin; the parallel banks visible in places may be the fragmentary remains of strip fields or possibly ridge and furrow.

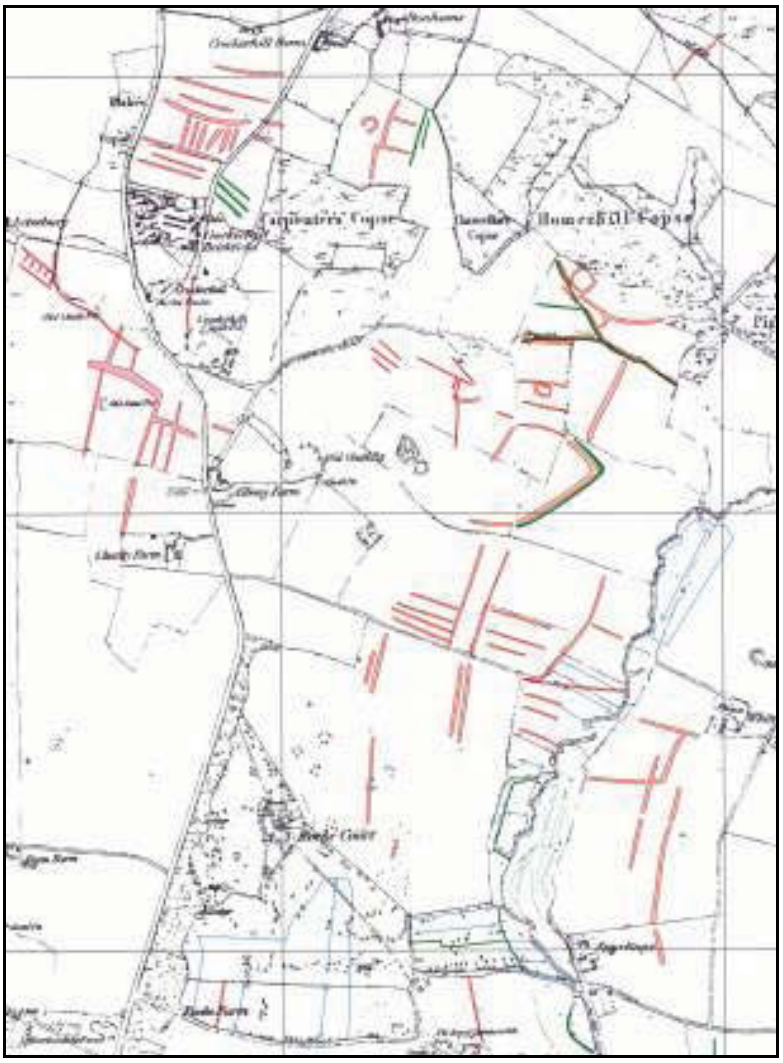


Figure 42. Medieval or post medieval fields to the north of Fareham, Southwick sub-unit. Scale is provided by the 1:10,000 grid square.

The large irregular shaped enclosure towards the centre of the illustration is likely to be a former woodland enclosure which could also fit into a late medieval interpretation. In fact this feature probably predates the boundaries shown on the OS map (the east – west boundary to the immediate south of the enclosure appears to respect it). It should be noted that some of the boundaries may be pre-medieval, given the presence of a number of small enclosures which may be prehistoric features.

These three examples serve to illustrate something of the variety of fields from the historic periods mapped during the project. Their dating is aided by the fact that they cover relatively extensive areas so their overall layout can be appreciated and by their relationship to datable features such as deer parks. To some extent the degree to which their form and alignment is consistent with our understanding of Historic Landscape Characterisation can also inform decisions regarding dating. Thus the way in which the cropmark field boundaries at Fareham correspond to fields defined by HLC as 'wavy fields' and assarts suggests that they represent late medieval enclosure.

Using patterning and HLC to date field boundaries is more straightforward in the case of post medieval Parliamentary type enclosures. The characteristics of fields of this type are straight, surveyed boundaries and regular shapes. In many cases they derive from the nineteenth century Parliamentary Enclosure Acts, but some derive from formal local agreements and are somewhat earlier. Parliamentary fields were recorded throughout the project area with particularly good diagnostic examples from the New Forest Coastal Plain (Figure 43).

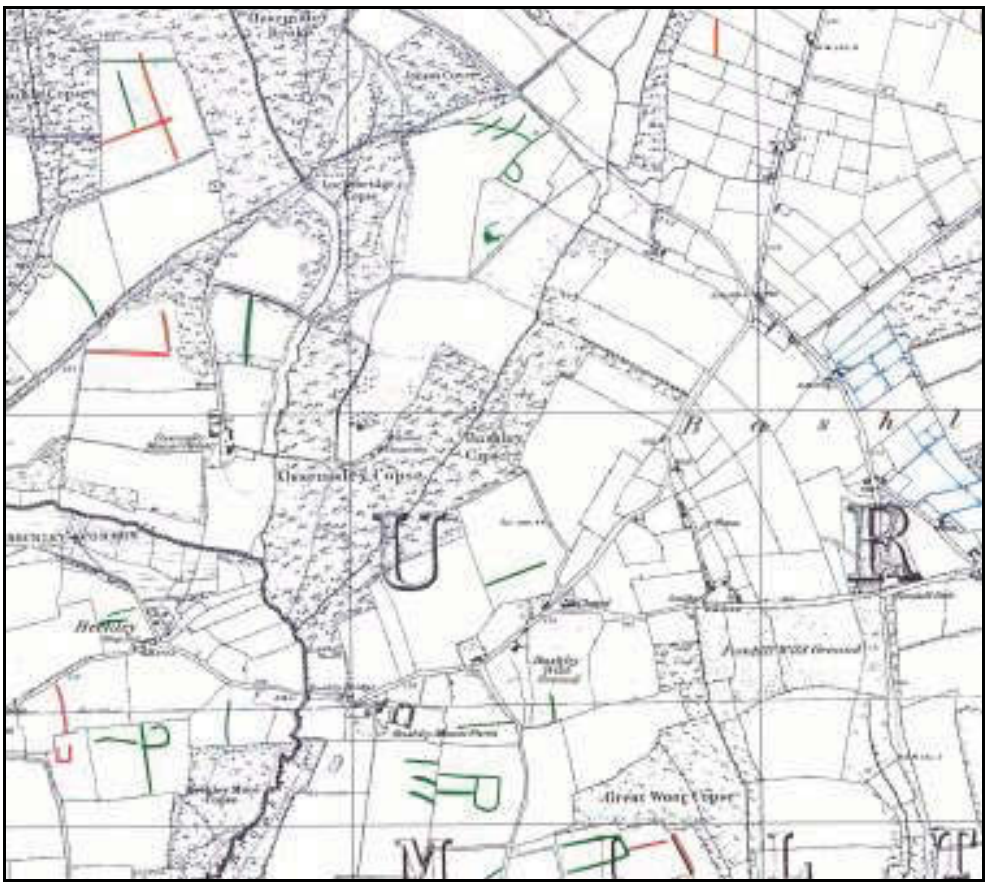


Figure 43. Parliamentary type enclosures and narrow ridge and furrow between New Milton and Bransgore in the New Forest Coastal Plain.

7.2.4 Water meadows

In Hampshire water meadows are a regionally important and distinctive historic landscape from the post medieval period. Water meadows are included as a type in the county's Historic Landscape Characterisation and their extent was mapped during a study carried out in 2000 by Oxford Archaeology. The NMP project identified new areas of water meadow and produced detailed mapping of their layout.

Water meadows are pasture irrigation systems designed either to increase total grass production or to bring the growth of grass forward in the agricultural year. The operation of water meadows, known as 'floating', required a considerable degree of management, distinguishing them from grazing marshes and flood meadows, which are naturally floodable areas.

Two basic types of water meadow were identified during the project. The first are the frequently complex and extensive bed systems in the flood plains of the major rivers, particularly the Avon, Test and Itchen (Figure 44). These consist of networks of parallel ridges and channels often covering many hectares. Water was diverted from the river through leats or 'carriers' from which it was then fed into gutters cut into the tops of the grass ridges. Floating of the meadows by opening sluices was carried out in winter or early spring, after which the meadows were drained before being grazed.

The second type consists of a far simpler arrangement with few channels (sometimes with just one main channel) and floating the meadow was achieved by allowing the channels to overflow. Water meadows of this type were recorded mainly in East Hampshire and the Hampshire Kennet (Figure 45).

Figure 44. Water meadows at Fordingbridge, Avon valley. Photo: RAF F22 58 2679/066 (23-JAN-1959) © Crown copyright. MoD.

Figure 45. A simple water meadow in the narrow flood plain of the river Wey near Broxhead Common, East Hampshire. Photo: RAF CPE/UK/1750/4338 (21-SEP-1946) © English Heritage. NMR (RAF photography)

The process of floating made early growth possible by warming the soil and it boosted fertility through the deposition of nutrient-rich sediments from the river water. After the early crop had been grazed the meadows were rewatered to produce a hay crop. Water meadows were an effective means of producing a reliable hay crop and they spread rapidly from the sixteenth century. They also served to increase the productivity of cereal crops; livestock grazing on the meadows by day were herded overnight in the arable land where their manure provided fertiliser for the crops.

Bed systems are most extensive in the Upper Avon and their highly regular layout suggests that the Avon valley water meadows were the most developed of those mapped during the project. Certainly they appear to have been in use more recently than others elsewhere in the project area, such as those in the Itchen valley (Figure 46).

Figure 46. Water meadows in the Itchen Valley Country Park, Eastleigh. Scale is provided by the one kilometre grid.

Comparison of Figure 46 with Figures 44 and 48 suggests that the flood plain of the Itchen has not been so intensively exploited as that of the Avon. Although parts of the valley have been divided into compartments containing beds of closely spaced parallel ridges the beds are less continuous than in the Avon. They have the appearance of being a series of small individual water meadows rather than an integral part of a more extensive system like those in Figure 48. An alternative possibility is that these beds fell out of use before those in the Avon valley and the channels and ridges have become more eroded, have merged into the valley floor vegetation and are more difficult to identify on the photographs.

There are a number of places in the example shown in Figure 46 where the character of the beds is different. Here there are gaps where there are fewer ridges and where the channels are far less ordered and are more curvilinear and irregular in form; they appear to meander and frequently seem to lead nowhere. Beds of this type are often found adjacent to the more ordered parallel beds and were recorded in all the major river valleys in the project area (Figure 47).

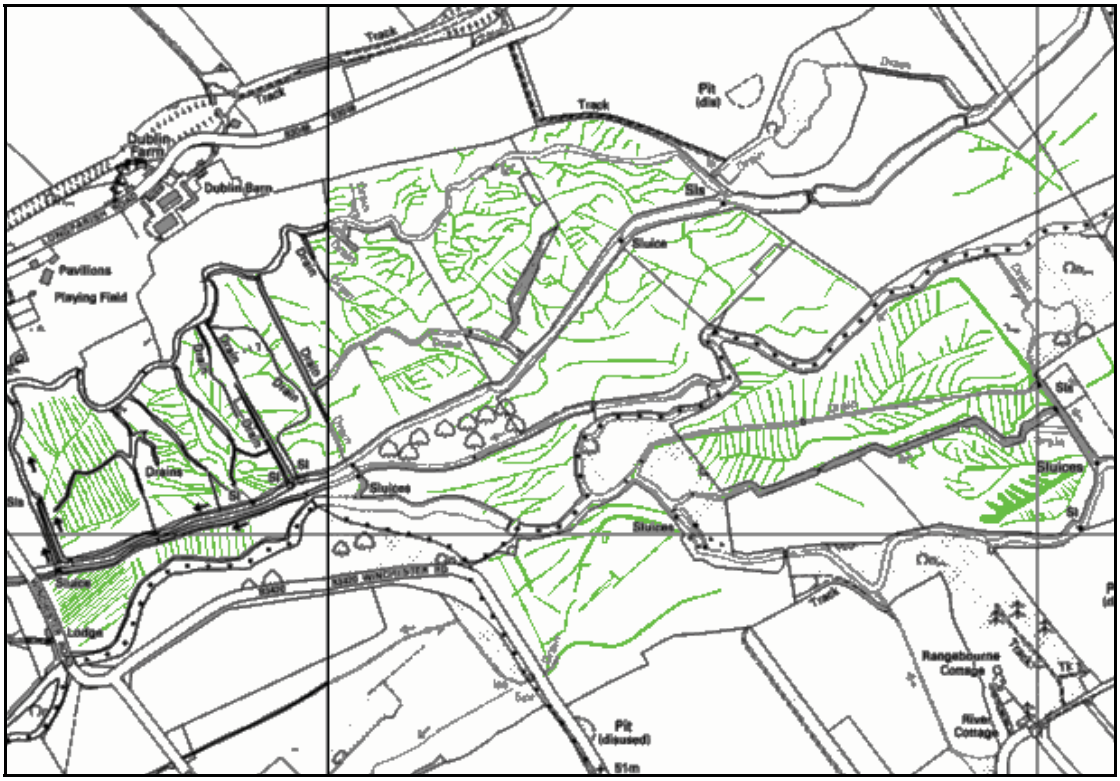


Figure 47. Water meadows at Wherwell, Upper Test. Scale is provided by the one kilometre grid. **© Crown Copyright 2006HCC 100019180**. Reproduced from the Ordnance Survey map with the permission of the controller of Her Majesty's Stationery Office

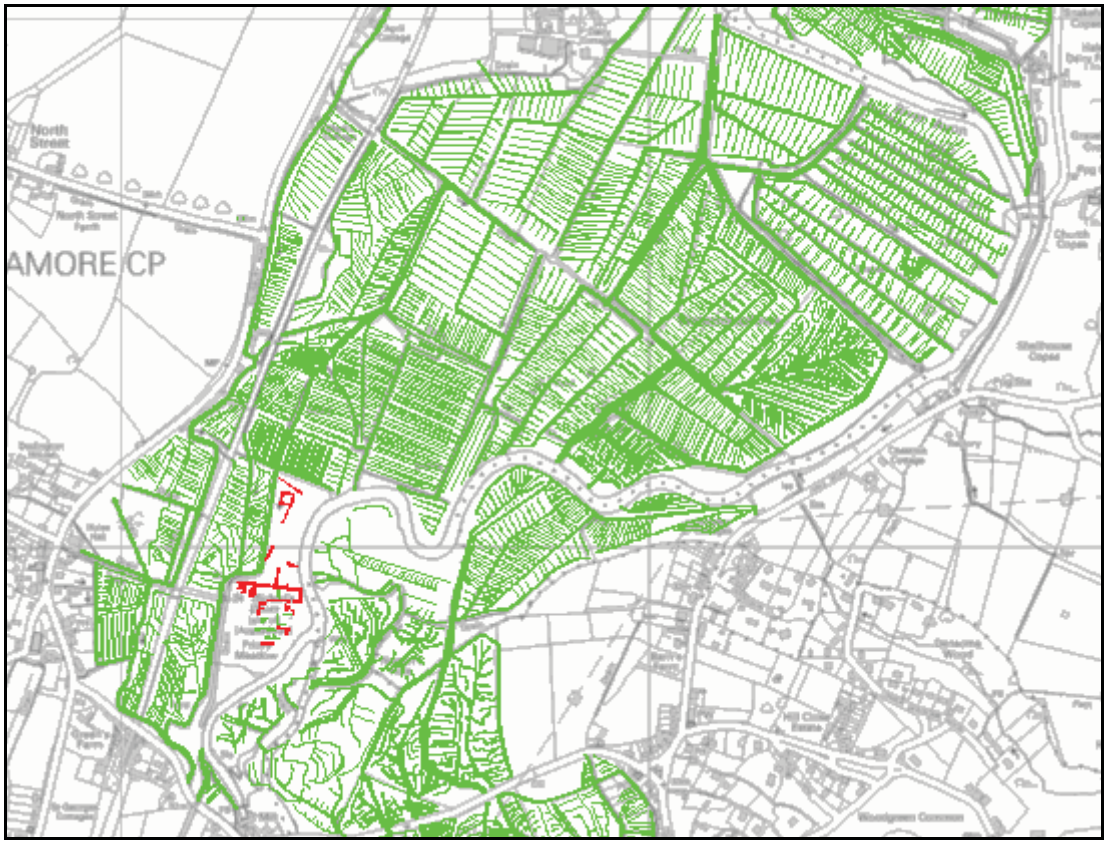


Figure 48. Water meadows at Breamore, Avon valley. Scale is provided by the one kilometre grid. **© Crown Copyright 2006HCC 100019180**. Reproduced from the Ordnance Survey map with the permission of the controller of Her Majesty's Stationery Office

Fragmentary curvilinear channels like those in the northern section of the Wherwell meadows are likely to be a more primitive version of the carefully ordered rectilinear beds. Some may merely be extensions to natural water courses and in areas prone to flooding such an arrangement may have been all that was needed to flood and drain the meadows.

It is possible that some fragmentary water meadows may be of an early date. In the medieval period hay meadow was more valuable than arable land (Hare, 1994) and elements of some water meadows might be pre-sixteenth century. One example is at the Augustinian priory at Breamore (whose remains are shown in red in the bottom left hand corner of Figure 48) where to the immediate east of the priory, and possibly associated with it, is a fragmentary water meadow. Worth noting is the fact that the water meadow in Figure 47 is adjacent to the site of Wherwell priory and that a similar series of meadows in the Itchen valley are close to the medieval manor house at Bishopstoke.

A notable feature of the water meadows mapped during the project is the remarkable variety of their form and layout. This report provides only a cursory overview but, for example, the meadows at Wherwell are quite different from those a few kilometres downstream at Longstock Park (Figure 49).

Figure 49. Water meadows at Longstock Park, Upper Test. Photo: RAF CPE/UK/1927/1022 (04-11-1946) English Heritage. NMR (RAF Photography)

Water meadows such as these, comprising a patchwork of ridges resembling ridge and furrow cultivation, were mapped at several locations, but especially in the Test valley. Whilst such variation may reflect developments in the management and design of water meadows (and therefore their chronology), they are also likely to result from the local conditions particular to each site determining the most effective layout.

Post medieval water management is also represented throughout the project area by numerous drainage systems. In places, such as East Hampshire, it is difficult to distinguish between drainage features and simple water meadows and in some instances sites were double indexed as drainage or water meadows. Frequently drainage systems are accompanied by straight narrow ridge and furrow; presumably this type of cultivation practice was used to facilitate drainage.

The most extensive drainage systems are on the banks of the Blackwater along the county boundary with Berkshire (Figure 50). Here the fields are now under grass but their form indicates that they are enclosed strips and furlongs which would have been cultivated in the medieval period. Present day field hedges fossilising the layout of medieval strips in this way are extremely rare in Hampshire (those along the Blackwater at Eversley are the most extensive example in the county).

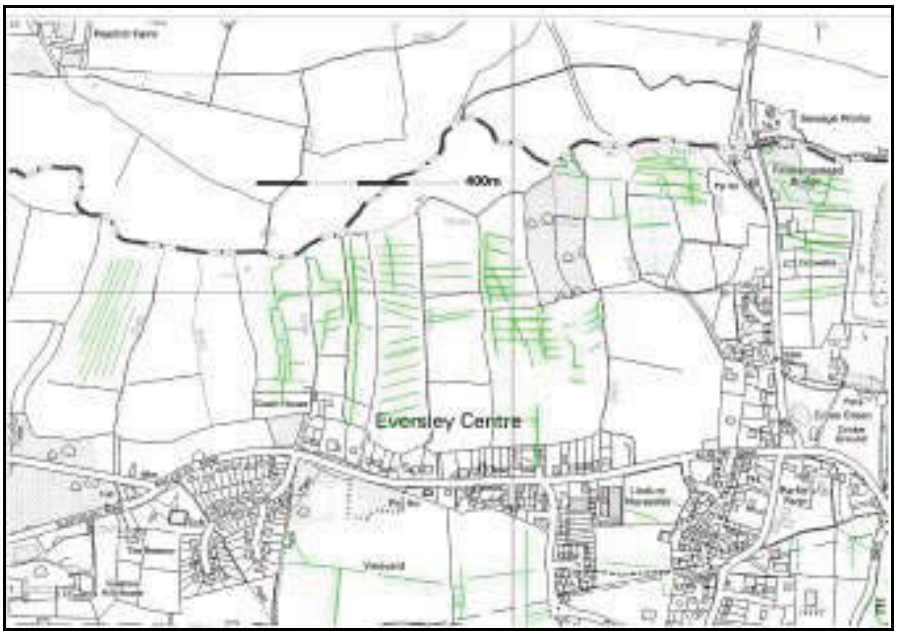


Figure 50. Drainage ditches and narrow ridge and furrow within enclosed strips and furlongs at Eversley, Blackwater catchment.

7.2.5 Woodland features and post medieval archaeology in the New Forest

Hampshire was the most extensively afforested county in England (Bond, 1994) and as well as the New Forest, there were at least ten other royal forests. The main ones in the project area are Buckholt, Bere Ashley and Bere Portchester in the south, Pamber, Eversley and Bagshot in the north and Alice Holt and Woolmer in the east. As well as being valued for the hunting of deer and providing pannage for pigs the forests were a source of timber and wood production.

Coppicing was practiced from the late thirteenth century (Bond 1994, 129), whereby a stand of trees was enclosed by a bank for protection against grazing animals. Underwood was cut for fuel, fencing and charcoal production; standard trees were used for structural timbers (oaks from Pamber forest were used in Westminster Abbey and Windsor Castle, *ibid* 129). The practice of coppicing was replaced in the late seventeenth century by the establishment of timber plantations in which no underwood was grown (Smith 1999, 50).

Medieval wood boundaries were often irregular and rambling whereas later wood banks were progressively smaller; from the eighteenth century onwards they were usually straight sided. The boundaries consisted of a substantial stock-proof (and

deer-proof) bank with an external ditch. The enclosures vary in size from a few hectares to many tens of hectares (Smith, 1999).

A small number of woodland enclosure boundaries were identified during the project and two mapped examples are contained in Figures 41 and 42 from the Southwick sub-unit. Generally those recorded during the project are relatively small and are probably coppice enclosures of late medieval or early post medieval origin, although dating from aerial photographic evidence alone should be regarded as tentative. A further difficulty of interpretation lies in differentiating woodland enclosure boundaries from bank and ditched field boundaries but as a general rule enclosure banks are more substantial in form (Figure 51), and they sometimes contain tree-removal pits.

Figure 51. Probable woodland enclosure boundaries at Heckfield Place, Blackwater catchment. Photo NMR SU 7361/2 (NMR 26/14) 03-MAY-1967. © Crown copyright. NMR

There is extensive survival of wood banks in the New Forest (Bond, 1994). Small areas on the fringe of the forest were included in the project area and a number of woodland and heathland features were recorded. Most of these are centred on Ibsley Common and, especially, on Rockford Common. They include banks and enclosures but precise interpretations were not always possible. Although a large number of earthwork remains survive in the New Forest they are often fragmentary in nature: 'Many remains consist of isolated banks and ditches which start and finish with no clear purpose, some fading into valley mires, others ending abruptly and inexplicably' (Smith, 1999, 3).

One feature likely to be a woodland plantation enclosure was identified on Ibsley Common (Figure 52). This enclosure appears to be a continuation of Newland Plantation; its straight sides indicate that it is likely to be of eighteenth or nineteenth century origin. Enclosures and banks identified to the south, at Rockford Common are interpreted not as woodland features but as encroachment enclosures (Figure 53).

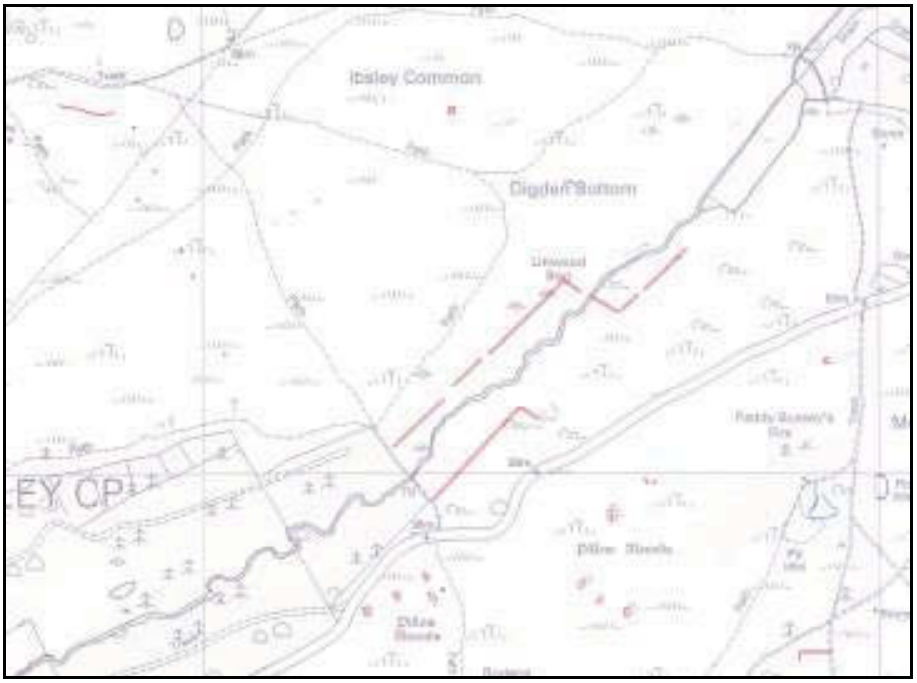


Figure 52. A probable late post medieval timber plantation and other post medieval features on Ibsley Common. **© Crown Copyright 2006HCC 100019180**. Reproduced from the Ordnance Survey map with the permission of the controller of Her Majesty's Stationery Office

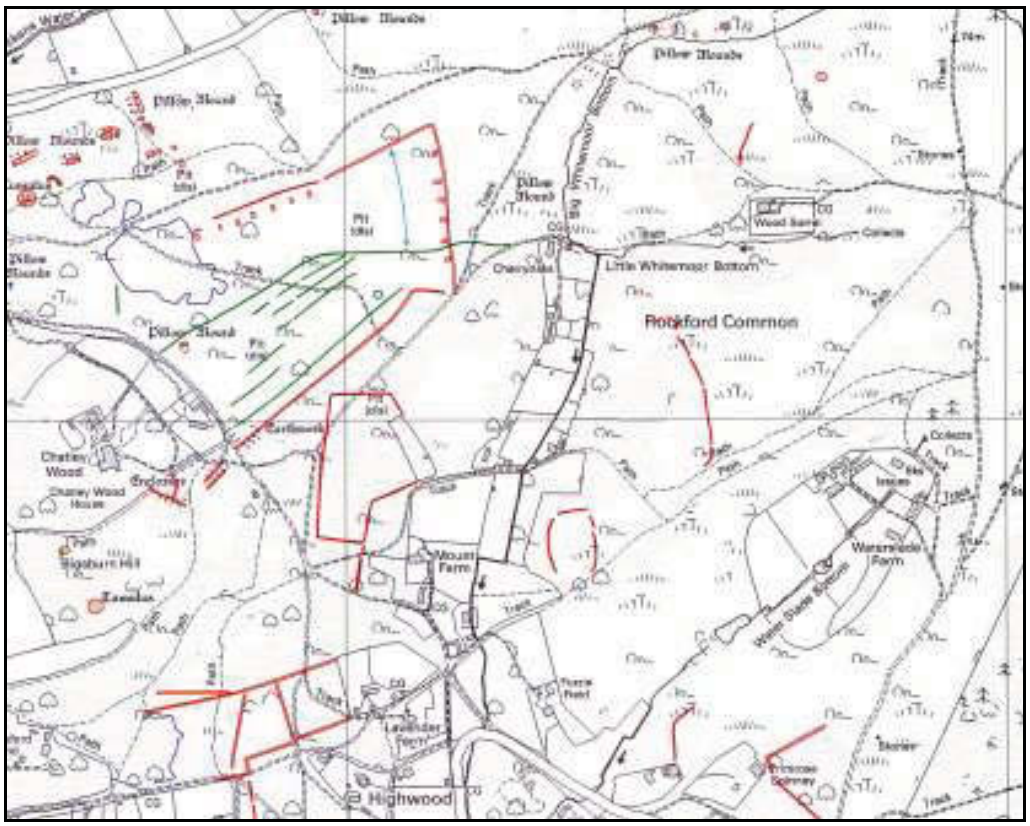


Figure 53. Earthwork features mapped at Rockford Common on the western edge of the New Forest. **© Crown Copyright 2006HCC 100019180**. Reproduced from the Ordnance Survey map with the permission of the controller of Her Majesty's Stationery Office

The largest of these, towards the top left of Figure 53, contains traces of ridge and furrow cultivation and lines of pillow mounds are arranged along its north and east

sides. Encroachment enclosures are the result of agricultural expansion illegally cutting into the forest boundaries. Encroachment dates from the late medieval or post medieval period but was especially prevalent during the eighteenth century (Smith, 1999). It is probable that the large enclosure on Rockford Common was an area of 'out-fields', cultivated sporadically and allowed to revert back to heathland – the presence of pillow mounds certainly suggests this. The smaller rectilinear enclosures to the south (towards the bottom left) are more typical of encroachment enclosures and these, adjacent to the settlements were more likely to represent in-field cultivation.

There are more fragmentary remains of rectilinear encroachment enclosures towards the bottom right of Figure 53. To the north of these, a more curvilinear enclosure and long curvilinear bank were mapped; the purpose and date of these features is unclear.

One other post medieval archaeological feature characteristic of the New Forest is the so-called 'bee garden' and several of these, including some new examples, were identified during the project. Despite their exotic sounding name bee gardens are utilitarian features consisting of small, usually square, banked enclosures designed to protect groups of straw beehives from being damaged or disturbed by livestock. These Holmesley Ridge type enclosures (to give them their more prosaic name) are a feature of the New Forest heathlands and one is shown in the northernmost part of Figure 52.

7.3 Overview of medieval and post medieval features

NMP mapping identified a large number of agricultural features from the medieval and post medieval periods. Aerial photographs are a valuable source for the study of the development of the landscape as they record much that has been destroyed or levelled since the Second World War as a result of the expansion of building or modern ploughing. In particular the mapping and recording of former field boundaries provides the potential for further research, complemented by documentary evidence, into the origin and development of the medieval and post medieval field pattern in the aggregate landscape.

The project has demonstrated that the extent of water meadows and the range of form and the complexity of their development have yet to be fully explored. The detailed mapping of water meadows makes a useful contribution to further research into their form, development and chronology.

New evidence was provided for the exploitation of commons and heathland on the western fringe of the New Forest. The project has demonstrated that future NMP projects or similar surveys, such as LIDAR, would be likely to provide further new evidence.

Few abandoned or shrunken settlements were recorded. One reason for this might be the comparative lack of specialist earthwork photography and it is likely that future targeted earthwork reconnaissance might reveal evidence for settlements not currently recognised.

8 NMP results: twentieth century sites

During the project 386 sites dating from the twentieth century were identified, amounting to 14% of all site records in the project database. Almost all the records are for new sites, representing a significant enhancement of baseline data for the modern archaeological resource in the aggregate landscape. Twentieth century sites were recorded from all parts of the project area. There are significant concentrations in East Hampshire, in the Blackwater catchment, and around the town of Eastleigh on the northern outskirts of Southampton (Figure 54).

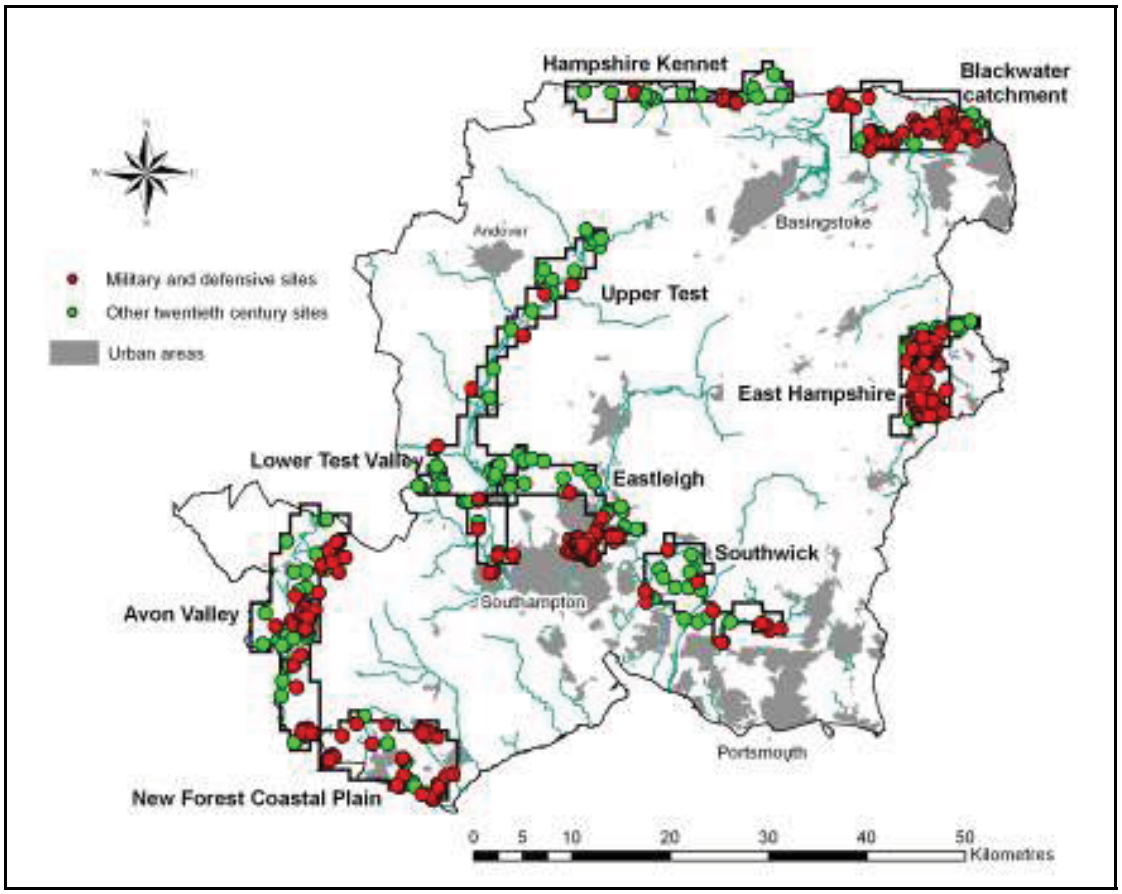


Figure 54. Distribution of twentieth century archaeological sites in the aggregate landscape

These concentrations are of military and defensive features and they reflect the national importance of Hampshire in terms of the archaeology of twentieth century conflict and the archaeology of military training. The non-military sites are predominantly quarries, pits and drainage systems and the great majority of these were double-indexed as being post medieval or modern in date.

The character of the archaeology is different in each of the three areas where there are dense concentrations of military features.

Large numbers of features dating from the Second World War were identified in the area immediately east of Eastleigh and centred around Eastleigh airfield (now Southampton International Airport). Eastleigh airfield was established as a military airfield in 1917, became a civilian airport during the 1920s and was used by the RAF during the Second World War. It is famous in aviation history as the base from where the Spitfire made its maiden flight and where Spitfires were test-flown.

Although some of the sites mapped here during the project are associated with activity at the airfield, such as aircraft hangars and dispersals, for the most part they

related to the defence of Southampton. The defences include barrage balloon bases, pillboxes, anti-tank road blocks, gun emplacements, an air-raid shelter and emergency water storage tanks (Figure 56).

One site of particular interest is at Bassett Green, to the west of the airfield, where a heavily defended building was surrounded on three sides by anti-tank blocks. It had pillboxes on either side of its main entrance and the road in front of it was guarded by road-blocks and stopping posts (Figure 55).

Figure 55. Heavily defended building at Bassett Green, Southampton. Photo: RAF 106G/UK/600/6080 04-AUG-1945 English Heritage. NMR (RAF Photography)

Figure 56. A wartime air raid shelter on a street corner in Bassett Green, Southampton. Photo: RAF 106G/UK/932/6029 17-OCT-1945 English Heritage. NMR (RAF Photography)

In the Blackwater catchment the military features are focused on two main areas. The first is Yateley Common and its environs. Yateley Common has long been used as a military training area and one of the most important features here is a series of trenches interpreted as First World War training trenches (Figure 57). This is an important finding because few remains of 1914 – 1918 training activities are currently recorded from Hampshire, despite the Hampshire coast being an embarkation point for the Western Front and despite the substantial military bases in the county at that time.

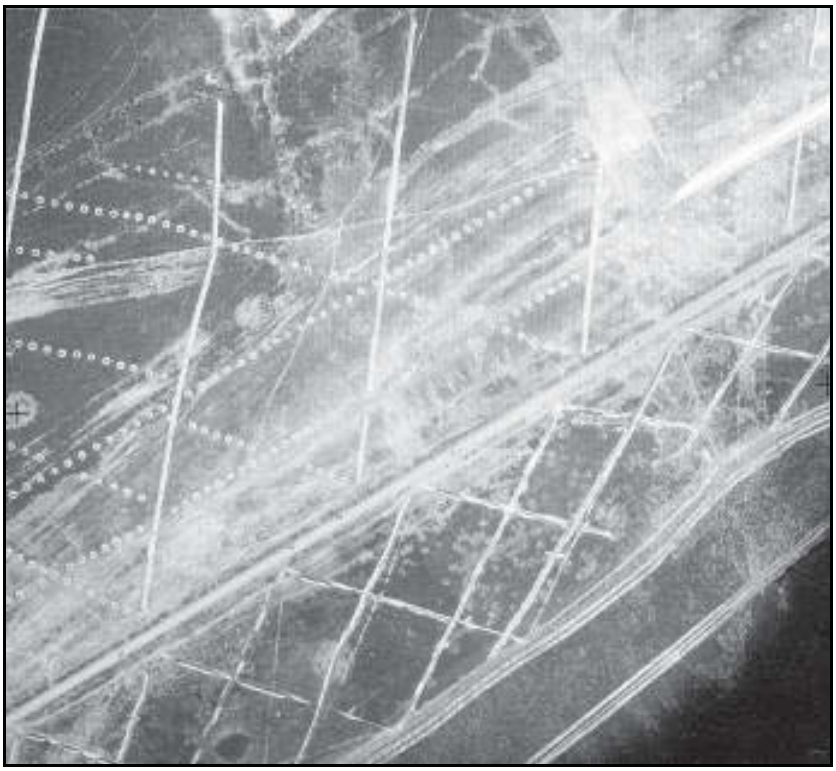


Figure 57. A lattice arrangement of aircraft obstruction features at Yateley Common, Blackwater catchment. The faint network of trenches towards the top of the image are thought to date from the First World War. Photo: RAF 13T/AC19/166 (6431) 02-APR-1942. English Heritage. NMR (RAF Photography)

A second phase of earthworks at Yateley Common comprised extensive aircraft obstruction features (commonly referred to as 'anti-glider trenches') consisting of lines of trenches and pits with upcast mounds criss-crossing the area. Features such as these were dug in areas of open country across Britain in the summer of 1940 in response to the threat of airborne invasion (Figure 57). The final phase of this military landscape began in 1942 when an RAF fighter station was built on the site; this was later taken into civilian ownership and is now Blackbushe airfield.

A few kilometres to the west of Yateley Common is the second important concentration of military features. These are anti-invasion defences and formed part of a Stop Line known as the GHQ Line A which ran between Heckfield and Ewshot. Stop Lines were heavily fortified defensive lines established in the spring and summer of 1940 and GHQ Line A was one of a series designed to defend London's western approaches. In places the line incorporated the river Whitewater. Originally it would have included barbed wire entanglements, mortar emplacements and machine gun posts, but on 1940s aerial photographs the visible features consist of pillboxes, a filled-in anti-tank ditch and rows of anti-tank blocks (Figure 58).

Figure 58. The GHQ Line A to the south of Heckfield, Blackwater catchment. The line of the anti-tank ditch runs in a zigzag pattern through the fields from north to south. There are pillboxes hidden in field hedges to the east. Photo: RAF 106G/UK/1647/2019. 11-JUL-1946. English Heritage. NMR (RAF Photography)

In East Hampshire the remains are those of twentieth century military training. Because of its open and agriculturally poor nature and its proximity to London this area developed as the nation's principal training ground (until it moved to Salisbury Plain), and various training establishments developed here, including Aldershot, Woolmer and Minley. The military presence here began in the late nineteenth century and the earliest features are a series of redoubts on Broxhead Common which probably date from the Boer War. One hundred previously unrecorded twentieth century sites were identified in this area during the project. Almost all are for military

features, most of which relate to Bordon Camp which is still in use by the military. Many of the sites are associated with long-term use of the landscape around the camp complex as a training area. Bordon was used as a storage and redistribution centre for troops and equipment for a limited period during the Second World War and a large number of sites associated with this activity have been identified including nine camps, three railway sidings and a timber pond (Figure 59).

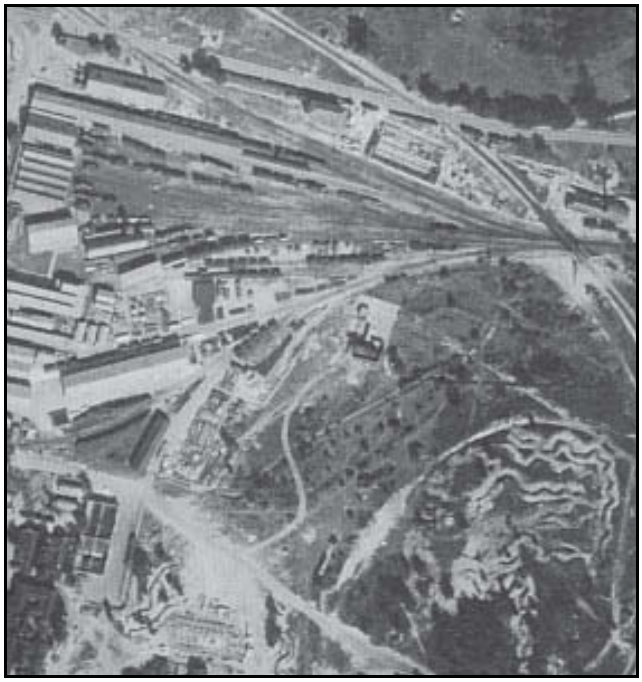


Figure 59. The depot and railway sidings at Bordon Camp, East Hampshire, with Second World War slit trenches. Photo RAF 13H/AC33/2. 19_APR_1942 © English Heritage. NMR (RAF photography)

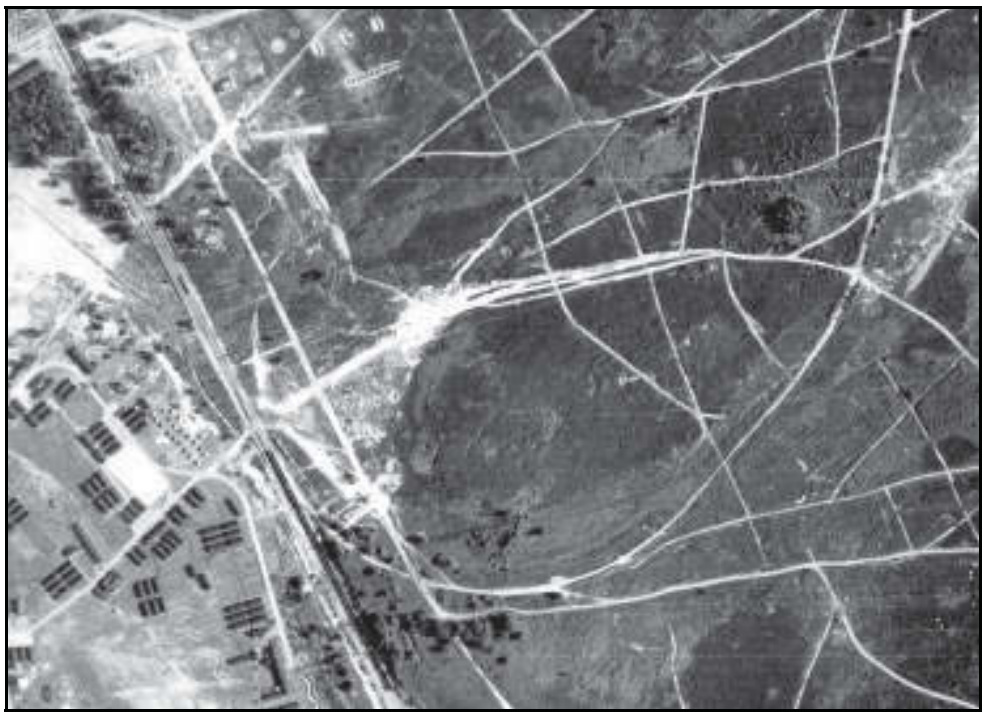


Figure 60. Tank tracks, silt trenches, a firing range and other twentieth century military features at Longmoor Camp, East Hampshire. Photo RAF 106G/UK/838/3080 25-SEP-1945. © English Heritage. NMR (RAF photography)

Similarly the training areas to the south east of Bordon – Woolmer, Weaver Downs and Longmoor Inclosure - have produced many new sites associated with military training. These features include rifle butts, firing ranges, shell holes and numerous tank tracks. There are many crenulated and zigzag slit trenches both within the camp perimeters and in the surrounding heathland and more extensive trench complexes in the open heathland.

Two difficulties were encountered during the mapping of the East Hampshire heathlands. The first arose from the fact that this area is still used for military training and determining which features are abandoned and which might still be in use was not always straightforward. Comparison of 1940s photographs with those from more recent flights guided these decisions. The second issue concerns a number of features clearly associated with training but whose function is uncertain; specialist knowledge would be needed to fully interpret these.

The mapping of twentieth century features in East Hampshire is one of the important aspects of this project. The project has shown that there is a greater range of archaeology of military training surviving in this landscape than had hitherto been identified but the nature of this archaeology and its inherent importance is far from clear. The archaeology of the training here and on the neighbouring Surrey heaths may well prove to be of national importance when better understood.

Elsewhere a range Second World War features were identified at locations throughout the aggregate landscape. Airfields, including temporary grass airfields in the New Forest area, camps containing Nissen type buildings, anti-aircraft batteries, bombing decoys, searchlight batteries, anti-tank blocks and pillboxes were all recorded. Most of these features have been removed over the last 60 years or destroyed. In some cases, however they have left their imprint on today's landscape (Figure 61).

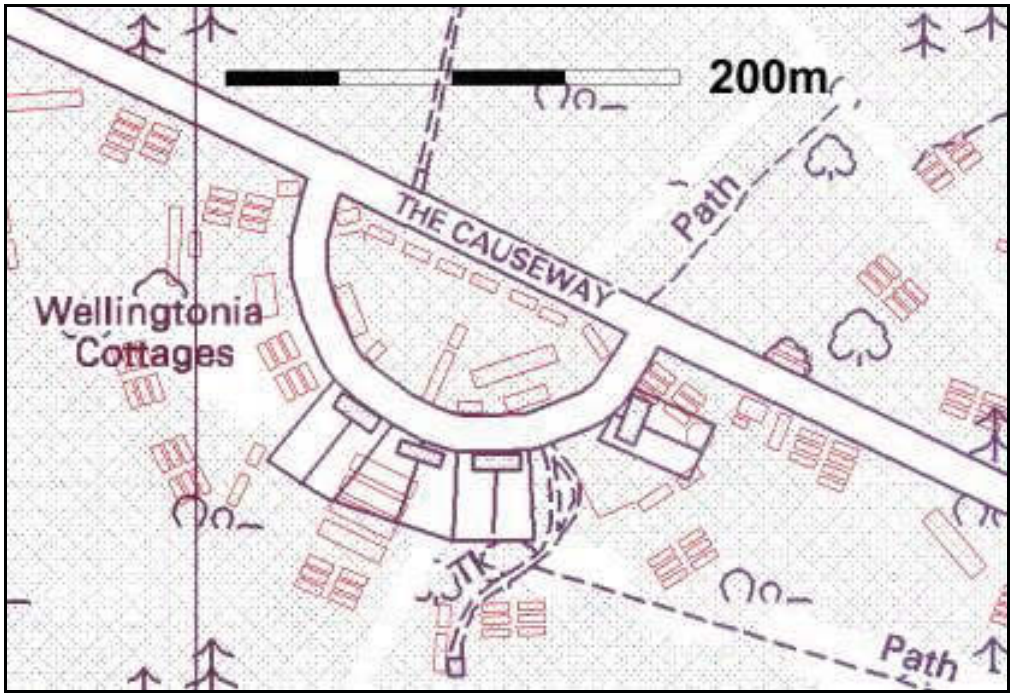


Figure 61. Part of a Second World War camp on Heckfield Heath, Blackwater catchment. Although the camp buildings have been demolished the crescent around which they were arranged and which was laid as part of the camp is now in use as a residential road.

8.1 Overview of twentieth century features

Hampshire has a rich legacy of twentieth century military archaeology and this is especially the case in the aggregate landscape.

Archaeological interest in this period is of recent origin and much of the work has been carried out by volunteers and has been interest-driven. For the most part professional involvement has been stimulated by threats to surviving structures. Although the Defence of Britain Project generated some records in the aggregate landscape the coverage was generally inconsistent.

NMP mapping has recorded substantial numbers of new Second World War features and, in doing so, has highlighted the uneven nature of the record for twentieth century military archaeology in the AHBR.

The archaeology of the training in the area of Aldershot (North and East Hampshire and bordering parts of Surrey) may prove to be of national importance when better understood. Projects such as NMP, combined with specialist involvement and advice are important in improving our understanding of this under-researched resource.

The First World War, although an overseas conflict, is reflected by a legacy of camps and training grounds, although most were temporary and the archaeology can be difficult to interpret. Generally the archaeology of this conflict is very poorly understood in Hampshire. Relatively few First World War practice trenches have been found in Hampshire to date, but it seems likely that, with further NMP projects, more will be identified.

9 Conclusions

The NMP mapping of the aggregate landscape identified more than 2,000 previously unrecognised archaeological features, almost doubling the number of recorded sites in the project area. In this respect the project fulfilled its aim of providing a fuller awareness of the range and extent of archaeological remains in the aggregate producing areas of the county.

The enhanced awareness of the archaeological resource of the aggregate landscape will facilitate management of the area's historic environment on two levels. Firstly at the site specific level; reviews of existing minerals planning permissions and the assessments of new applications for permission can be made from a better-informed position. Secondly at a strategic level; NMP mapping will help define those parts of the aggregate landscape most sensitive to development in the form of mineral extraction.

The enhancement of baseline data will ensure more effective evaluations and the research framework developed from the project (contained in the detailed project report [Young et al 2008]) will provide a context into which future archaeological interventions are undertaken.

The main outcomes of the NMP mapping and recommendations for further survey and research are set out below.

The majority of the sites recorded were medieval or post medieval cultivation remains, but substantial numbers of late prehistoric and/or Romano-British features were identified as was a wide range of twentieth century military and defensive remains.

The results do not significantly alter current understanding that since late prehistory the aggregate landscape, comprising river valley gravels, infertile plateau gravels and sandy heathlands, has been used differently from the surrounding chalk downland. Nonetheless the results provide a better understanding of the nature and extent of the prehistoric and Romano-British settlement pattern in the wider valleys, those of the Avon, Blackwater and Test, parts of which appear to have been relatively densely populated.

NMP mapping raises the possibility that some Neolithic monuments may be located in the aggregate landscape, beyond the limits of their previously known distribution. Further investigation of possible round houses mapped during the project may confirm the suggestion that some represent Bronze Age settlement. In the wider valleys complex and superimposed Iron Age and Roman settlements resembling those on the chalklands were identified; in other parts of the aggregate landscape they are absent. The reasons for this are another avenue for future investigation.

The medieval open fields which characterise the chalklands do not extend into the aggregate landscape but the large number of field enclosures mapped here during the project will inform any future research into the development of the historic landscape based on analysis of field patterns coupled with documentary evidence and Historic Landscape Characterisation.

NMP mapping has demonstrated that the extent of water meadows, the range of their form, their complexity and their development have yet to be fully explored. The detailed mapping of water meadows carried out during the project provides a useful contribution to further research into these aspects.

Substantial numbers of new Second World War features were identified, highlighting the uneven nature of the record for twentieth century military archaeology in Hampshire's AHBR. A small number of First World War features were also mapped. Generally the archaeology of this conflict is poorly understood in Hampshire, and it is

likely that any future NMP projects will further enhance knowledge of the nature and extent of twentieth century military features in the county.

Specialist reconnaissance over parts of the project area has been hampered by restricted airspace and as a result oblique coverage is patchy. In general there has been little specialist earthwork reconnaissance of the aggregate landscape. New sites were identified from oblique photography taken over the last decade. For these reasons there remains considerable potential for the discovery of archaeological remains through continuing programmes of reconnaissance.

The project has demonstrated that there is the potential for identifying previously unrecognised earthwork features in the heathland areas of Hampshire. In these areas any future survey from aerial photographs might be supplemented by LIDAR survey.

At a number of parkland locations (e.g. Stratfield Saye; Longstock Park; Heckfield Place) there is good survival of earthwork remains, suggesting that topographical survey of parkland might enhance the results of the mapping project.

Three of the river valleys in the project area, the Avon, Kennet and Blackwater, mark the boundary of Hampshire with neighbouring counties. The Dorset and Berkshire sides of these valleys are obvious targets for similar NMP projects to provide complete surveys of the coherent landscapes these valleys form.

The archaeology of the training in the area of Aldershot (North and East Hampshire and bordering parts of Surrey) may prove to be of national importance when better understood. A mapping project in this landscape, guided by specialist involvement and advice, would be an important initiative towards improving our understanding of this under-researched resource.

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Appendix 1 Methodology

Sources

Aerial photographs

All relevant aerial photographs housed at the two collections listed below were consulted during the project.

The NMR collection

The National Monuments Record Centre (NMRC)

Kemble Drive

Swindon

SN2 2GZ

The NMR collection contains a large number of vertical photographs. These were taken at various scales for non-archaeological purposes, such as military and cartographic reconnaissance and civil engineering projects. The collection also contains specialist oblique photography resulting from archaeological reconnaissance, and oblique photography taken by the RAF during the 1940s and 1950s for military purposes.

The CUCAP collection

Air Photo Library

Cambridge University

Unit for Landscape Modelling

Sir William Hardy Building

Tennis Court Road

Cambridge

CB2 1QB

The CUCAP collection contains a small number of vertical photographs taken for a range for non-archaeological purposes. The collection also contains specialist oblique photography resulting from archaeological reconnaissance.

The third major collection of relevant photographs is housed at the offices of Hampshire County Council. Due to timescale constraints it was not possible to consult these photographs during the 2006/2007 phase of the project. This collection was, however, consulted during the mapping in 2007/2008. The collection consists of vertical prints dating from four Census Surveys (1971, 1984, 1991 and 1995). The address of the collection is:

Hampshire County Council

Environment Department

Room 210

Ashburton Court West

The Castle

Winchester

SO23 8UD

In total 24,522 aerial photographs were consulted during the project. These consist of 21,517 vertical prints, 2,393 specialist oblique photographs, and 612 military obliques.

The numbers and types of photographs consulted for each of the nine areas mapped in are listed below.

Sub-unit	Verticals	Obliques	Military obliques	Total
Avon valley	2826	523	140	**3489**
East Hampshire	1971	97	16	**2084**
New Forest Coastal Plain	3194	98	282	**3574**
Lower Test valley	3138	244	33	**3415**
Hampshire Kennet	1702	479	0	**2181**
Blackwater catchment	2277	210	12	**2499**
Southwick	1968	121	0	**2089**
Eastleigh	2892	55	81	**3028**
Upper Test	1549	566	48	**2163**
Total	**21,517**	**2,393**	**612**	**24,522**

The main photographic collection is that at the NMRC. Available photographs consisted of 20,050 verticals, 2,271 specialist obliques and 612 military obliques. A loan arrangement was put in place enabling the consultation of these photographs at Cornwall County Council's offices in Truro. Under the terms of this arrangement photographs were loaned to the project team one sub-unit at a time.

Photographs contained in the collection held at CUCAP consisted of 552 verticals and 122 specialist obliques; these were loaned out at up to 100 photographs per loan.

Photographs in the HCC collection amounted to 915 verticals; these were consulted at the HCC offices in Winchester; scans were made of photographs as necessary and transcriptions made from the scanned images.

Full details of the photographs from these collections are contained in the project archive.

Archival sources

Three archival sources were consulted to further understand the archaeology of the project area and to aid interpretation of specific sites.

- Hampshire AHBR and HLC data
- First Edition Ordnance Survey map of 1870-1880
- The NMR Archives and Monuments in England (AMIE) database (containing monument, event and archive records

Previous Survey Work and Research

The Hampshire cropmark ArcGIS shapefile was consulted on an ongoing basis during the project. An aerial photographic transcription of the area around Silchester Roman town (RCHME 1995) formed the basis of NMP mapping of this area.

Archaeological scope of the project

All visible archaeological features, dating from the Neolithic to the twentieth century (pre- 1946), were recorded. These include both plough-levelled sites and those with upstanding remains. Sites appearing on OS maps which have not been photographed or which are completely obscured by vegetation were not recorded. Features still in use or fossilized by later structures that are still in use, e.g. buildings, field walls, canals, railways, leats and hedges, were not recorded.

- **Plough-levelled features and earthworks**

All cropmarks and soilmarks representing buried 'negative' features (i.e. ditches and pits) or plough-levelled earthworks were recorded. All upstanding earthwork sites visible on aerial photographs were recorded, whether or not they had been previously surveyed (including those marked on the OS maps), and whether or not they are still extant on the most recent photography. The project database recorded which elements of any particular archaeological site survive or have been levelled and/or destroyed.

- **Ridge and furrow**

All areas of medieval and post medieval ridge and furrow were mapped using a standard convention to indicate the extent and direction of the furrows. The same convention was used to map areas of pre-1945 cultivation marks. The standard convention distinguishes between plough-levelled and upstanding ridge and furrow but not differences in date. Suggested dates were, however, recorded in the project database.

- **Water meadows**

Areas of extensive water meadows thought to pre-date 1945 were transcribed and recorded. The lines of the main drains and leats were mapped in full, plus a sufficient sample of the minor water courses to give a true feel for the extent and pattern of the whole.

- **Buildings and structures**

The foundations of buildings and structures appearing as ruined stonework, earthworks, cropmarks, soilmarks or parchmarks were recorded. Standing roofed or unroofed buildings and structures were not, except in a few instances in which no other adequate map record existed. A specific exception was the recording of military installations (see twentieth century military features, below).

- **Industrial features and extraction**

All extractive features believed to pre-date 1945 were mapped. These included large-scale features such as quarries and pits, as well as small-scale extraction of resources for local use (e.g. minor stone quarries and gravel extraction).

- **Twentieth century military features**

Twentieth century military features were recorded to an appropriate level of detail. The extent of large military complexes such as airfields or camps was depicted using the 'extent of area' symbol. Major buildings and structures within military complexes as well as isolated structures, e.g. pillboxes or slit trenches, were fully mapped and recorded.

- **Field boundaries and field systems**

Removed field boundaries and field systems were plotted as long as they were considered to predate the OS First Edition map (1870-1880) and were not already recorded on that or any other OS map.

- **Parkland, landscape parks, gardens and country houses**

All park and garden landscape features (including deer parks) visible on aerial photographs but not previously recorded by the OS were plotted.

- **Transport features**

Major transport features (i.e. disused canals and main railways) are included in the Ordnance Survey sphere of interest and subsequently appear on OS mapping; these were therefore not mapped. Smaller features (e.g. local trackways associated with quarries), which were outside the Ordnance Survey sphere of interest, were mapped as were trackways, pathways and roadways considered to be post medieval or earlier in origin and not already recorded by the OS.

- **Natural features**

Geological, geomorphological, and other natural features were not mapped except in a few cases when alternative, archaeological interpretations were possible. In these cases the site records were double-indexed with both interpretations.

Transcription

The results of the mapping were produced entirely in digital format using AutoCAD 2002 and 2007. Transcription comprised the following processes.

1. Information was derived from the photographs available in the collections identified above.
2. Oblique and vertical photographs were scanned.
3. Rectified transformations of archaeological features visible on the scanned photographs were produced using AERIAL 5.2. Digital copies of current OS 1:10,000 maps were used for control information and as a base for mapping in AutoCAD. Where necessary digital terrain models (DTM) were created using digital contour data prior to rectification of the photographs.
4. The rectified images were imported into the relevant AutoCAD drawings.
5. Archaeological features were digitally transcribed in AutoCAD according to a specified layer structure and using agreed line and colour conventions (see section 1.4).
6. Polygons were drawn around each separate monument to define its extent.
7. Quality assurance checks were carried out by each member of the project team on selected map sheets to ensure that all sheets were completed to NMP standards.

Data processing

Project database

A repurposed version of the Cornwall HER Access database was used as a stand-alone project database. A few minor changes were made to certain fields to bring it in line with current national standards and background tables were populated with Hampshire information, such as Parish and District lists.

Monument records with automatically generated unique site record numbers were created in the project database for each site mapped.

Where the site was already recorded in the Hampshire AHBR, the existing AHBR record number was recorded as were any relevant AMIE Hob UID numbers.

AutoCAD attached object data

Three object data tables were incorporated into each AutoCAD drawing to enable concordance with the Hampshire GIS and to facilitate basic analysis of the drawings.

The Project ID number generated by the Project Database, the AHBR number of any site with an existing Hampshire AHBR record and the AMIE Hob UID of each site (where it existed) was recorded in the first table.

The second table recorded basic interpretative information and contained four fields; period, type, form, and photo number as well as including a comment field.

The third table recorded the date, surveyor, scale of survey, and copyright information.

These tables were attached to all plotted features and the relevant polygon defining the monuments.

GIS shapefiles

Each AutoCAD drawing was exported as an ArcGIS shapefile to the project GIS. Each mapped site could then be linked to the project database through the attached Project ID number.

Selected fields in the project database were attached to the individual features within the shapefiles; these fields are set out below.

Project ID number

AHBR number

AMIE Hob UID number

Site type

Form (cropmark/earthwork)

Date

Short description

Photograph serial number

Easting

Northing

Data exchange

The data mapped during this stage of the project was provided to HCC as a series of ArcGIS shapefiles to be incorporated as a layer into the county GIS with the attributes contained in the Access database attached. This layer can function immediately as a data source in the Hampshire GIS. The creation of new records in the Hampshire AHBR will be carried out by HCC as part of a wider data entry programme in the future.

Copies of the shapefiles will also be provided to the NMR for incorporation in to the NMR GIS. A copy of the project database will also be sent to the NMR so that the data can be transferred to the NMR AMIE database. Proposed fields for data migration are in line with EH minimum standards for monument recording and are tabled below.

PROJECT DATABASE FIELD(s)	AIME DATABASE FIELD(s)
OS Map	**Quarter Sheet**
AHBR no	**Assign other monument Identifiers** *Identity Method*: AHBR Number *Value*: AHBR monument HOB UID
Summary **Text**	**Summary** **Long Text**
District/Parish	Automatically generated by GIS
Period	**Period** NB tables will need to be correlated.
Site Type	**Class scheme** *Monument Type* **Term**
Form	**Class scheme** *Evidence* **Term** NB tables will need to be correlated.
NGR	Needs discussion to ascertain how to fill minimum fields
OS Number Populated with NMR number where one exists.	This field could be used to automate concordance, or pull out records which require concordance
Photos Date Source Serial Number	**General Archive References** Title: GAM number (may need some data concordance) Source number
	References of Archives to Monuments? Object Title and Object Number from NMR
	Associated Events: Generated from the NMR
Created By **Created**	**Roles attached to Monument** Name Date Organisation: automatically tag all records with Cornwall HES.
PRN	**Other Monument Identifiers**

Project outcome

A series of AutoCAD drawings was produced showing all archaeological features visible on aerial photographs for each of the four sub-units.

The project Access database containing information and descriptions of all archaeological sites mapped during the project was populated with 2,576 records.

The AutoCAD drawings with Access data attached were exported as ArcGIS shapefiles.