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ISBN 1-874350-36-1

Archaeological Research Agenda for the Avebury World Heritage Site

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Avebury Archaeological & Historical Research Group (AAHRG)

ENGLISH HERITAGE

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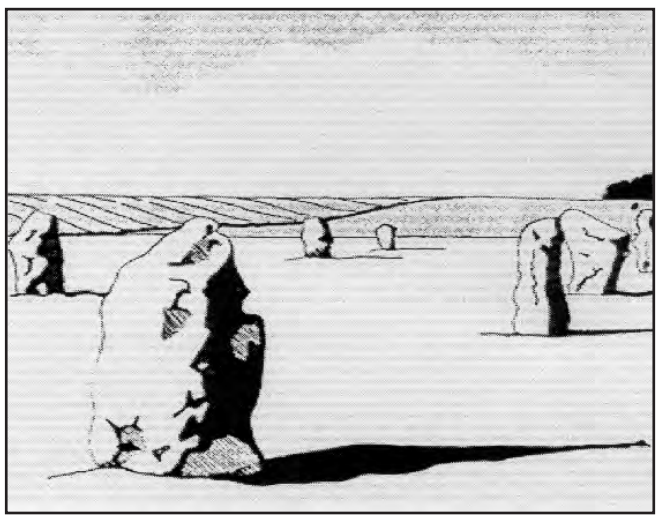

Avebury Archaeological & Historical Research Group (AAHRG)

February 2001

Published 2001 by the Trust for Wessex Archaeology Ltd
Portway House, Old Sarum Park, Salisbury SP4 6EB
Wessex Archaeology is a Registered Charity No. 287786

on behalf of English Heritage and the Avebury Archaeological & Historical Research Group

British Library Cataloguing in Publication Data
A catalogue entry for this book is available from the British Library

ISBN 1–874350–36–1

Produced by Wessex Archaeology
Printed by Cromwell Press Ltd, Trowbridge

The cost of this publication was met by English Heritage

Front Cover: Avebury: stones at sunrise (© English Heritage Photographic Library. J920762, Sept 1992)

Back Cover: Aerial photograph of the Avebury Henge (© English Heritage Photographic Library. K910422, May 1991)

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Acknowledgements

The authors and editors of this volume would like to thank all past and present members of AAHRG for their various contributions which have made this publication possible. Thanks are due to Amanda Chadburn, Julie Gardiner, Kate Fielden and Melanie Pomeroy for editing, and to Nick Burton for compiling the maps.

The individual authors would like to thank the following for reading and commenting on earlier drafts and for providing help and additional data: Dave Batchelor; Andrew David; Duncan Coe; Bruce Eagles; Dave Field; Andrew Fitzpatrick; Charly French; Philip de Jersey; Julie Gardiner; Alex Gibson; Mark Gillings; Andrew Lawson; Rebecca Montague; Mike Pitts; Josh Pollard; Julian Richards; Colin Shell; Isobel Smith; Geoffrey Wainwright; Alasdair Whittle; the staff of English Heritage Aerial Survey, Avebury WHS Mapping Project and National Monuments Record.

Illustrations

The distribution maps, Figs 1–3, 9, 10, 13, 15 and 19, and Fig. 18, were produced by Nick Burton via the Avebury WHS Geographical Information System © English Heritage; Figs 6 and 17 were produced by RCHME © English Heritage; Fig. 21 after Jewell 1963; Figs 4, 5 and 7 © The National Trust; Figs 11 and 12 © Wiltshire Heritage Museum, Devizes; Fig. 16 © Mick Aston; Fig. 14 after Corney 1997b, fig. 1.

Foreword

Avebury and Stonehenge are part of the same World Heritage Site. Both have Management Plans which place considerable importance on the encouragement and promotion of academic research to achieve a greater understanding of their rich cultural heritage. There was a unswerving belief on the part of all those associated with the completion of the Management Plans that such research and the understanding it brings are not optional extras, but essential for the appropriate management of the heritage assets which make these World Heritage Sites outstanding landscapes of universal significance.

For both Avebury and Stonehenge the work has begun with the compilation of a gazetteer of what is known and the codification of that information with compatible machine-based formats employing the latest technology with particular reference to geographical information systems. Such records have been compiled and are accessible to the public as well as to academics and land-managers. Subsequent conferences and documents identified the gaps in our understanding and promoted appropriate research topics and methodologies to fill these. For Avebury this was accomplished over a long period of time by many people and this document is a tribute to their persistence and determination. It portrays in classic format a statement of what is known and what we now need to know. In time the document will become outdated as new research necessitates reviews. A fear of obsolescence should never prevent the compilation of research agendas. Indeed there is a case for arguing that their value is best gauged against the frequency with which they are reviewed.

Improved understanding is the key to good land management and this excellent document provides the essential adjunct to the Management Plan. Both documents must develop together to ensure their mutual success and one may feel confident that the Avebury Archaeological and Historical Research Group will ensure that the proper priorities are maintained.

Geoffrey Wainwright
November 2000

Summary

This volume draws together contributions from a number of specialists to provide an agenda for future research within the Avebury World Heritage Site. It has been produced in response to the English Heritage initiative for the development of regional and period research frameworks in England and represents the first formal such agenda for a World Heritage Site.

Following an introduction setting out the background to, need for and development of the Research Agenda, the volume is presented under a series of major headings. Part 2 is a resource assessment arranged by period from the Lower Palaeolithic to the end of the medieval period (c. AD 1500) together with an assessment of the palaeo-environmental data from the area. Period 3 is the Research Agenda itself, again arranged by period but focusing on a variety of common themes. A series of more over-arching, landscape-based themes for environmental research is also included.

In Part 4 strategies for the implementation of the Research Agenda are explored and in Part 5 methods relevant for that implementation are presented.

Résumé

Cet ouvrage rassemble les contributions d'un certain nombre de spécialistes pour établir un programme de recherches pour l'avenir sur le site d'Avebury, inscrit au Patrimoine Mondial. Il a été élaboré à la suite d'une initiative d'English Heritage en vue de développer des schémas pour la recherche par région et par période en Angleterre et constitue le premier programme officiel de cet ordre pour un site inscrit au Patrimoine Mondial.

Après une introduction qui retrace l'arrière-plan du programme de recherches, en explique la necessité et le développement, le volume se présente sous la forme d'une série de grands intitulés. La deuxième partie consiste en une évaluation des ressources par époque et s'étend du paléolithique inférieur à la fin de la période médiévale (c. 1500 ap. J.-C.) ainsi qu'en une évaluation des données relatives au paléo-environnement de la région. Le programme lui-même constitue la troisième partie, également ordonnée par période mais se concentrant sur divers thèmes courants. Elle comprend aussi une série de thèmes plus compréhensifs fondés sur le paysage et destinés à la recherche environnementale.

Dans la quatrième partie, on explore les stratégies pour la mise en application du programme de recherches et dans la cinquième, on présente les méthodes appropriées à cette mise en place.

(Annie Pritchard)

Zussamenfassung

Dieser Band beinhaltet Beiträge von Spezialisten zur Planung zukünftiger Forschungen im Avebury Weltkulturerbe. Er wurde auf eine Initiative des English Heritage hin zur Entwicklung regionaler und auf Perioden bezogener Forschungsrahmen in England produziert und stellt den ersten formalen Forschungsplan für ein Weltkulturerbe dar.

Es beginnt mit einer Einführung, die den Hintergrund des Forschungsplans, dessen Notwendigkeit und seine Entwicklung erläutert, und wird durch weitere Teile ergänzt. Bei Teil 2 handelt es sich um eine Bewertung der Resourcen, die nach Perioden geordnet sind. Dies beginnt mit dem frühen Paläolithikum und geht bis zum Ende der mittelalterlichen Periode (ca. 1500 AD). Eingeschlossen darin ist eine Bewertung der paläoökologischen Daten des Gebietes. In Teil 3 wird der Forschungsplan selbst dargestellt, wobei wieder nach Perioden geordnet wird, und dabei aber auch eine Vielzahl von allgemeinen Themen behandelt werden. Zusätzlich sind eine Reihe von weiter greifenden, auf die Landschaft bezogenen Themen für ökologische Forschungen enthalten.

In Teil 4 werden die Strategien für die praktische Anwendung des Forschungsplans untersucht, und in Teil 5 werden schließlich die Methoden vorgestellt, die für diese Anwendung relevant sind.

(Peter Biehl)

Part 1: Introduction

Amanda Chadburn and Melanie Pomeroy-Kellinger

1.1 Background

The Avebury World Heritage Site (WHS) and its wider hinterland comprises a landscape which is a palimpsest of archaeological features. Avebury is one of a small number of areas in southern Britain which appears to have acted as a focus for ceremonial and ritual activities during the Neolithic and Early Bronze Age; it is one the richest and most varied of these areas. The particularly rich assemblage of archaeological sites, both visible and buried, provides a vivid record of past landscape patterns and use and has exerted a considerable visual and cultural influence on the surrounding landscape for more than 5000 years.

The Avebury WHS, an area of 22.5 square kilometres, together with Stonehenge, was inscribed onto the World Heritage List by UNESCO in 1986 in recognition of its outstanding universal value. Avebury is located on the Marlborough Downs in Wiltshire, around 40 km north-west of Stonehenge. The Avebury Henge and Stone Circles, Silbury Hill, West Kennet Avenue and other associated sites greatly contribute to a distinctive historic and cultural landscape.

Since 1990 a group of archaeologists has been meeting regularly to discuss archaeological issues affecting the Avebury WHS (Chadburn 1998). From February 1996 onwards a key focus of discussion has been the formulation of a comprehensive research agenda for the WHS and its wider hinterland. During the last decade, the composition of the group has often changed, and this publication represents the written and verbal contribution of many people (Appendices A and B). This volume takes the form of a series of individually-authored papers written in consultation with other members of the Avebury Archaeological and Historical Research Group (AAHRG), rather than a document written by committee. The following text therefore displays a diversity of styles and approaches to the archaeological potential of the area.

AAHRG was set up in early 1993 following the publication by English Heritage in 1992 of the Management Statement for the Avebury WHS (English Heritage 1992) and AAHRG (1993). The EH document established a number of principles for management of the WHS, and recommended that two sub-groups be set up to assist a main WHS Working Party in the matters of a) archaeological and historical research and b) visitor and traffic management.

The specific role suggested for an archaeological sub-group was to:

> *seek to co-ordinate the efforts of the various bodies with interests in the WHS. Besides formulating broad research designs and meshing individual projects, such a group would allow for efficient information exchange*. English Heritage (1992, 11–12).

The Management Statement recognised that a suitable group to undertake this work – the Avebury Environs Forum (AEF) – had already been in existence since 1990. In due course the AEF agreed to undertake the role set out in the English Heritage Management Statement, although they reserved the right to meet separately if necessary as their role was wider than that set out by English Heritage.

In September 1996, a Management Plan Officer was appointed by the National Trust (funded by English Heritage), with the specific aim of writing a management plan for the Avebury WHS. This initiative was part of a national programme to ensure that all British WHS had management plans. The International Council on Monuments and Sites (ICOMOS) guidelines for the contents of management plans suggested that research programmes should be included (Feilden and Jokilehto 1993, 28 and 39).

The ICOMOS requirement was set against the general need for research designs in the wider archaeological community at this time. In 1995, following its earlier work on research frameworks (English Heritage 1991b), English Heritage conducted a survey of research designs in England to record existing research frameworks, and to make recommendations as a focus for a wide ranging debate about the way forward (Olivier 1996, 2). The publication of *Frameworks For Our Past* (*ibid.*) promoted the planning of future priorities for archaeological research and the development of regional strategies, resulting in publications such as such as *Wessex Before Words* (Woodward and Gardiner 1998) and *Framework for the Eastern Counties* (Glazebrook 1997). However, despite the ICOMOS guidelines, we have been unable to find any detailed published research agenda for any WHS, and we believe this document represents the first formal and detailed research agenda of this kind in the world.

Geoffrey Wainwright, the then chairman of the main Avebury WHS Working Party, suggested in late 1995 that AAHRG should take the research framework forward for use in the Avebury Management Plan. The published Management Plan (English Heritage 1998), taking into account the first draft Research Agenda (AAHRG 1997) heavily emphasises the need for ongoing archaeological research, the further development of the research agenda, and for sustainability in research methods (Section 1.2 below). The Plan also highlights the high potential for further

research and the close link between research and cultural heritage management in the Avebury WHS. One of the 26 main objectives in the Plan focuses specifically on research, aiming to:

> *Encourage and promote academic research to achieve a deeper understanding of the WHS necessary for its appropriate management. All research should be carried out with due regard to the principles of sustainability and to appropriate standards of work*. (English Heritage 1998, Objective Z).

The Research Agenda presented here is primarily concerned with academic and scientific research issues rather than management issues, and in this respect the Research Agenda and Management Plan are two separate documents. However, the two are designed to be closely intertwined and together they comprise a *universal framework* as described in *Frameworks for Our Pas*t (Olivier 1996, 5, and fig.1).

The recently published WHS Management Plan for Stonehenge announces the intention to develop a separate research agenda for this part of the WHS (English Heritage 2000, section 4.7.8).

1.2 The Need for a Research Agenda

Research agenda have long been the subject of archaeological debate in Britain. The introduction of *PPG* 16 (DoE November 1990) led to concerns that development-sponsored work was being undertaken in an academic vacuum. Even before this there were similar concerns, principally following the rescue programmes of the 1960s and 1970s. Recently, Olivier concluded that the archaeological discipline needed a general framework of well-synthesised investigation to support the development of a new generation of research, and to provide reference points for cultural resource management. In particular, regional as well as national strategies were needed (Olivier 1996, 2). Morris argued convincingly that research-driven archaeology was both good for archaeology and cost-effective, and that without research strategies and agenda 'all that happens is that another avalanche of data is added to a largely unconsulted archive which is increasingly unaffordable to store' (Morris 1997, 11).

Such problems were felt at the local level in the Avebury area which was, despite its international status, experiencing difficulties in the co-ordination of research. Although the importance of the key archaeological features has been recognised and studied, the cultural landscape of the Avebury WHS is not particularly well understood or documented. The extant earthworks are easily recognised and can be planned for and managed. However, a wide range of archaeological features and sites exists in the area, the evidence for which is less tangible and more elusive. There is a strong possibility of the discovery or rediscovery of as yet unknown archaeological sites, as illustrated by the recent discovery (1987–9) of the buried features of the impressive Late Neolithic 'palisade enclosures' complex at West Kennett and the 'Beckhampton Avenue' in 1999. Moreover, the RCHME (now English Heritage) has recently undertaken a thorough examination and transcription of all aerial photographic coverage of the WHS area as part of their National Mapping Programme (described in Section 5.7). This work has already resulted in the discovery of a number of previously unknown sites and landscape features, including ploughed-out barrows, enclosures and parts of field systems. Part 3 of this volume presents the many gaps in our current state of knowledge for all periods, and the great potential of the area for answering important research questions.

The Avebury WHS is well protected by the various designations for conservation and by planning policy. Thus, the opportunities for making new discoveries through the development control process are limited. This makes the existence of the Research Agenda and framework for implementation of crucial importance.

The WHS, because of its intrinsic values and international importance, does attract a great deal of interest and concern from the public as well as from archaeologists. The existence of the Research Agenda associated with the Management Plan is essential to aid a good level of public awareness and to stress that research is in the public interest.

The Sustainability of Research

It is essential for the long-term preservation of the WHS that all uses of the site are sustainable. Therefore, like any other land use, *research* has to be undertaken on a sustainable basis. In the context of research, sustainability can be defined as *meeting today's need for improved knowledge and understanding of the WHS without jeopardising the ability of future generations to do the same.*

Advances in knowledge rely on measures taken now to preserve enough physical and documentary evidence to allow future investigations and discoveries to improve understanding which can be passed on. This raises the question of what level of survival of physical evidence is needed to sustain such investigation into the future, allowing for ever-changing research interests. Paradoxically, excavation means the destruction of the physical evidence (apart from the artefacts and ecofacts). With advances in techniques in the future, it is probable that future generations of archaeologists will be able to extract more information from smaller samples of the evidence. For some interests, past destruction may already have precluded the pursuit of some lines of research; for some, nothing less than total

preservation of what remains will suffice; for others, a more modest level of preservation will be required. In the case of particular archaeological sites and monuments, different levels of preservation might be appropriate to support different lines of inquiry: the requirements of palaeoenvironmental research might be quite different from those of other lines of inquiry. The objective should be to aim at preserving the maximum rather than the minimum sample required to sustain future research.

Although some excavation and surface collection will be necessary to answer key research and hence management questions, it is recognised that these activities do diminish the evidence available to future generations of researchers, and as such do carry some moral obligations of care. These activities should be kept to a minium and only carried out when there is a valid and defensible reason. The use of non-destructive prospection techniques and 'experimental' techniques should be encouraged.

There is a strong necessity for continued academic input and a research framework for the future management of the WHS. Research is essential to informed understanding, management and interpretation. It is difficult to distinguish between academic- and management-led research, as all research can have management potential and implications. Because of the elusive nature of many buried archaeological features, leading to surprise discoveries, it is often difficult to know the management implications until the research has been completed. The extent to which further research is required to help with specific management issues or problems needs to be examined further over the next few years. The continued updating of the Research Agenda should assist in addressing these issues. However, the Research Agenda does not intend to focus on the Avebury landscape and foster archaeological over-exploitation. The Research Agenda should help to ensure that a balanced and sustainable level of research is achieved by providing guidelines for research, mechanisms for consultations, and the coordination of resources.

1.3 Aims and Objectives

The general aim of the Research Agenda proposed here is to:

> *actively encourage sustainable levels of research into all periods and all relevant aspects of the WHS and its near environs, in order to improve archaeological understanding, to better inform other academics, and to allow informed archaeological resource management to take place.*

Detailed objectives to meet these needs include:

- Recognise the importance of research in the WHS.
- Identify gaps in our understanding and promote the appropriate research topics and methodologies to fill the gaps.
- Support research into all periods and all relevant aspects of the WHS and its environs, ensuring the conduct and methods of research are sustainable and compatible with the identification and protection of WHS values.
- Ensure research is conducted in accordance with the objectives of the Management Plan.
- Promote a policy of preserving maximum rather than minium remains (although some excavation may be desirable), encouraging the use of non-invasive techniques.
- Publish and disseminate existing information and ongoing research results to the land managers, the public and the archaeological community.
- Encourage the use of the most appropriate techniques for the successful investigation of the priority research areas.

The concept of archaeological significance is a dynamic one, which will change with the times and with advances in archaeological method and theory. The Research Agenda will continue to evolve and be updated on a regular basis.

The Agenda is principally aimed at people intending to conduct research, individuals and agencies concerned with conservation and management in the area, and all with a desire to understand more about Avebury's past. However, it is considered that the Research Agenda will only be effective if widely disseminated to the academic community via conventional publication and electronic access. In general the Agenda itself encourages the publication and wide dissemination of existing information and ongoing research results. It is planned to publish the whole of the text presented here on the English Heritage web site. www.english-heritage.org.uk

1.4 Methodology

The Avebury Research Agenda is presented in line with the definition and structure recommended in *Frameworks For Our Past* (Olivier 1996). The Research Agenda comprises: a resource assessment (Part 2: a description of the archaeological resource and statement of the current state of knowledge); a list of gaps in that knowledge and the potential of the resource to answer questions (Part 3); and a statement setting out priorities (Part 4); and methods (Part 5). Because of the complexity of the palimpsest of archaeological features in the WHS, and the difficulties of dealing with the transitional periods, a holistic and diachronic

approach is used in the Research Agenda. Thus, themes have been identified as priority research areas, whose investigation will improve understanding of most chronological periods.

The AAHRG group devoted considerable time to discussing the methodology and format of the Agenda. Members felt that the Agenda should not be constrained by chronological divisions or by the limit of the WHS boundary which has little academic or archaeological integrity. Indeed, many of the authors have considered archaeological evidence for some periods from quite far afield in order to place the Avebury evidence in its proper context. However, for practical purposes both a chronological and thematic approach has been taken. The period divisions used are[1]:

Lower & Middle Palaeolithic	500,000 BP–40,000 BP
Upper Palaeolithic/Late Glacial & Early Post-Glacial[2]	18,000 BP–4,300/4,200 BC
Neolithic & Early Bronze Age	4,300/4,200 BC–1,400 BC
Late Bronze Age	1,400 BC–750 BC
Iron Age	750 BC–AD43
Romano-British	AD 43–410
Post-Roman and Pagan-Saxon	AD 410–700
Later Saxon and Medieval	AD 700–1500

A number of AAHRG members with specific expertise took certain of these periods to compose resource assessments and identify gaps in our knowledge. Data from the Wiltshire Sites and Monuments Record (SMR) was made available for each period. However, more than half of the sites identified on the SMR are undated, indicating the need for further investigation.

The authors were also asked to highlight lacunae and research objectives in relation to a number of themes chosen by AAHRG:

- Settlement and land use
- Environment
- Chronology
- Ceremony, ritual and religion
- Engineering, craft and technology
- People (diet and health)
- Social organisation, economy and subsistence
- Transport and communication.

These themes proved very useful for dealing with the complexities of transitional periods and for allowing a comparative approach across the board.

Much debate continued about the nature of the Agenda, resulting in the completion of the first draft document, compiled by Amanda Chadburn in December 1997 (AAHRG 1997). This version greatly contributed to the research issues written into the emerging WHS Management Plan. The first draft mainly focused on the resource assessment and identification of gaps in our knowledge, and research priorities by theme (Parts 2, 3, and 4). This version was widely circulated to AAHRG members and other academics and archaeologists for comment. Since then, a series of methods and techniques was written up by experts with reference to the Avebury WHS (see section 5). In addition, a comprehensive report on the environmental evidence was produced with specific reference to Avebury (Allen 2000a). Thus, a more comprehensive second draft, compiled by Melanie Pomeroy, was produced and circulated in October 2000 (AAHRG 2000). Subsequently, a series of maps was prepared by Nick Burton from the Avebury GIS database (Figs 1–3, 9, 10, 13, 15, 19). Finally, Julie Gardiner at Wessex Archaeology undertook the copy editing and publication in February and March 2001.

It is recognised by AAHRG and the individual authors that aspects of the Agenda are incomplete and that there is scope for it making it more comprehensive.[3] It was intended to include sections on the post-medieval period and on absolute dating methods. However, at this time it has been difficult to gain contributions from experts in these fields. It is hoped that this volume will be updated on a regular basis as research is conducted, new discoveries are made, and research priorities evolve. It is intended that the AAHRG group will continue to exist to pursue its work on the implementation and updating of the Agenda. Other sections which may be considered for inclusion in the future include topics such as sacred landscapes, cosmology, and the impact of 20th century interventions in the WHS.

As mentioned above, this Agenda has been developed from a series of voluntary contributions from a number of individual authors, without heavy text editing. This is reflected in the different levels of detail given the text and slight variations in the geographical focus of the period sections. Thus, the text purposefully reflects a range of different styles and approaches to the future of the past in the Avebury WHS[4].

Endnotes

1. The dates given here for the chronological periods reflect the definitions given by the individual authors of the text specifically for the Avebury area. Some of the dates may therefore differ slightly from those included in standardised archaeological period lists used by organisations such as the (former) RCHME and English Heritage.
2. This time-frame excludes the period of the last major glaciation when Britain was largely uninhabited
3. The spelling of the place-names in this volume follows those set out by Isobel Smith (1965)
4. Most of the papers in this volume were written before publication of Peter fowler's substantial research in the area (Fowler 2000). Future updates of this volume will take fully into account the results of that influential work.

Part 2: Resource Assessment

2.1 Lower and Middle Palaeolithic
Julie Scott-Jackson

The Lower Palaeolithic period (in Britain) extends from approximately 500,000 years BP (Oxygen Isotope Stage (OIS)13) to around 180,000 years BP (OIS 6/7), a date which is generally considered to mark the end of the Lower Palaeolithic period and the beginning of the Middle Palaeolithic. No sharp divisions exist anywhere between the Lower and Middle Palaeolithic; the distinction is always blurred. The Middle Palaeolithic period (in Britain) lasted from around 200,000 years BP (OIS 6/7) to approximately 40,000 years BP (OIS 3–4) – a time span which is synonymous with the final glaciation at the end of the Devensian period and the beginning of the British, Early Post-glacial Upper Palaeolithic.

The key component in determining the patterns of Lower and Middle Palaeolithic occupation in Britain over geological time may well have been the regulating effects of marked climatic change on both the sea-levels and the migration of flora and fauna. This generated a situation conducive to intermittent rather than continuous occupation. The Lower and Middle Palaeolithic periods in the British archaeological record are, therefore, a discontinuous record of change. Further research is required before any Lower and Middle Palaeolithic sites within the Avebury area can be assigned with confidence to a particular stage within the Pleistocene.

The Earliest Inhabitants

Stone tools represent the oldest traces of a human presence and manufacturing activity in Britain. Although it is generally agreed that the Upper Palaeolithic industries are associated with modern humans (*Homo sapiens sapiens*) no satisfactory or generally agreed correlation appears to exist between the different industry-types of stone tools and various species of *Homo* in the British Lower and Middle Palaeolithic; nevertheless enough is known to provide a general picture. It is not possible to say with any certainty whether the Palaeolithic peoples who visited Britain at any one time during the middle and upper Pleistocene were Archaic *Homo sapiens* or Neanderthals (*Homo sapiens neanderthalensis*) with specific clinal characteristics. However, the hominid tibia found at Boxgrove (site date around 500,000 years BP) has been assigned to *Homo cf heidelbergensis* (Stringer 1996) and the Swanscombe skull (site date around 400,000 years BP) has certain cranial skeletal characteristics usually associated with Neanderthals. No Palaeolithic human remains have been found in the Avebury area.

Stone Tool Technology

Within the Avebury area is the important high-level Lower and Middle Palaeolithic site on Hackpen Hill. Stone tools excavated from this site in 1912 have been the subject of considerable study (see Kendall 1916; Lacaille 1971; Scott-Jackson 2000). Advances in the knowledge of artefact technology and the context and relationships of the various industry types would make a re-examination and assessment of the other artefacts recovered from the Avebury area likely to prove worthwhile. It is also possible that some may have been wrongly described (such as *sarcen handaxes*), a common problem with surface finds reported over a number of years, during which taxonomies are refined and altered.

Downland Areas and the British Lower and Middle Palaeolithic Archaeological Record

The Chalk downlands which so characterise the Avebury area of Wiltshire stretch through twelve counties of southern England, they are invariably capped, on the highest parts, with deposits mapped as Clay-with-flints. Over the past 100 years or so, many Lower and Middle Palaeolithic stone tools have been found in association with the deposits mapped as Clay-with-flints. The virtual exclusion of these high-level stone tools from the British Lower and Middle Palaeolithic archaeological record is due to the lack of appropriate research and general misunderstandings regarding both the archaeological integrity of the artefacts from these high-levels and the processes that have operated on the Chalk downlands and the deposits mapped as Clay-with-flints over geological time. Naturally, those sites which provide the best examples of Palaeolithic industries and/or contain other notable finds will command the greatest attention. However, it is essential that the Palaeolithic landscape is considered as a whole, or the local/national archaeological record will be distorted. The information provided here is a brief extract from more substantial publications (Scott-Jackson 1999; 2000) which go some way to redressing the issue of the data distortion.

Environment

Although Wiltshire lay beyond the ice-sheets, glacial and interglacial cycles during the Pleistocene effected dramatic changes on the Avebury area. Unfortunately, the role of periglaciation in shaping the downlands over geological time has been over-emphasised. Often the effects of periglaciation have been confused with those

of solution (as noted by Williams 1980; 1986; and Scott-Jackson 2000) with the result that both the high-level Lower and Middle Palaeolithic find sites/spots on deposits mapped as Clay-with-flints, and indeed the artefacts themselves, have been academically devalued. Significantly, it is the presence of *basin-like* solution features that has been instrumental in retaining the deposits mapped as Clay-with-flints and the associated Palaeolithic artefacts on the highest downland hilltops and plateaux, over geological time. The greatest number of stone tools found on the highest downland hilltops and plateaux have been surface finds. However, there are a few well documented records of Lower and Middle Palaeolithic artefacts which have been found *embedded* in the deposits mapped as Clay-with-flints when, for one reason or another, the top-soil was removed. Embedded artefacts are particularly important as the majority of these finds have proved to be discrete assemblages that are indicative of *in situ* Palaeolithic sites.

The importance of the Lower and Middle Palaeolithic archaeological *potential within* the deposits mapped as Clay-with-flints on the downlands in the Avebury area needs due consideration following the recent excavation of a Palaeolithic site in Kent. Using a specific modern scientific methodology (developed by the author) the *in situ* status of a high-level Lower Palaeolithic site on deposits mapped as Clay-with-flints was confirmed (Scott-Jackson 1994; 2000). These findings have effectively demolished previously held arguments that none of the high-level assemblages on deposits mapped as Clay-with-flints, however apparently discrete, could be found *in situ*. The existence of measurable stratigraphy in the excavated trenches was demonstrated, refuting another long held opinion that processes operating in cold and temperate environments will have removed any useful stratigraphic or environmental evidence from such deposits. This unique discovery has now made it possible, for the first time, to directly link and compare (using more than one simple category) a high-level site on deposits mapped as Clay-with-flints with dated low-level sites across Britain – effectively expanding the British Palaeolithic archaeological record.

There have been no detailed geological investigations of any Lower and Middle Palaeolithic find-sites within a 5 km radius of Avebury village.

Resource Assessment (Fig. 1)

To date there are 14 recorded Lower and Middle Palaeolithic find-spots/sites within a 5 km radius of Avebury village (Fig. 1; see Wessex Archaeology 1993; Scott-Jackson 1999).

Most of the finds are curated in either Devizes Museum or the British Museum, the whereabouts of the others remains unknown. The majority of the artefacts are reported as being single surface finds from the topsoil overlying Chalk downlands. However, the most important of the Lower and Middle Palaeolithic finds from the Avebury area are those which have come from the little appreciated Palaeolithic site on the deposits mapped as Clay-with-flints on Hackpen Hill, a site which was excavated, with great care by H.G.O. Kendall (see Kendall 1916; Lacaille 1971; Scott-Jackson 2000). It is imperative that the data distortions relating to Hackpen Hill which are contained in the archaeological records as set out in the RCHME (1999a) report regarding the Kendall (1916) excavations are adjusted.

The high-level sites on Hackpen Hill are in an area mapped as Clay-with-flints, Kendall recorded the presence of flint and gravel both as surface finds and during the excavation. Both flint and gravel are expected components of deposits mapped as Clay-with-flints. Kendell took great pains to establish the integrity of the excavated Palaeolithic artefacts on Hackpen Hill as the Harrisonian *eolith* debate was raging at this time (Scott-Jackson 2000).

The grid reference (SU 121 726, centre point) does not relate to Kendall's excavations at the high-level site in the saucer-shaped solution depressions at SU 128 726 close to Glory Ann pond, but to the lower levels of Monkton Down, where many pits have been dug. The pits in this low-level Monkton Down area may be the result of flint, gravel or chalk extraction.

The report (RCHME 1999a) states that 'there has been considerable flint and gravel extraction in the area in the Post Medieval period ... and ... some of the features may even be natural'.

The RCHME report is misleading in its assumption that the hollows Kendall excavated on the high-level site at Hackpen Hill near Glory Ann pond are one and the same as the low-level pits at the base of Monkton Down where flint digging and gravel extraction is recorded. Kendall's important, and rare, report of embedded Palaeolithic artefacts from this high-level site on deposits mapped as Clay-with-flints is effectively, but mistakenly, dismissed as the following quotes from the report show: 'His [Kendall's] excavations at two such depressions in the area indicated the presence of a gravel bed, and worked flints recovered were compared by him to Palaeolithic material' and 'The discovery of Palaeolithic (and later) worked flints in the Hackpen Hill area is far from unusual, there having been many surface finds'.

2.2 Late Glacial and Early Post-Glacial
Andrew J. Lawson

The period marked by an amelioration of climate after the last glacial maximum (at *c.*18,000 BP: OIS 2) to the establishment of the first Neolithic farming communities (at about 5500 BP, *c.* 4300 cal BC[1]) is

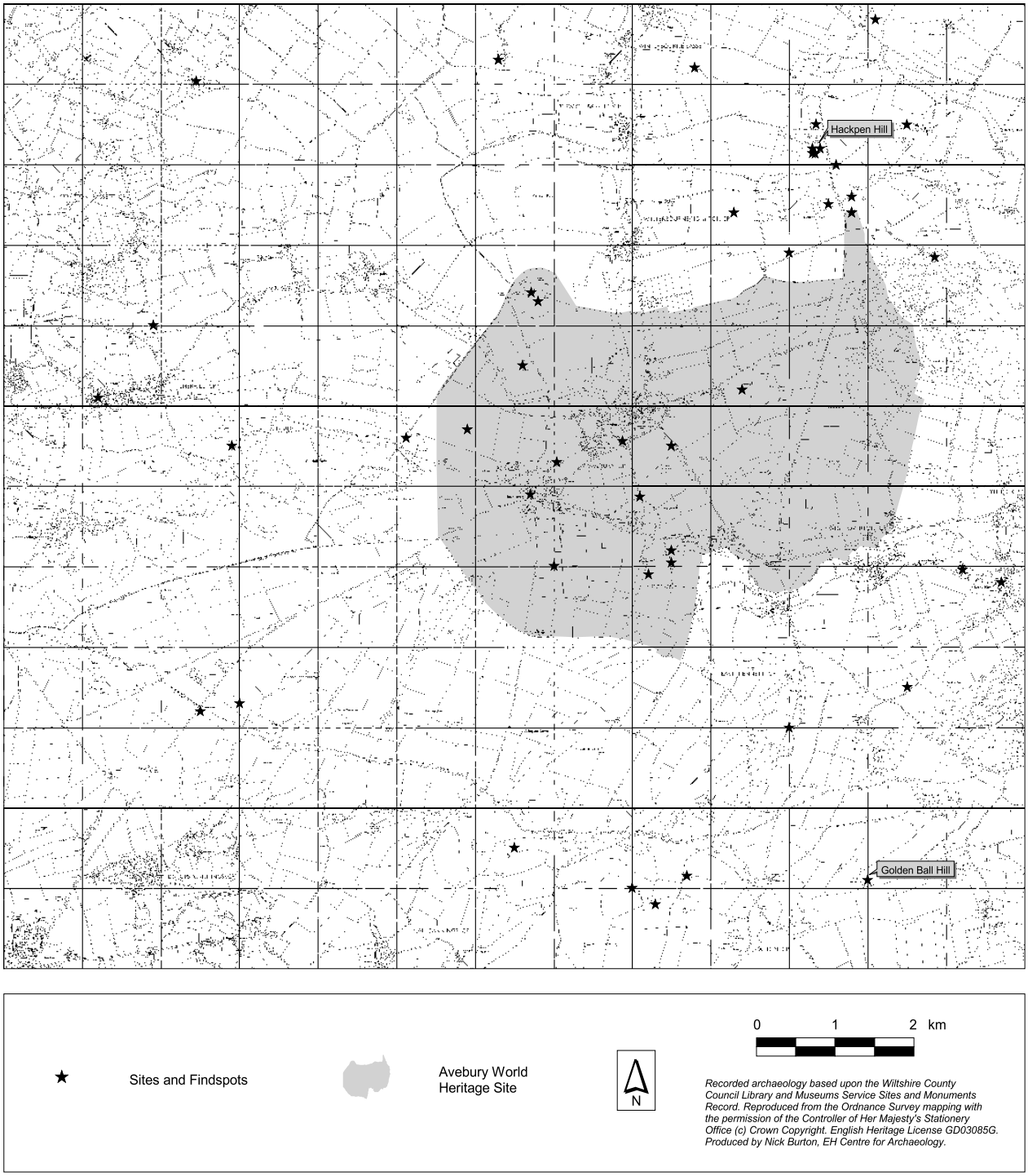

Fig. 1 Distribution of findspots and sites attributed to the Palaeolithic, Late Glacial and Early Post-glacial periods

referred to *here* as the *Early Post-glacial*. In geological terms, the period incorporates the final part of the Devensian glaciation (the Dilmington Stadial) and the first part of the present Holocene era. However, climatic and environmental changes were not constant but fluctuating. Detailed studies, largely of pollen sequences throughout north-west Europe, have established a succession of chronologically distinct zones (Bölling, Older Dryas and Allerød combined in Britain as the Windermere Interstadial; the Younger Dryas equated with the Loch Lomond Stadial, while Pre-Boreal, Boreal, etc, are stages of the Flandrian) into which human activities can be fitted (Bell and Walker 1992; Jones and Keen 1993).

In Europe, Aurignacian industries, which are regarded by many to be the earliest undisputed product of modern humans, occur by 35,000 BP. Few traces of such an industry, produced prior to the last glacial

maximum some 20,000 years ago, are known in Britain. Furthermore, Britain appears to have been devoid of human settlement between the glacial maximum and a warmer interlude at *c.*13,000 BP (the Bölling or earlier Windermere) after which the archaeological evidence of the population gradually increases (Jacobi 1991; Housley *et al.* 1997). Archaeological artefact assemblages pre-dating 9700 BP are technologically similar and may be regarded as Upper Palaeolithic, whereas from the middle Pre-Boreal chronozone onwards the toolkits reflect an adaptation to more heavily wooded environments and may be regarded as Mesolithic (Barton 1991; Smith 1992). The earliest Mesolithic flint industries were based on relatively broad blades but from the 9th millennium onwards they were based on narrow blades and individual artefacts became diminutive in size (microlithic).

Resource Assessment

To date, 31 sites with Early Post-glacial artefacts have been recorded on the Wiltshire SMR in the four 5 km squares centred on Avebury. They are all classified as Mesolithic without further qualification. The majority of finds have been recovered from the surface and, of these, 16 are single or selected, characteristic artefacts (such as microliths, tranchet axes, etc), although larger assemblages have been found at 11 sites. No Early Post-glacial site has been selected for excavation but Mesolithic flint implements have been found incidentally during the course of excavations at four sites (see below). Most importantly Mesolithic artefacts have been discovered during controlled excavations initially designed to establish the sedimentary and environmental history of the region (Evans *et al.* 1993).

An assessment and interpretative model of Mesolithic land use has been published by Whittle (1990).

2.3 Neolithic and Early Bronze Age
Rosamund M.J. Cleal and R. Montague

The transition to Neolithic practices and ways of life may have come relatively late to the Avebury area. Whittle pointed out that the area 'was not a primary zone for neolithic beginnings', that being more likely to be true of coasts, estuaries and well-watered river valleys (1990, 108). The earliest dated activity identified so far within the WHS is the construction of Horslip (Windmill Hill) long barrow, with a range of 4340–3640 cal BC (BM-180; 5190±150 BP). This places Horslip at the boundary of Whittle's phases A and B of the Neolithic period (Whittle 1993, 31, table 2), Phase A representing the earliest Neolithic activity in the British Isles and dated by Whittle to 4360/4240–4000/3820 cal BC (at 1 sigma, rounded out).

The well-known type site of Windmill Hill, now dated by a large range of dates, was not constructed until the middle of the 4th millennium BC, and some at least of the long barrows of the area are relatively late (South Street and Millbarrow – the latter just outside Windmill Hill, to the north). For the purposes of this study the lower limit has been taken approximately as the lower possible limit of the construction of Horslip – ie, at about 4300–4200 cal BC, and the upper, that of the funerary assemblages of the Early Bronze Age and the transition to the Middle Bronze Age at around 1400 cal BC. Both upper and lower limits, however, need to be treated as approximate.

Archaeological activity within the WHS was intense during the 20th century, following two and half centuries of antiquarian activity centred on the henge and round barrows. Previous archaeological and antiquarian activity is listed below, arranged by period and site, followed by more general studies not confined to specific sites. Where gazetteers or full studies exist these are referred to rather than summarised. A small number of sites outside the WHS are also referred to.

Earlier Neolithic Avebury (Figs 2 and 3)

Windmill Hill causewayed enclosure

The ditches (or at least one of the circuits) on Windmill Hill were noticed by Stukeley (1743) but were not subject to excavation until this century. H.G.O. Kendall, Vicar of Winterbourne Bassett, collected voraciously on and around the hill early this century and cut sections across the ditches in the early 1920s. The history of the early investigation of Windmill Hill is fully discussed by Whittle *et al.* (1999) and in the RCHME monograph on causewayed enclosures (in prep.) (Figs 4 and 5). Whittle *et al.* (1999) is also the full report on the 1988 season of excavation at the site.

Smith's volume *Windmill Hill and Avebury* (1965) is the definitive account of the five seasons of excavation undertaken by Keiller, and of the excavations she conducted in 1957–8. The archive is held largely by the Alexander Keiller Museum, although some finds are on loan to Devizes Museum and some were discarded (particularly after a serious fire on Keiller's property in 1945), dispersed, or lost.

Long barrows (other than West Kennet)

A full and useful inventory of sites and possible or mistakenly identified sites is given by Barker (1985). Within the WHS three long barrows have been excavated under modern conditions: South Street, Horslip (also known as Windmill Hill) and Millbarrow (Ashbee *et al.* 1979; Whittle 1994). Just outside the WHS two have been excavated in the same time

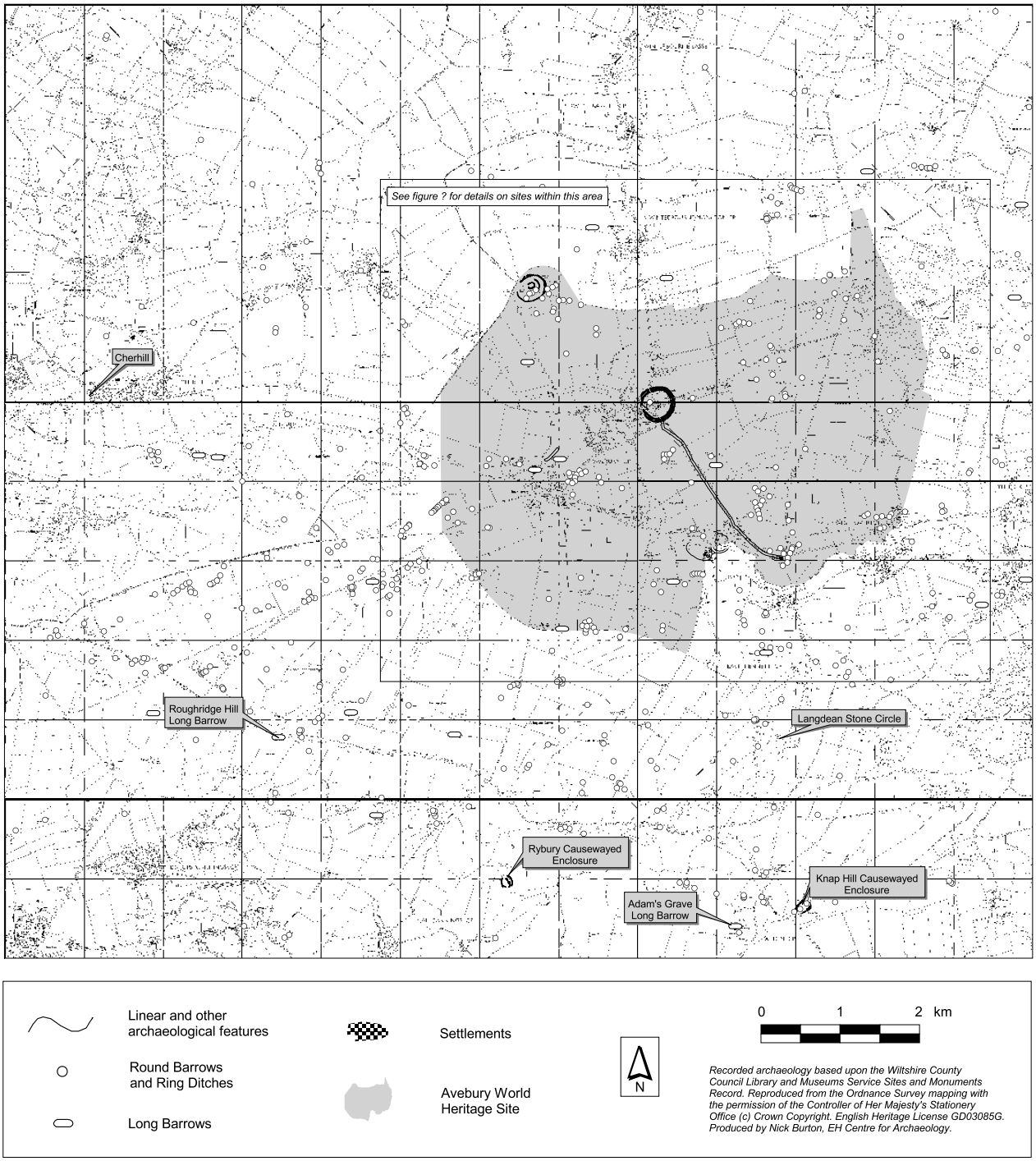

Fig. 2 Distribution of Neolithic and Early Bronze Age sites and monuments in the wider Avebury area

period: Beckhampton Road (Ashbee *et al.* 1979) and Easton Down (Whittle *et al.* 1993).

West Kennet long barrow

Excavated in 1859 and 1955–6; the latter investigations were fully published by Piggott (1962), who gives a summary account of the earlier depredations and of the excavation by Thurnam (1861; Piggott 1962, 1–7). Subsequent to this excavation a soil pit 1.2 m square was excavated into the mound by J.G. Evans; the soil profile and molluscs are published (Evans 1972, 262–4). The finds are held by more than one museum or university: the artefacts are in Devizes Museum, the human skeletal remains in the Duckworth Laboratory of the University of Cambridge and the animal bones in the comparative series of the Department of Zoology of the Royal Scottish Museum, Edinburgh (Piggott 1962). The animal bones have recently (1998) been analysed at the University of Sheffield, Department of Archaeology and Prehistory.

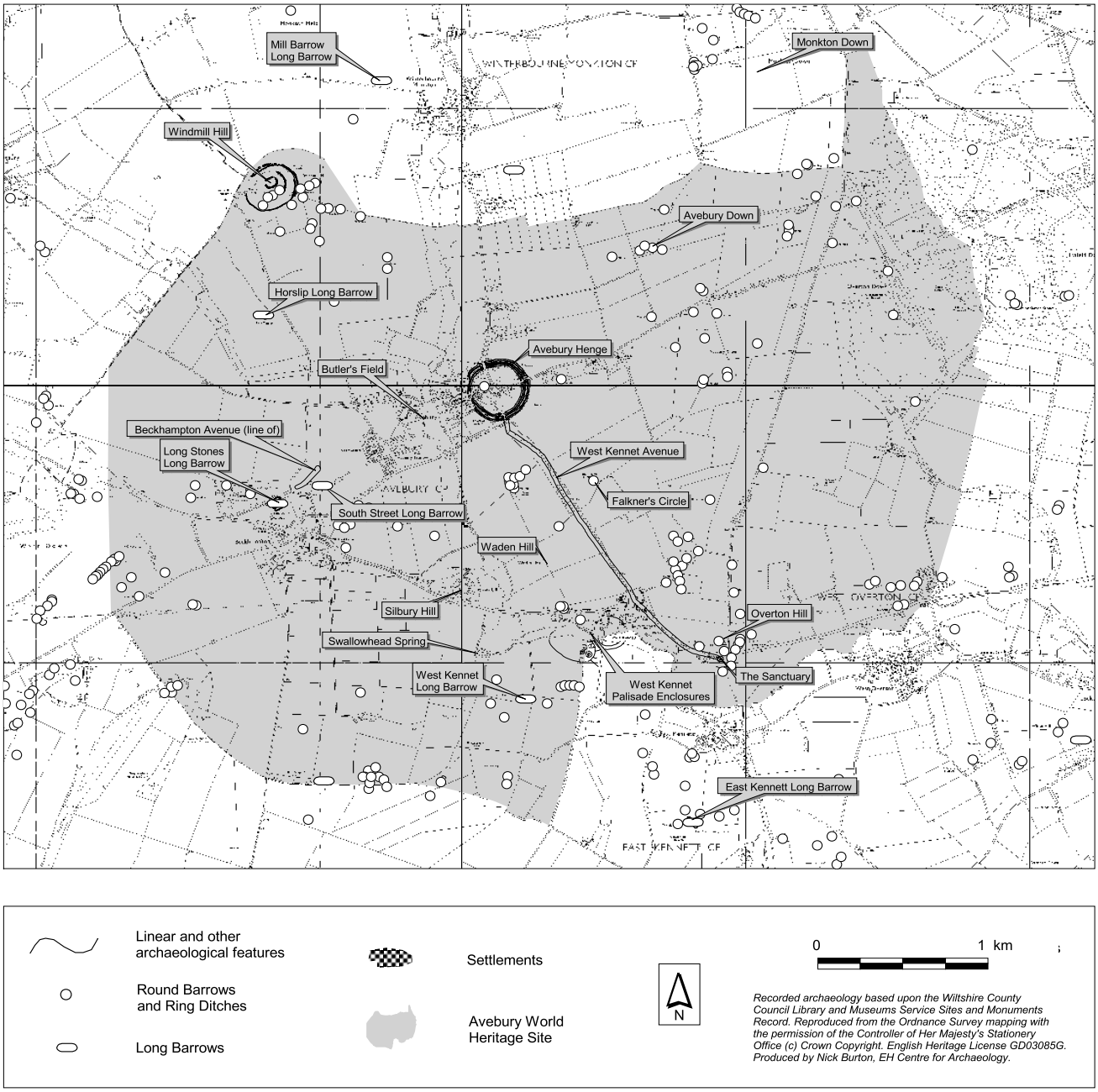

Fig. 3 Distribution of Neolithic and Early Bronze Age sites and monuments in the Avebury area

Later Neolithic Avebury

Henge, stone & timber circles, avenues

Avebury henge (Fig. 6)

The henge was not extensively or systematically excavated until the investigations of Gray and Keiller this century, but there have been a number of smaller excavations over the last two centuries. Finds made prior to Keiller's work are in general not held by the Alexander Keiller Museum, which was not founded until 1938.

Reported 1829: Record of digging at the foot of the Cove stones to the depth of a yard or more, but 'nothing peculiar was observed' (Hunter 1829). Hunter was reporting this episode and was not one of those involved.

Reported 1833: Record by Henry Browne of digging at the Cove and finding 'the place of burnt sacrifices'; probably therefore encountered the burning pit of the northern stone (Browne, H. 1833 *An illustration of Stonehenge and Avebury*; information taken from Smith 1965).

1865: Excavations on behalf of the Wiltshire Archaeological Society by A.C. Smith and W. Cunnington, which lasted for a week. They recognised the burning pit for the northern stone of the Cove and also examined the bases

Fig. 4 Stone axes from Windmill Hill

Fig. 5 Antler pick and rake from Windmill Hill

of the surviving stones of the Cove, digging on both west and east sides of the western stone (the *back stone*) and close to the southern (side) stone. Apart from the Cove they also trenched through an earthwork in the SE part of the NE quadrant, finding part of a 'stag's horn' and pottery.

In the SE quadrant they dug a trench at the centre of the Southern Circle, and across it to the north, south-west and east of the centre (each trench *c*. 60 ft (18.3 m)). In the centre was a large quantity of burnt sarsen, including fragments and chips, and 'charred matter', and there was similar material in all the trenches. The excavators presumed a large central stone in the middle of the Circle, but found no evidence of an interior setting to the Circle.

Several trenches were dug into the bank, although locating these is difficult from the report and they do not appear to have been substantial. The largest trench was dug into the bank of the NW quadrant and extended 'many yards' into the bank; the buried soil proved to be a stiff, red clay. There were no finds from this trench and only one pottery sherd from the smaller trenches (Smith 1867, 209–6).

In total, 14 excavations were undertaken. No human remains were found but finds did include sheep, cattle and horse bones, some of which were clearly modern. Modern glass and pottery was also recovered, but *British* pottery was also found. The buried sites of three stones in the south-western quadrant were also recorded, having been revealed by parching of the grass.

1881: Probing by workmen with iron bars (directed by A.C. Smith and W.C. Lukis) revealed 18 buried stones (16 in the Outer Circle and two in the Northern Inner Circle), half of which were in positions noted by Stukeley as representing stones which had been destroyed. These were uncovered to show the size of the stone, and then re-covered, the sites marked with wooden pegs (Lukis 1882, 153). Lukis found much coarse pottery, and also records the finding of an 'entire vessel of the same kind of clay' near to the centre of the Southern Inner Circle when a hole was dug for a flagpole (*ibid.*).

1894: Excavation carried out for Sir Henry Meux, under the direction of his steward, E.C. Trepplin, and supervised in the field by another of his staff, Thomas Leslie. Between the 4th and 19th of July a trench was dug through the bank in the SE quadrant, and an extension of 6 ft (1.8 m) was made along the ditch. These works were not published, although an account is given in the record of the fiftieth general meeting of the Wiltshire Archaeological and Natural History Society (*WAM* 33 (1904), 103) and also described by Gray (1935, 103–4). He estimated the trench to have been 8 ft (2.4 m) wide by 140 ft (42.7 m) long, with a 6 ft (1.8 m) extension along the ditch. Gray describes the excavation from Leslie's 'rough diary', which he possessed. Leslie recorded what 'appeared to be the grass surface line of an inner rampart, defined by a curved line of vegetable mould 3½ in. in thickness' (*ibid.*, 104). The turf line beneath the bank was also recognised, reaching a thickness of nearly 2 ft (0.61 m) in the 'middle of the inner slope'. It appeared to have been burnt, with wood ash visible, and was said to be 2.25 ft (0.69 m) below the level of the adjoining field (*ibid.*). (A pencil sketch of the bank section, with a report of the dig, probably from Leslie, exists in correspondence with the Cunningtons in the library of the Wiltshire Archaeological & Natural History Society, Devizes; information from M. Pitts). There were few finds, all apparently dispersed, although two antler picks were bought by the Society at a subsequent sale of Meux's effects (Gray 1935, 105). Passmore

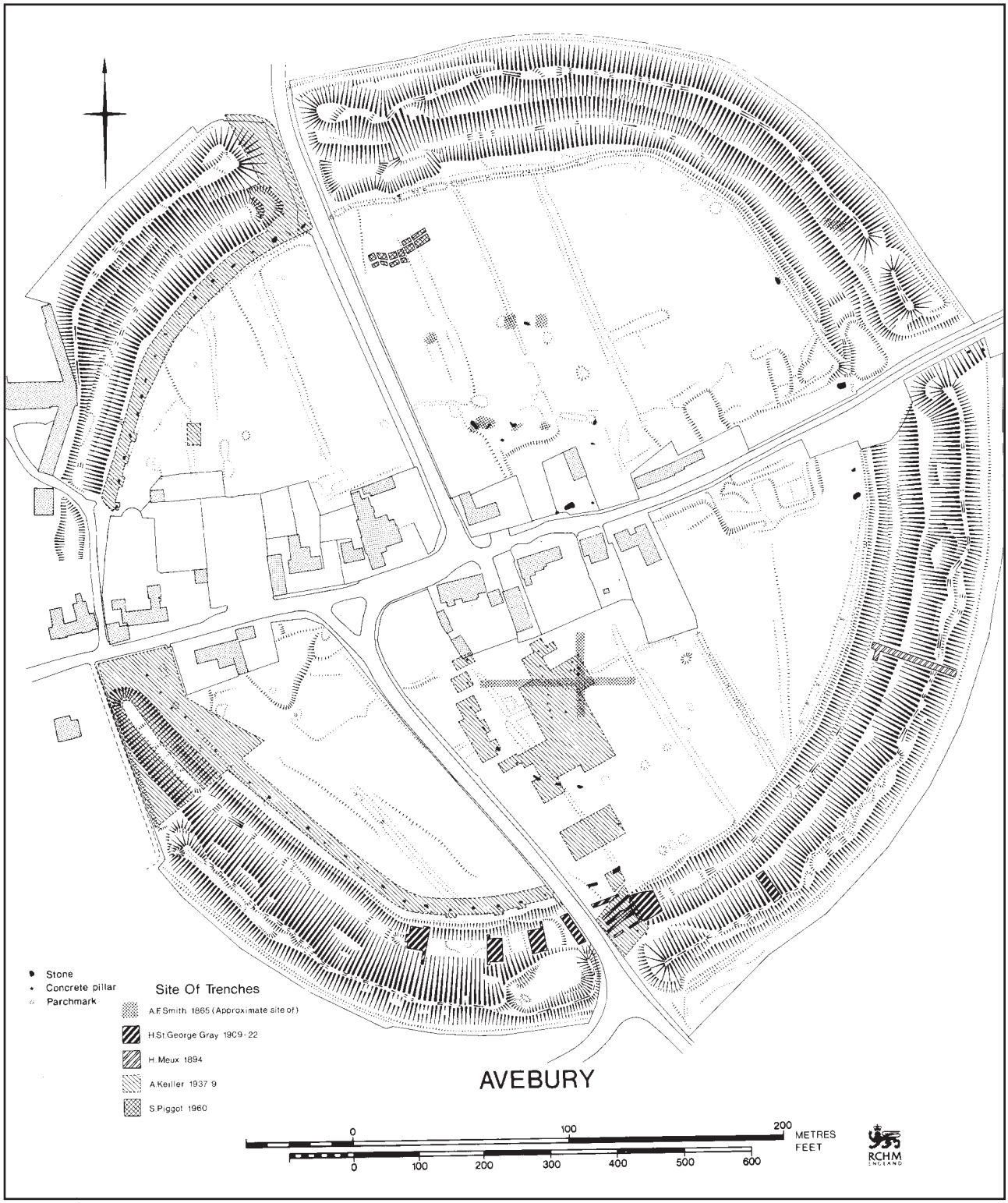

Fig. 6 Plan of excavation trenches in the Avebury Henge

describes three flints as having been found, two of which he illustrates (1935); one is a serrated flake and one a chisel arrowhead, Clark's type D (Clark 1935). The other object, a combined scraper and point, and the arrowhead, are illustrated by Smith (1965, 225–6, fig. 76.F188, F189). These three objects were purchased by Passmore, and are in the Ashmolean Museum, Oxford.

1908, 1909, 1911, 1914, 1922: Excavations on behalf of the British Association, directed by Harold St George Gray. Excavations mainly in the ditch, but also to reveal one of the stones of the Southern Inner Circle (Gray 1935, 131–2, fig. 5)

Fig. 7 South-west quadrant of Avebury Henge and Stone Circle

and three buried stones (or three parts of one stone) within the interior of the Inner Northern Circle (*ibid.*, 108). The excavations were published in 1935. The finds are mainly in Devizes Museum, though some were dispersed. A catalogue (compiled by M. Pitts) of the location of antler and bone finds, including dispersed finds, is in the Alexander Keiller Museum. Smith also illustrates and discusses some of the St George Gray material (1965, 224, n.1; 228, n.2, 229).

1937, 1938, 1939: Excavations by Alexander Keiller in the NW sector (1937), SW sector (1938) and SE sector (1939). In the NW and SW sectors the excavations were largely confined to the Outer Circle, while in the SE sector an area in the interior was excavated, including part of the interior of the Southern Inner Circle. A partial section into the bank was undertaken of the SW sector in 1938. Keiller published an interim report on the 1937 and 1938 seasons (Keiller 1939) but the excavations were not fully published until 1965 (Smith 1965).

1960: Excavations by Stuart Piggott to confirm or refute the existence of a third circle, north of the Northern Inner Circle, and to locate a stone near the northern entrance causeway shown by Stukeley. In neither case did he find evidence for the existence of former stone settings (Piggott 1964).

Post-1960 minor episodes: Since 1960 there have been many minor episodes of archaeological recording, mainly associated with services and maintenance. These have been recorded by staff of the Alexander Keiller Museum (mainly Faith Vatcher in the 1960s and 1970s; Michael Pitts in the late 1970s and early 1980s), by archaeological contractors and by National Trust archaeologists. Some of these have been reported only in interim, but most of the archives are available in the Alexander Keiller Museum. Excavation preceding work on the north wing of the Great Barn in 1982 was published in full (Evans *et al.* 1985). National Trust work is recorded by Intervention No.; summaries are sent to the Wiltshire SMR, and full reports and archives are available at the Alexander Keiller Museum. Work on the backlog of unreported sites from the 1960s onwards is being undertaken by the National Trust at the Alexander Keiller Museum.

1969 Avebury School Site: Unpublished excavation by Mrs Vatcher on the site of the new building for the Avebury Church of England primary school. The area was largely occupied by medieval features, but a small area of remnant bank (surviving to a height of *c.*2.0 m) was included in the excavation. Soil profile and molluscs for the remnant bank were published by Evans (1972, 268–74). Finds and paper archive are in

the Alexander Keiller Museum. A reinterpretation of the buried soils has more recently been publish (Pitts and Whittle 1992, 206; and more fully described in Pitts 2001b).

The Sanctuary

Excavated by M.E. Cunnington in 1930, the Sanctuary was interpreted in the excavation report as an unroofed timber structure that was later replaced by a stone structure. The surviving stones were destroyed in 1724. The site was not totally excavated, and as can be seen from plate 1 of the excavation report (M.E. Cunnington 1931) large areas between the outer stone circle and the outer post-hole circle were left unexcavated, as was the vast majority of the area immediately outside the structure.

Various reinterpretations of the site have been proposed. R.H. Cunnington (1931) attempted to place all the post-holes as components of a single roofed building. Piggott (1940) regarded the site as a succession of progressively larger roofed timber buildings, the last with a stone circle incorporated in the structure alongside wooden posts. He considered that the outer stone ring was added as a fourth phase. Pollard (1992) rejected the more complicated phasing for a single or, at most, double phased (one timber and one stone) monument. The majority of finds from The Sanctuary are in Devizes Museum; the animal bone is in the Natural History Museum. In 1999 a limited area, within the area excavated by Mrs Cunnington, was reopened by M. Pitts, which has aided in reinterpretation of the evidence from 1930 (Pitts 2000; 2001a).

Human bones were discovered close to the Sanctuary in the 17th century by a Dr Toope of Marlborough, who corresponded with John Aubrey (letter of 1 December 1685; quoted in Long 1858, 327). Dr Toope reported having encountered workmen who had been making new boundaries to enclose land for grass, who had found bones. Dr Toope returned and collected 'bushells' for making into medicine. The burials were shallow, only a foot or so beneath the topsoil, and Toope reported their feet as lying towards the 'temple' (the Sanctuary). 'I really believe' he wrote, 'the whole plaine, on that even ground, is full of dead bodies.' (*ibid.*).

He also gives some indication of location, when he says that the 'temple' is about 80 yards away (*c.* 73 m) and mentions that the workmen were not 'far off the road'. The ground is most 'even' to the north of the Sanctuary, as it lies on the end of Overton Hill with the ground falling away on the other sides, but it seems odd in that case that Toope did not mention that the burials were across the road from the Sanctuary (as the road appears to have run close to its present course, at least by the time of the Andrews & Drury map of Wiltshire 1773, and indeed the stones of the surviving circle were apparently visible from the road at the time Pepys passed through in 1668 (cited by Burl 1992, 168)). That area is now much disturbed because of the former cafe at that site; if the burials lay south of the road and east of the Sanctuary they would probably have been removed by the chalk digging which has extensively disturbed that area.

Dr Toope's comments are, however, an intriguing observation, although possibly one more relevant to the Roman or medieval sections of the Research Agenda. The impression given, although the point is not made specifically by Toope, is that they were extended burials rather than crouched, and therefore perhaps less likely to be Neolithic or Bronze Age than later. If the burials were on the level ground to the north they must have lain very close to the Roman road and might therefore be Roman, or, as Mrs Cunnington suggested, they may have been a war cemetery for the battle *aet Cynetan* of 1006 between the Saxons and Danes (Cunnington 1933, 169). There are both Roman and (early) Saxon burials within the Overton Hill barrow cemetery, on the edge of which the Sanctuary is situated.

Smaller stone circles

A number of smaller stone circles is recorded in the vicinity of Avebury. Some survive in a much reduced state, whilst others have been totally destroyed. None of the circles has been excavated in the accepted sense, and consequently both the date and form of these features, and the possible presence of associated features are unknown.

1. Falkner's Circle: This circle, *c.* 258 m east of the West Kennet Avenue, was observed by a Mr Falkner in 1840, who saw one standing stone, two recumbent stones and nine 'hollow places' where stones had stood. The circle was *c.* 36.5 m in diameter. Only the standing stone now remains, and the precise location of the circle relative to the standing stone is not known, the map published in Long (1858) not showing any features by which the relation of the surviving stone to the former stone setting can be estimated (ie, there is no compass point and the field boundary, which did exist at that time, is not shown).

2. Winterbourne Bassett: This circle lies 5 km to the north of the Avebury henge (and outside the present boundaries of the WHS) in an area of ridge and furrow. The circle was originally recorded by Stukeley as comprising two concentric rings of stones, with a single stone to the west of the circle. It is not clear from the description whether the stones in the circles were standing when Stukeley saw them, although an outlier to the west does appear to have been. None of the stones was standing when recorded by Smith (1885) and Lukis (1883). They investigated the site by probing and (very) limited excavation (just enough to uncover the buried stones), and recorded a central stone which had not previously been mentioned. The true form of

the circle is unknown as the possibility exists that the stones may be misplaced rather than fallen *in situ*. A geophysical survey was carried out here in 1998 by English Heritage but was inconclusive.

3. Broadstones SU 165 688 (Barnatt 1989): This is a small stone circle first recorded by Aubrey as comprising eight recumbent stones 'In a Lane from Kynet towards Marlborough'. Stukeley added the observation that four other stones may have formed the beginning of an avenue running out from the circle. The exact location of this circle is not known and attempts to place it using the documentary evidence have resulted in three separate grid references being suggested (Meyrick 1955; Burl 1976; Barnatt 1989). The evidence for its existence seems convincing, and it seems likely to have lain close to the river Kennet just east of the southern end of that part of Clatford Bottom which lies north of the A4, possibly around SU 162–163 690, in a field which, according to documentary sources cited by Meyrick, has been known as Broadstone Mead for centuries (1955, 192).

4. Langdean SU 1180 6570: Recorded by Passmore (1923), about 11 m in diameter; could be a barrow kerb, but uncertain. It is rejected by Barnatt, who describes it as 'likely to be the rim of a barrow or a house site' (1989, 505). A recent review of the site is provided by Mortimer (1997).

5. South of Silbury/Beckhampton Penning (SU 0985 6714): A large oval setting of small stones, 261 ft north to south, 216 ft east to west (*c*. 80 x 66 m), probably first recorded by Stukeley ('a very large oblong work, like a long barrow, made only of stones pitched in the ground'; 1743, 46) and later investigated by Smith (1878; 1881). Considered by Barnatt to be an 'enclosure rather than a stone circle' (1989, 505) and by Barker to be a possibly destroyed long barrow (Barker 1985, 24, entry no. 31). Most recently reviewed by Mortimer (1998).

West Kennet Avenue

The West Kennet Avenue links the henge with the Sanctuary, some 2.3 km to the south-east. For the purposes of this discussion, the Avenue will be split into three areas:

Area 1: the northern part excavated by Keiller
Area 2: the central area between areas 1 and 3
Area 3: the eastern part of the Avenue from West Kennett to the Sanctuary

Area 1: The northern third of the Avenue was excavated and reconstructed by Keiller in 1934–5 and 1939; two stone-holes within this length had earlier been excavated by M.E. Cunnington in 1912. Keiller 'stone-hopped', and so large areas of the interior of the Avenue in this area have not been investigated archaeologically.

Area 3: Five stone-holes have been excavated at the southern part of the Avenue, where it straddles the A4 to the east of West Kennett House, (see Smith 1965, fig. 72) and four stones survive in the hedgerow bordering the A4 (*ibid.* 72). The very southern end of the Avenue where it joins the Sanctuary was excavated by M.E. Cunnington in 1930. The far eastern part of the Avenue as it approaches/leads from the Sanctuary was fieldwalked in 1991 by The National Trust.

Area 2: The rest of the Avenue between Areas 1 and 3 has only been partially and non-intrusively investigated. The area from just to the south of the Late Neolithic 'Occupation Site' excavated by Keiller to a farm track north of the A4 was investigated by geophysical survey (published in Ucko *et. al.* (1991)). The part of the West Kennet Avenue south of Keiller's excavated area and west of the lane from the A4 to Avebury (which includes the area geophysically surveyed) was intensively fieldwalked in 1995. None of the stoneholes in this area have been excavated. Two stones survive in this area, and the position of a third was located to the north of the A4 by the Ordnance Survey in 1883 (see also section on Geophysical Survey, Section 5.1).

The exact course of the West Kennet Avenue is, surprisingly enough, still uncertain. The results of the geophysical survey were good in the northern part of the area surveyed, but inconclusive in the southern area. The course of the Avenue in the field to the west of the Sanctuary is also unknown, as it is in the vicinity of West Kennett House.

Some Ground Penetrating Radar has been carried out on the Avenue south of the length excavated by Keiller. This has successfully identified a number of buried stones (Shell and Pierce 1999).

Beckhampton Avenue & associated structures

The existence or non-existence of an avenue of standing stones running towards Beckhampton and connected in some fashion with the two standing Longstones was a matter of debate from the early 18th century when its existence was postulated by Stukeley until 1999 when its existence, at least in Longstones Field, was demonstrated (Gillings *et al.* 2000a; 2000b). Ucko *et al.* (1991, 195) note that from 1719 to 1723 Stukeley did not recognise any entrance to the henge as original other than the southern one, so that the question of an avenue to the west did not arise. None of the previous observations by other writers had noticed such a setting of stones.

In *Abury* Stukeley describes the course of the Avenue in some detail (1743, 34–7; table viii), charting its course from the western entrance to the

henge, along the village street, across the Winterbourne, out past South Street to the Longstones where one of the stones formed the back of a Cove, down to Beckhampton and beyond, finally terminating below Cherhill and Oldbury Downs. The descriptions seem fairly confident at the village end, becoming vaguer as the Avenue passes westward, until the final western stretch seems fairly clearly not much more than wishful thinking combined with the occurrence of natural sarsens.

The Longstones

Two stones, one larger than the other, standing in the field north of South Street. In Stukeley's interpretation of the evidence the larger stone (*Adam*) was the eastern side stone of a south-east facing Cove which lay within the Avenue, with the backstone fallen and the western side stone destroyed (Ucko *et al.* 1991, pl. 60; Stukeley 1743, 35). The backstone was therefore a stone of the Avenue, as was the stone now known as *Eve*, the smaller of the two surviving stones, which stands some 40 m to the east. Stukeley saw only those two stones still standing, but he clearly did see others fallen, the most important being the putative backstone (he records the western *arm* of the Cove as already having been carried away, so that must be regarded as less certain). Aubrey may have seen the Cove standing, as he describes 'southward from Aubury in the ploughed field, doe stand three upright stones perpendicularly, like the three stones at Aubury; they are called the Devill's Coytes' (quoted in Long 1858, 330). This has usually been interpreted as referring to a cove on the West Kennet Avenue, but could have been the Beckhampton Cove (Ucko *et al.* 1991, 190); both West Kennet and Beckhampton could be described as 'southwards', West Kennet to the south east and Beckhampton at south of west, and the description as 'in the ploughed field' would seem to fit Beckampton better than West Kennet, as the latter would seem to be more naturally described as beside the road.

The larger stone (Adam) fell on 2nd December 1911 and was re-erected by Mrs Cunnington in 1912. (The stone may not have been re-erected in the same attitude as before its fall; I.F. Smith pers. comm. on photographic evidence of A.D. Passmore). A disturbed burial was found during the excavation of the stone-hole and the area around it, associated with sherds of a Beaker. It is not clear from Mrs Cunnington's report which side the Beaker-associated burial lay, as she describes its position as 'presuming that the three stones of the cove originally formed a sort of triangular enclosure this face of the stone [ie the face against which the burial lay] would have been the inner one' (1913, 3). It is clear from the introduction to this report, however, that Mrs Cunnington considered that both remaining stones formed part of a widely spaced Cove and that her 'inner face' would therefore have been the eastern face, rather than the western, which would have formed the inner face in Stukeley's interpretation.

The Beaker is classified as Northern/Middle Rhine group by Clarke (1970, fig. 233). A small sherd of another Beaker (classified by Clarke as indeterminate) was found 2ft (0.6 m) deep in undisturbed packing boulders against the wall of the hole on the opposite side to the burial (Cunnington 1913, 5), appearing to indicate that this stone at least was erected during the currency of Beakers (*c.* 2600–1800 cal BC).

In an attempt to resolve some of the uncertainty surrounding the stone settings around the Longstones geophysical survey was undertaken by the Ancient Monuments Laboratory. Both resistivity and magnetometer survey were undertaken and have been fully published (Ucko *et al.* 1991, 196–9; see also David, Section 5.1). Further geophysical survey was undertaken by the same team in 1999, leading to the successful excavation that summer of six stone and stone positions for the Avenue east of the Longstones by the universities of Leicester, Southampton and Wales (Newport) (Gillings *et al.* 2000a). The same excavations also confirmed the existence of an enclosure, first recognised from aerial photography in 1997, adjacent to (and with the ditch passing between) the Longstones (Fig. 8). This is now known to date to the 3rd millennium cal BC having produced Grooved Ware from low in the ditch and a radiocarbon date in the first half of that millennium.

Cursus Monument

A single aerial photograph (Maj. Allen Neg 143) shows a possible cursus monument just outside the WHS to the west, in Cherhill parish (SU 0703 7000). Close to it are ring-ditches, one of which seems to enclose a ring of holes. The site has not been located on the ground, largely due to the disruption to the area caused by the military buildings around Yatesbury (Grinsell 1957, 55).

Monumental Mounds (ie, other than obvious barrows)

Silbury Hill

The largest prehistoric artificial mound in Europe, Silbury Hill has long attracted speculation about its age and function. Five additional episodes of intrusive investigation and one non-intrusive have taken place on and around the hill since the Duke of Northumberland and Colonel Drax first sunk a central shaft from the top of the mound down to ground level in 1776–7.

In 1849, and again in 1922, tunnels searching for a central burial chamber were unsuccessful, and in 1867 excavations proved that the Roman road (the present-day A4) swerved around the base of the hill, and

Fig. 8 Excavation in Longstone Field, Beckhampton 1999

therefore post-dated it. In 1886 the ditch around the hill was explored by sinking ten shafts into it (Whittle 1997, 10).

In 1959 a resistivity survey of the mound was undertaken, but did not produce any notable results. Three seasons of excavations were carried out by Professor R.J.C. Atkinson in 1968–70, and these showed that there were three phases of construction of the hill, and important environmental information was recovered (Atkinson 1968; 1970). These excavations have recently been fully published by Whittle (1997) who also provides a summary of the previous investigations (*ibid.*, 8–11).

The Marlborough Mound

This is 19.8 m high, with a basal diameter of about 84 m and a summit diameter of 30 m (Best 1997); it lies close to the confluence of the Kennet and Og and formed part of Marlborough Castle (it now lies within the grounds of Marlborough College). It has not been excavated, but in two episodes, this century and last, antlers have been found within the Mound: once in 1912 in a 'pocket about half way up and 2′–3′ in'; in the 1890s a single antler was found on the opposite side of the Mound. In the 1930s a single antler tine was also found 'on the slope of the chalk 40 yds to the north' (Brentnall 1938). Of these occurrences one (1912) was

certainly seen by the author who reported it, and the find of the antler tine north of the Mound may also have been. No note is made in the publication of the subsequent location of the antlers.

The evidence for a prehistoric date for the Mound has most recently been reviewed by Best, who concludes that it is probably not prehistoric as it fits quite comfortably within the category of mottes as although large it is not outside the range of known motte size (Best 1997). It would appear, however, sensible to reserve judgement until the date of antlers associated with the Mound are known. Recently Grooved Ware has been discovered in Marlborough, less than 1 km from the Mound, which indicates some Later Neolithic activity in the area (information from Cotswold Archaeological Unit).

West Kennet Palisaded Enclosures
Two enclosures and associated features, surrounded by palisades, in the valley of the Kennet; they are later Neolithic in date and have produced a range of radiocarbon dates, Grooved Ware and other finds. Excavations in the late 1980s and early 1990s and geophysical surveys over the same period have been fully published by Whittle (1997).

Earlier Bronze Age Avebury

Round barrows
A Gazetteer of round (and long barrows) was compiled by the RCHME. Round barrows within the World Heritage Site were investigated in the 19th century largely by Sir Richard Colt Hoare (1812) and by Dean Mereweather (1851), although destruction by ploughing and antiquarian disturbances are also recorded by Aubrey and Stukeley. Grinsell (1957) remains a useful and accessible summary of barrow investigations prior to the mid-1950s.

Environmental Archaeology

Recent work has largely been by the University of Wales, under the direction of Professors J.G. Evans and A.W.R. Whittle. Full accounts are given in Whittle (1993), Evans *et al.* (1993) and Whittle (1997). Allen (this volume) summarises the environmental evidence from the area.

Settlement and Evidence of Occupation

Surface collections and casual finds
Unstructured but extensive surface collection was undertaken by interested amateurs in the early years of this century. In recent years a total of four episodes of more methodologically rigorous field collection has taken place. Just over 15% of the area of the Avebury World Heritage Site has been examined by these four episodes; the area covered by the earlier collections is not certain.

Early collectors
J.W. Brooke: Collection in Devizes Museum, including some material from Avebury (Cunnington and Goddard 1934, 8).

W. Browne: Largely Windmill Hill; Collection in Devizes Museum (*ibid.*, 6).

H.G.O. Kendall: Large quantities of flint were collected from the Avebury region in the early part of this century by H.G.O. Kendall, the vicar of Winterbourne Bassett. Kendall noted concentrations of flint on Windmill Hill, and also on Hackpen Hill, and published reports in journals including *Proceedings of the Prehistoric Society of East Anglia*, *Proceedings of the Prehistoric Society* and *Proceedings of the Geological Association.* His collections and some notes are held in the Alexander Keiller Museum, Avebury, having been bought from him and from his widow by Alexander Keiller.

A.D. Passmore: A.D. Passmore also collected large numbers of flints in the Avebury environs, and his notes allow the approximate findspots of concentrations of struck flint artefacts to be located, as did the notes made by Kendall. His collection is held in the Ashmolean Museum, Oxford.

Recent work
R. Holgate and J. Thomas 1983: The results of a fieldwalking survey in the Avebury environs, and a consideration of Kendall's and Passmore's collections was published in interim form by Holgate in 1987. The lack of information about the field conditions encountered, methodology employed and negative observations made by Kendall and Passmore led Holgate and Thomas to survey areas of Avebury in an attempt to map more precisely the distribution of artefacts across the landscape. The shift in settlements from the upper slopes of the Downs in the earlier Neolithic towards the lower valley slopes in the later Neolithic was surmised from the survey material. Their work also concluded that the flint scatters, recognised by Kendall and Passmore and encountered during the recent survey on the SE slope of Windmill Hill and NE of Avebury, were mainly later Neolithic in date and contained a variety of implements, whereas those to the south of Avebury were probably Bronze Age in date and contained few implements. Both the finds and paper archive are held by the Alexander Keiller Museum.

Surface collection by University of Wales (Cardiff) 1992: An area south of the Windmill Hill causewayed enclosure was subjected to systematic surface collection in 1992,

associated with test pit and geophysical surveys. This work demonstrated both earlier Neolithic and later Neolithic activity and is fully published (Whittle *et al.* 2000).

Surface collection by the National Trust: Three episodes of fieldwalking have been undertaken by the National Trust on land prior to it being put down to permanent pasture. These plots of land are no longer ploughed in order to prevent any further damage to both underlying archaeological features and to artefacts already in the ploughsoil. The three episodes comprise:

1. The field to the east of the Sanctuary, and 21 acres around Seven Barrows, walked in 1990
2. The field to the south and west of the Sanctuary; and the south part of Avebury Down and the north part of Overton Hill, to the west of the Ridgeway, walked in 1991
3. The southern part of Waden Hill and part of the West Kennet Avenue, walked in 1995

The paper archive and the finds for these projects are held by the Alexander Keiller Museum in Avebury. These finds are under analysis.

Surface collection by Chippenham College: Several episodes of collecting were carried out in the early 1990s by Chippenham College Practical Archaeology Group. Apart from short notes of the work in the yearly archaeological review in *WAM* there appears to be no record of this work. Some of the finds have now been deposited in the Alexander Keiller Museum but in the absence of full records they are generally locatable only to field.

Occupation evidence

In addition to finds made during surface collection and evidence of occupation at the major sites there have been many small instances of material representing occupation having been recovered fortuitously during ground disturbing works and excavations of sites for other reasons. Such instances include: Horslip and South Street barrows (Ashbee *et al.* 1979), pre-enclosure at Windmill Hill (Smith 1965; Whittle *et al.* 1999), pits on Waden Hill, sherds possibly from an open site on the ridge east of Avebury ('Hackpen'; Piggott 1935), from Butlers Field, Avebury and beneath the henge bank at Avebury (Evans *et al.* 1993; Smith 1965), Avebury G55, close to West Kennet long barrow (*ibid.*) and from Overton Hill (Smith and Simpson 1964).

Outside the WHS there are notable occurrences also at Cherhill (Evans and Smith 1983) and Roughridge Hill (Proudfoot in prep.). It is likely that these are only a small sample of the whole, although it has also to be noted that along the whole length of the Avebury sewer trench there were virtually no Neolithic or Early Bronze Age finds, except for the location of a lost disc barrow, although the conditions of recovery during the work may have contributed to this apparent absence (Allen and Powell 1996a, 82).

2.4 Late Bronze Age

Gill Swanton, C.J. Gingell and Andrew J. Lawson

The bulk of the field archaeological investigation of this period has taken place on the chalk downland to the north, east and south of the core of the WHS, spanning its boundary. The latter cuts across the extensive field systems which form the bulk of the physical evidence for the middle and later Bronze Age in the study area.

Evidence for Late Bronze Age activity (Fig. 9) is derived from aerial photography, study of earthworks and some excavation; the resulting information falls into many of the themes identified in the Research Agenda, described below.

Collections of relevant material are held by the museums at Avebury and Devizes. The holdings in the latter includes the Meyrick collection, a valuable result of field walking at the time that land was being brought into cultivation during and after World War II. There may be material in other museums and in private hands.

2.5 Iron Age

Amanda Chadburn and Mark Corney

The Iron Age of the Avebury WHS is poorly understood. In contrast to earlier periods, there are no spectacular earthworks or monuments within the boundaries of the WHS. However, in the wider vicinity, there is plenty of evidence for activity during this period which must have had an effect upon the archaeology within the WHS (Fig. 10). For example, Avebury may have been close to an Iron Age *oppidum* in the Marlborough area. We have therefore discussed those monuments and sites outside the WHS which we feel are likely to have influenced the Iron Age sites within the WHS. We have indicated where sites and monuments fall within the WHS in the text which follows.

The resource assessment was undertaken using data from the Wiltshire County Council SMR, the English Heritage NMR and NAR, the Celtic Coins Index at Oxford University and personal knowledge. The SMR for the Iron Age in the WHS contains many entries of pottery finds from excavations and fieldwalking, and some single findspots of metalwork, as well as details of 'minor' settlements.

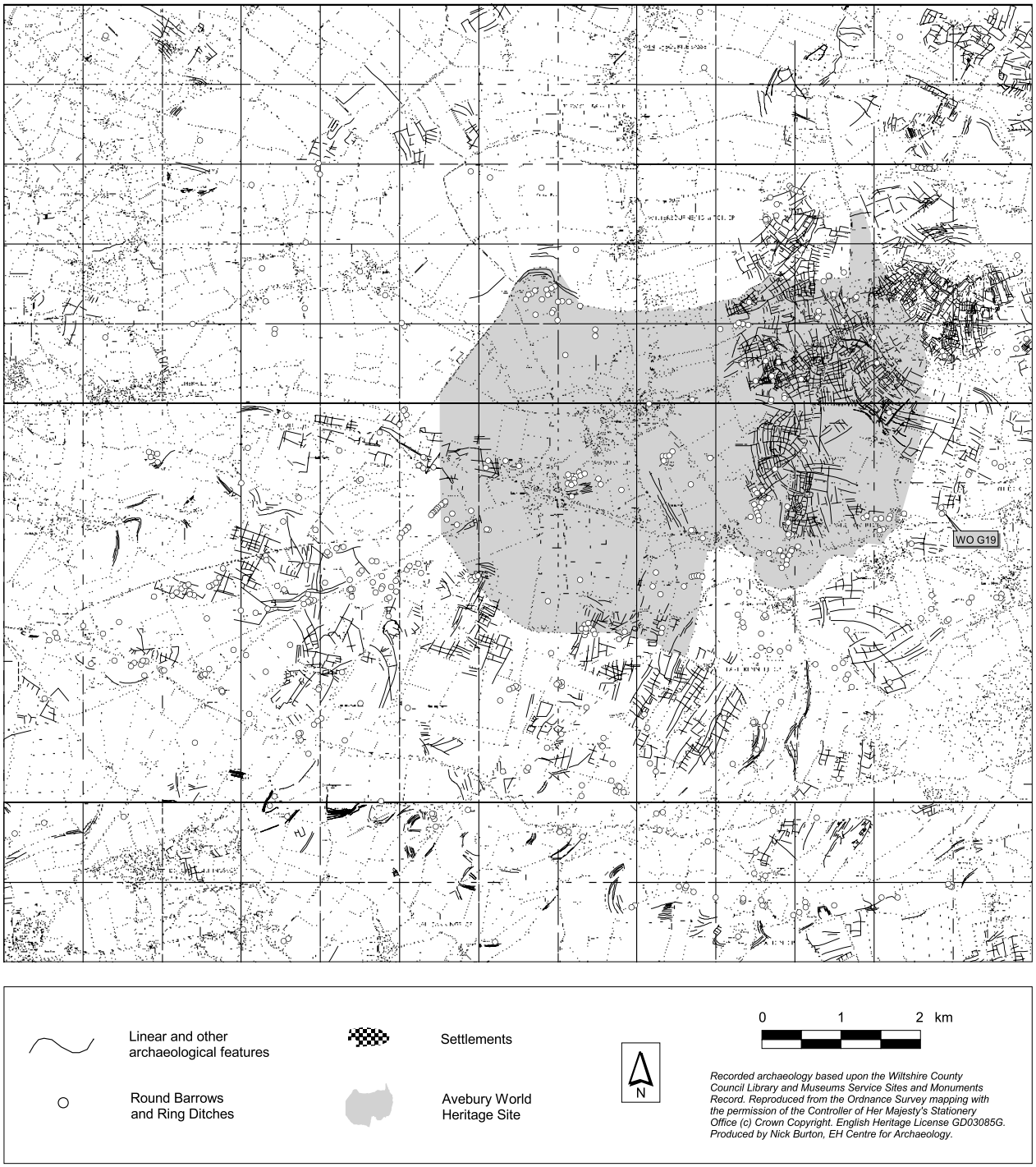

Fig. 9 Distribution of later Bronze Age sites and monuments in the Avebury area

Resource Assessment

Although best known for its earlier prehistoric monuments, the Avebury area also contains a wealth of later prehistoric remains. The most highly visible of these are the hillforts, represented by Oldbury Castle, Rybury, Giant's Grave, Martinsell Hill and Barbury Castle; none of these fall within the WHS. Barbury produced interesting evidence for metalworking in the form of a 'blacksmith's hoard' containing an number of finds including chariot fittings (SMR data). Other settlements of this period survive as earthworks on the edge of the chalk escarpment overlooking the Vale of Pewsey, such as Huish Hill and Newtown, Alton Priors. Away from the scarp edge, apart from the Fyfield and Overton Down area (RCHME AP transcript 1995), the remaining non-hillfort sites are largely plough-levelled and only known from air photography or antiquarian accounts.

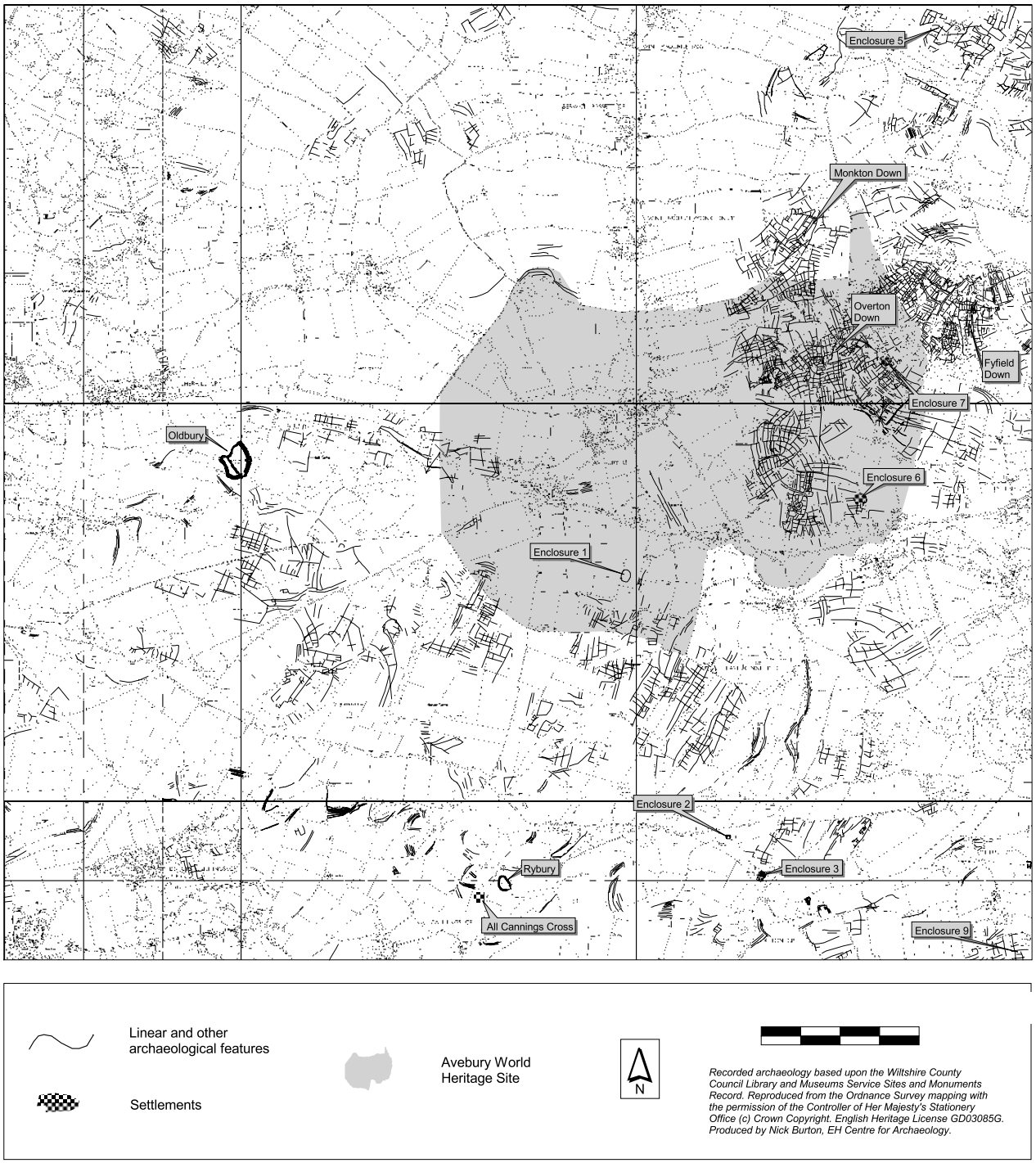

Fig. 10 Distribution of Iron Age sites and monuments in the Avebury area

The settlement record for the period is biased towards the chalk, although the work of Mrs Cunnington at All Cannings Cross demonstrated the potential and importance of the Vale of Pewsey (Cunnington 1923). As well as All Cannings Cross, similarly located sites of the Early Iron Age include Erlestoke (unpub. Devizes Museum) and Black Patch, Pewsey (unpub. Devizes Museum). All these sites may have had a similar function to those 'midden' sites at Potterne (Lawson 2000) and East Chisenbury, Wiltshire (McOmish 1996). All of these named sites fall outside the WHS, underlining the difficulty of interpreting this period within the WHS.

The area is relatively 'busy' in the Iron Age. For example, there are nine known enclosures in and around the WHS which are morphologically likely to be Iron Age although they do have similarities to some Anglo-Saxon enclosures; see Blair 1985. They include a cropmark site south-west of East Kennett (SU 1066); two enclosures represented by earthworks and

cropmarks near New Town (SU 1164: scheduled as Wilts 681 and SU 1264: scheduled as Wilts 679); earthworks and cropmarks at Huish Hill (SU 1564); an enclosure and field system in Preshute parish at which Iron Age sherds were recovered (SU 1374); an enclosure on Overton Down of a pre-Roman Little Woodbury type settlement containing four circular timber buildings, partly excavated by Peter Fowler in 1965 (Fowler 1967; SU 1370); and a cropmark site at North Farm (SU 1368) with a denuded bank and ditch, and antennae, enclosing many pits.

These latter two sites are scheduled monuments (Wilts 824 and SM number 21763 respectively) and are the only known examples of Iron Age enclosures within the WHS. Such enclosures all presumably represent rural settlement locations. A now lost Iron Age settlement at Preshute found by Hoare, at which querns and pottery were recovered, may be the same as the site at SU 1374 described above (Table 1, no. 5).

There are also a number of other similar enclosures (all plough-damaged and under cultivation) at foot of escarpment overlooking Vale of Pewsey, including a large site at Woodborough Hill (SU 1161), which may be Early–Middle Iron Age, and another enclosure at Huish (SU 1463). Further cropmarks around the All Cannings Cross site at SU 0763, are indicative of further non-enclosed settlement in this area perhaps Iron Age in date. A rapid examination of aerial photographs held by English Heritage at Swindon has identified further potential sites in the Vale of Pewsey, at the foot of Martinsell Hill, Knap Hill and Horton, Bishop's Canning. Some of the numerous other undated enclosures in and around the WHS noted in the SMR may also date to the Iron Age.

Five apparently unenclosed settlements are also known, three from Fyfield (Table 2). There are numerous boundaries and field systems within and around the WHS, many of which are traditionally described as 'Celtic'. However, there has been little published work on these fields, and although it is likely that at least some were in use during the Iron Age, we have virtually no evidence for this. Fowler found little evidence for Iron Age arable fields on the Fyfield and Overton Downs, and speculated that the Downs might have been large pastoral ranches during this period, perhaps relating to the nearby hillforts (Fowler, pers. comm., Society of Antiquaries lecture 27.11.1997; 2000)

Table 1. Probable Iron Age enclosures in and around the Avebury WHS

(site numbers correspond to enclosures shown on Fig. 10)

No.	*Name*	*Grid Ref.*
1	Cropmark SW of East Kennett	SU 1066
2	New Town 1 (SM Wilts 681)	SU 1164
3	New Town 2 (SM Wilts 679)	SU 1264
4	Huish Hill	SU 1564
5	Preshute	SU 1374
6	North Farm (SM 21763)	SU 1368
7	West Overton (SM Wilts 824)	SU 1370
8	Woodborough Hill	SU 1161
9	Huish	SU1463

Table 2. Probable Iron Age settlements in and around the Avebury WHS

No.	*Name*	*Grid Ref.*
1	Fyfied 1	SU 140711
2	Fyfield 2	SU 1371
3	Wroughton Copse	SU 140714
4	Winterbourne Monkton	SU 1872
5	Beckhampton Penning	SU 0868

Records of individual findspots of Iron Age material in the region (Wilts SMR; NMR; Oxford University Celtic Coin Index and Devizes Museum) point to relatively high levels of activity throughout the 1st millennium BC (we await the new Iron Age catalogue of material in Devizes Museum; Corney forthcoming). These findspots are mainly of coins, brooches, pins and pottery. However, when examined in detail, the distribution of this material, along with earthworks or cropmarks of Iron Age type does, on the available evidence, appear sparse for the area around Avebury henge. This contrasts strongly with the evidence from elsewhere within the WHS, especially as excavations on Windmill Hill and Millbarrow have identified later prehistoric episodes of cultivation (Smith 1965; Whittle 1994). The research by Wessex Archaeology into a new foul sewer pipeline in the area also produced a paucity of evidence for Iron Age activity in their study area (Powell *et al.* 1996, 83), so it appears likely that some parts of the WHS were actively used during the Iron Age, and other areas avoided.

Within and in the near environs of the WHS, there are two marked concentrations of La Tène I *fibulae*, firstly on the high ground to east of Avebury henge, and secondly, to the west beyond Beckhampton, which are indicative of some sort of Iron Age activity in these areas. A fragment of a bronze scabbard chape was found some considerable time ago near Beckhampton (referred to in Powell *et al.* 1996, 13), and another *fibula* was recovered from Millbarrow in Whittle's excavations (Whittle 1994). Silbury Hill also seems to have acted as a focus for activity, with records of an Iron Age urn, an Iron Age coin and La Tène I bow brooch, and further Iron Age Durotrigian silver and bronze staters being discovered 'near' the Hill (Fig. 11).

Large, unordered surface collections of Iron Age pottery were collected by Meyrick from the 1930s–50s, largely on the high ground to east and south of the henge complex, which seem indicative of the fact that

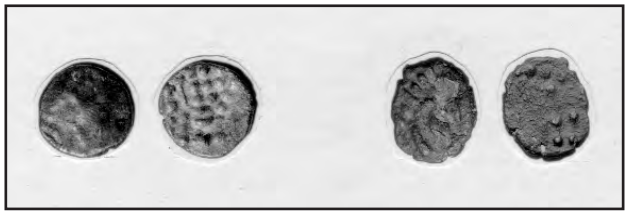

Fig. 11 Durotrigian silver and bronze staters, found near Silbury Hill in 1991 (¾ actual size)

the field systems in this area were being used (if not formed) during the Iron Age (Gingell, 1992, 4). However, some of Meyrick's 'Iron Age C' pottery *could* be immediately post-Conquest in date. Peter Fowler's work on the Fyfield and Overton Downs (Fowler 2000) provides more detailed evidence for land use in this area during the Iron Age, although preliminary results suggest a paucity of data for this period (Fowler and Blackwell 1998; Fowler 2000). Iron Age pottery is found at a low density throughout many parts of the WHS (SMR data) – perhaps as a result of the manuring of arable fields.

In the WHS and its environs, Iron Age coins appear to concentrate towards the east, around Savernake and Forest Hill near Marlborough, and into eastern end of Vale of Pewsey around Milton Lilbourne. These and other finds suggest that there was a major Late Iron Age centre at or near Forest Hill – the Marlborough Bucket (Fig. 12) came from just below Forest Hill earthwork site on the floodplain. As well as earlier potin coins, Trinovantian/Catuvellaunian, Atrebatic, Dobunnic and Durotrigian coinages are also found in the area (Table 3), and very recently (in 2000) a 'Savernake Forest' type stater has been found at Avebury (not included in Table 3). Although most recent scholars (Millett 1990, 67) place the Avebury WHS firmly within the territory of the Atrebates (which is partly supported by the coin finds – see Table 3), the coin evidence suggests that early Trinovantian/Catuvellaunian coinages were also used in the area, and that there is a strong influence from the Dobunni.

Fig. 12 The Marlborough Bucket

Who the Belgae were and where they fit into this area is also unknown although it is suggested by Millett that they were also not that far away from the WHS (1990, 67).

A cropmark site at Brown's Farm (just to the south of Marlborough) appears to show a polygonal enclosure, which is possibly an Iron Age shrine/temple (SU 1967). This interpretation is strengthened by its proximity to an adjacent Romano-British temple complex.

There are – as usual with the Iron Age – very few human remains from the area, and none known from the WHS itself, although the famous Marlborough Bucket probably came from a rich funerary context, and there are reports of other cremation burials from this vicinity. Possibly all such reports relate to a single (now lost) cremation cemetery near *Cunetio*. An burial dated to the Iron Age was excavated by H.G.O. Kendall in 1922–3 at Winterbourne Monkton (SMR data) just to the north of the WHS.

The dating of Iron Age sites in the WHS is largely dependant upon typological dating methods, using pottery and the metalwork finds described above. The

Table 3. Iron Age coins in the Oxford Celtic Coin Index (up to June 1997) within the area Eastings 0–25, Northings 60–80, that encloses the Avebury WHS, and total of all known Iron Age coins in the area

Tribal coin type	*No. coins in Oxford Coin Index*	*No. coins: all sources inc. SMR*
Trinovantes/ Catuvellauni	11	11
Atrebates	10	11
Dobunni	6	7
Durotriges	1	3
Corieltauvi	1	1
Geometric Type (Early)	1	1
Imported	1	1
Unidentified Iron Age	9	11

Note: The Celtic Coin Index mainly holds records of coins that have been photographed, so not all Iron Age coins are recorded within it

Devizes Museum Iron Age collections currently being reassessed will provide a basic chronological framework for the area (Corney forthcoming). For the early Iron Age, the artefacts from the All Cannings Cross site provide some relative dating evidence, and the forthcoming publication of the early Iron Age site at Potterne will also help (Lawson 2000). For the Late Iron Age, the coins from the area, although unstratified, are suggestive of the use of the WHS during the later Iron Age, and the ceramics from Withy Copse near Martinsell Hill (SU 1764) also provide some relative dating evidence for this period.

Absolute dates are rare, and have been recovered incidentally through research programmes into the monuments of earlier periods. There are some Iron Age radiocarbon dates from the henge itself, from charcoal from stake-holes, suggesting some use of the monument during this period (Whittle 1990). Another radiocarbon date of the Late Bronze Age/Early Iron Age was obtained on antler fragments from the eastern side of Silbury Hill recovered during excavations in 1867 and 1922. This date – 1280–780 BC (I-2795; 2750±100 BP – is dismissed as being too late by both Atkinson (1967, quoted by Whittle (1997) and Whittle (1997, 12), and is unlikely to represent Iron Age activity at Silbury.

2.6 Romano-British

Mark Corney and Bryn Walters

Although overshadowed by the prehistoric remains, the Avebury environs also contain a significant Romano-British archaeological resource (Fig. 13). A number of substantial settlements are known in the region and they will have undoubtedly influenced the local economy, society and administration. To the north of the region the 'small town' at Wanborough has a regular grid and at least one public building (Burnham and Wacher 199; Phillips and Walters 1977). To the west the poorly understood site of *Verlucio* (Sandy Lane) is a focus for villa and other settlement types, whilst recent work in the Silbury Hill (Fig.14) area has demonstrated the presence of a substantial settlement here (Powell *et al.* 1996; Corney 1997a). On the eastern fringe of the discussion area the 'small town of *Cunetio* (Mildenhall) is likely to have played an increasingly important role as a regional administration centre in the late Roman period (Corney 1997b).

Villas and other substantial buildings are fairly evenly distributed over the area of enquiry, with known or probable examples at Cherhill (SU 0370), Bishops Cannings (SU 0465), Avebury Trusloe (SU 0870), West Overton (SU 1368), Preshute (SU 1670), Brown's Farm (SU 1967), Forest Hill (SU 2068), Draycot (SU 1463), and Alton (SU 1361). Further probable sites in the Vale of Pewsey have been noted on recent aerial photographs taken by RCHME, most notably at Huish (SU 1363) and Wilcot (SU 1361). At least one of the above sites (Brown's Farm, SU 1967, may be associated with a temple or shrine).

A large number of other settlements of varying characteristics are known or suspected, for example, Fyfield Down and Overton Down (Fowler 2000), All Cannings (SU 0764), Knap Hill (SU 1263), Honeystreet (SU 1061), Cherhill Down (SU 0569), east of Gopher Wood (SU 1464), Huish Hill (SU 1564), Martinsell Hill (SU 1763 & 1864) and Marlborough (SU 1968). Additionally, a number of cropmark enclosures of probable Iron Age date are, by analogy with similar sites elsewhere in Wiltshire, likely to have continued into the Romano-British period, for instance, the enclosure complex at East Kennett (SU 1066). Similarly, finds of Romano-British pottery from hillforts such as Oliver's Castle (SU 0064) and Oldbury (SU 0469) suggest a continued use of Iron Age locations, (in the case of Oldbury, the further discovery of pennant roof tiles raise the possibility of a substantial Romano-British building, possibly a temple, adjacent to the hillfort). Extensive spreads of Romano-British material noted by local fieldworkers such as Meyrick (Swanton 1987) suggest a well-settled landscape. Notable concentrations occur at West Overton (SU 1268), Alton (SU 1163 & 1166), East Kennett (SU 1165), All Cannings Down (SU 0966) and Winterbourne Monkton (SU 1274–1275) (*ibid*).

Evidence of industrial activity is concentrated on the eastern fringe of the region; most notable is the Savernake Pottery industry, a ceramic tradition of probable Late Iron Age origin (Hopkins, pers. comm.), continuing into the 3rd century AD. Major kiln groups exist around Column Ride (Annable 1962) and Broomsgrove Farm, with a possible further group immediately to the west of Martinsell hillfort and at Withy Copse, Oare (Swan 1984).

The Roman period is the closest historically recorded period with which an obtainable resource might be compared with prehistoric ceremonial and religious practices. Consequently the collating of Roman evidence is of paramount importance. The possibility of continued reverence of the Avebury complex should be given serious consideration (*cf* Williams 1998). Ritual and ceremonial sites in the region are strongly suggested at a number of locations. A major shrine associated with a spring is probable at Mother Anthony's Well (ST 9964), located at the foot of Oliver's Castle, Oldbury hillfort (see above), Brown's Farm, Marlborough (SU 1967) – where a close association with the find spot of the Savernake Hoard suggests a Late Iron Age origin, Winterbourne Monkton Down (SU 1272) and close to Silbury Hill (SU 0968–1068). An unusual Roman barrow burial tradition has been identified through excavation on Overton Hill (Smith 1964) and Roman activity

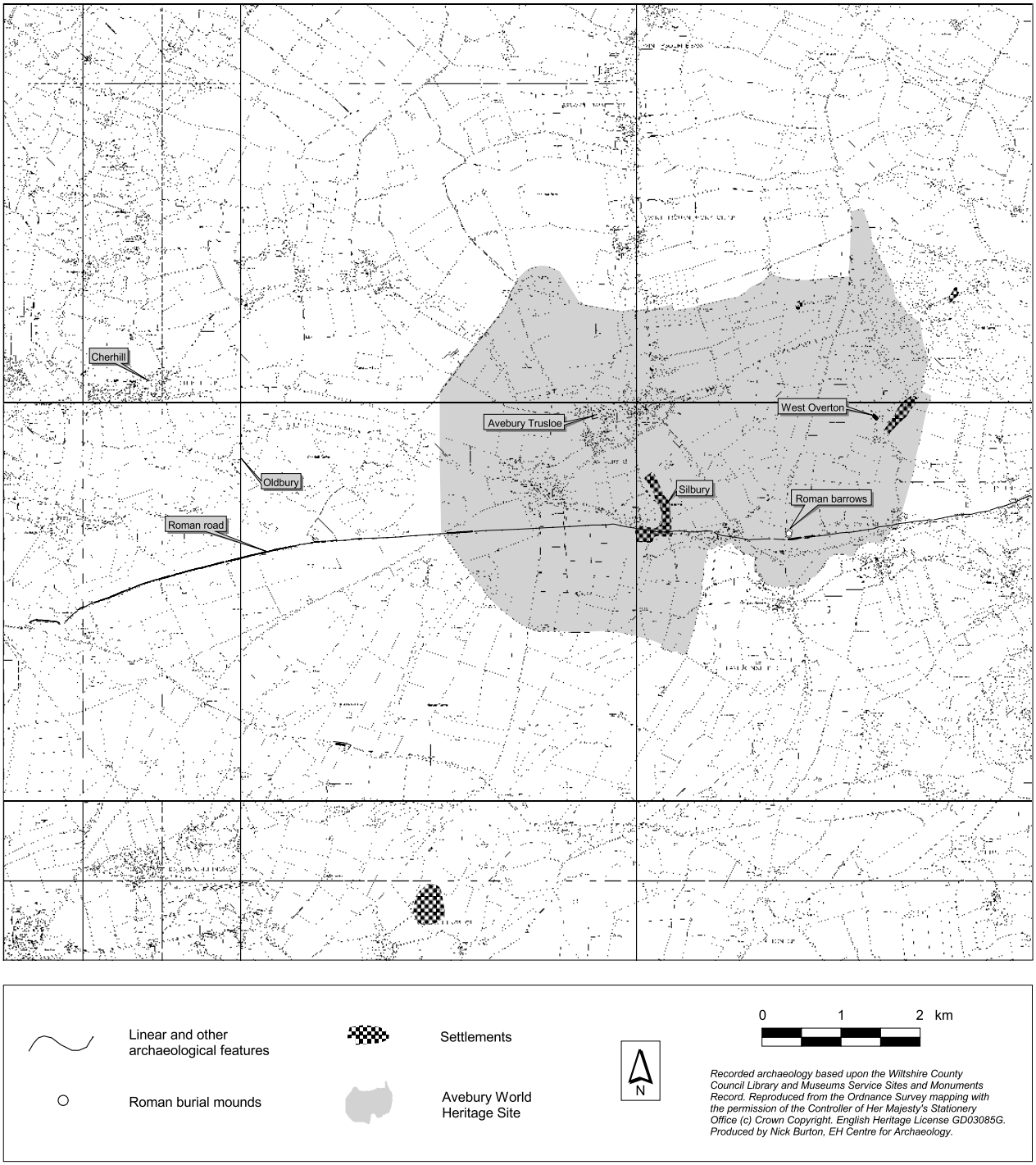

Fig. 13 Distrbution of Romano-British sites in the Avebury Area

around prehistoric funerary monuments is suggested by finds from West Kennet long barrow (Piggott 1962; Williams 1998). The possibility of Roman re-use of the Avebury henge is discussed in more detail below. Burials of Roman date are known from a number of locations such as Honeystreet (SU 1061), Marlborough (SU 1969) and Silbury Hill (SU 1068).

The general background pattern of 'stray' finds from the region suggest an ordered and structured landscape during the Romano-British period with settlements of many forms. The potential wealth of the area in the late Roman period has been recently demonstrated by the discovery of the large hoard of *siliquae* from Bishops Cannings (Guest 1997).

The results of Peter Fowler's work on Fyfield Down and Overton Down (Fowler 2000) are of great interest and importance in providing an insight into the evolution of the chalk downland economy.

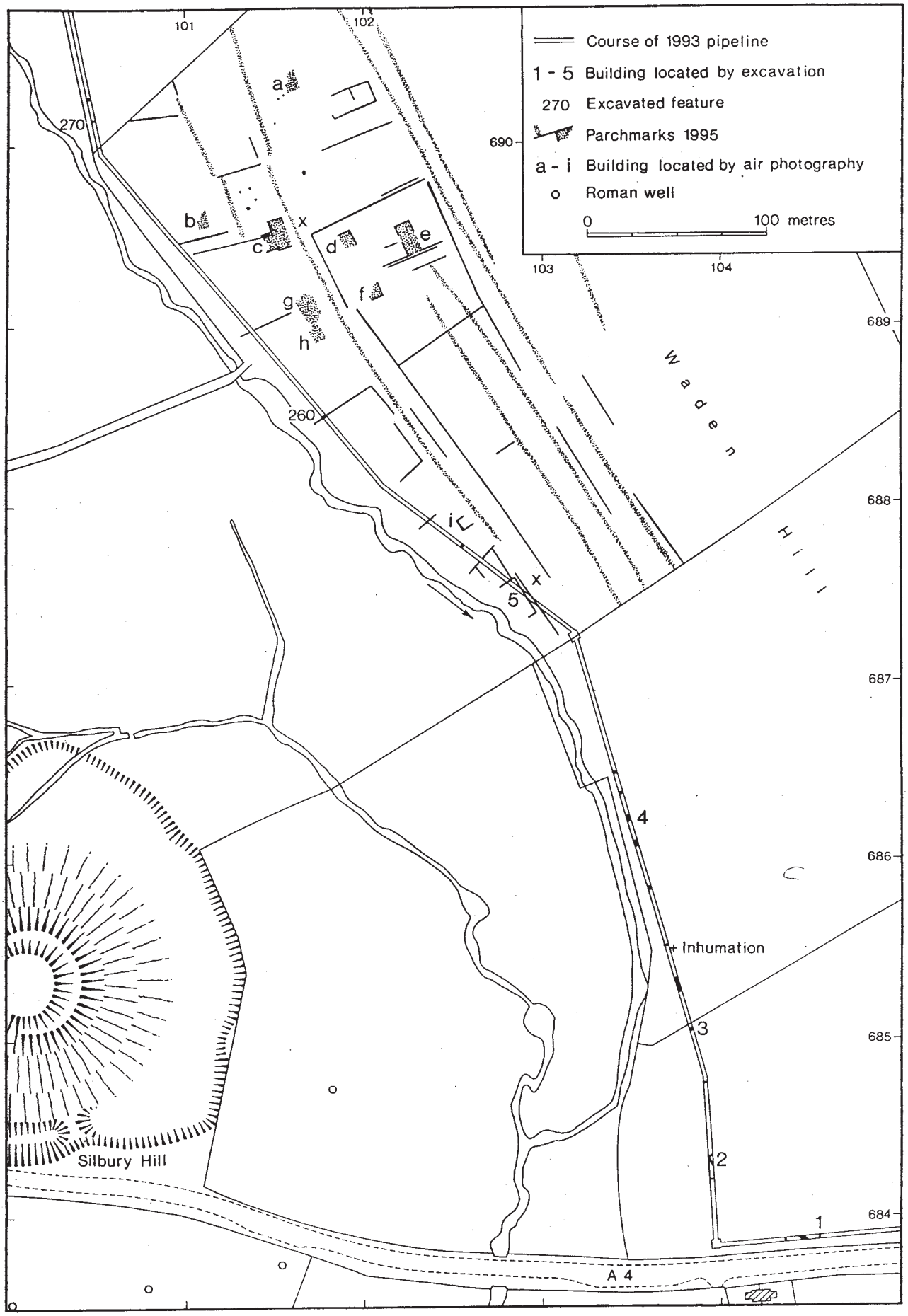

Fig. 14 Plan of the Silbury Hill Romano-British settlement

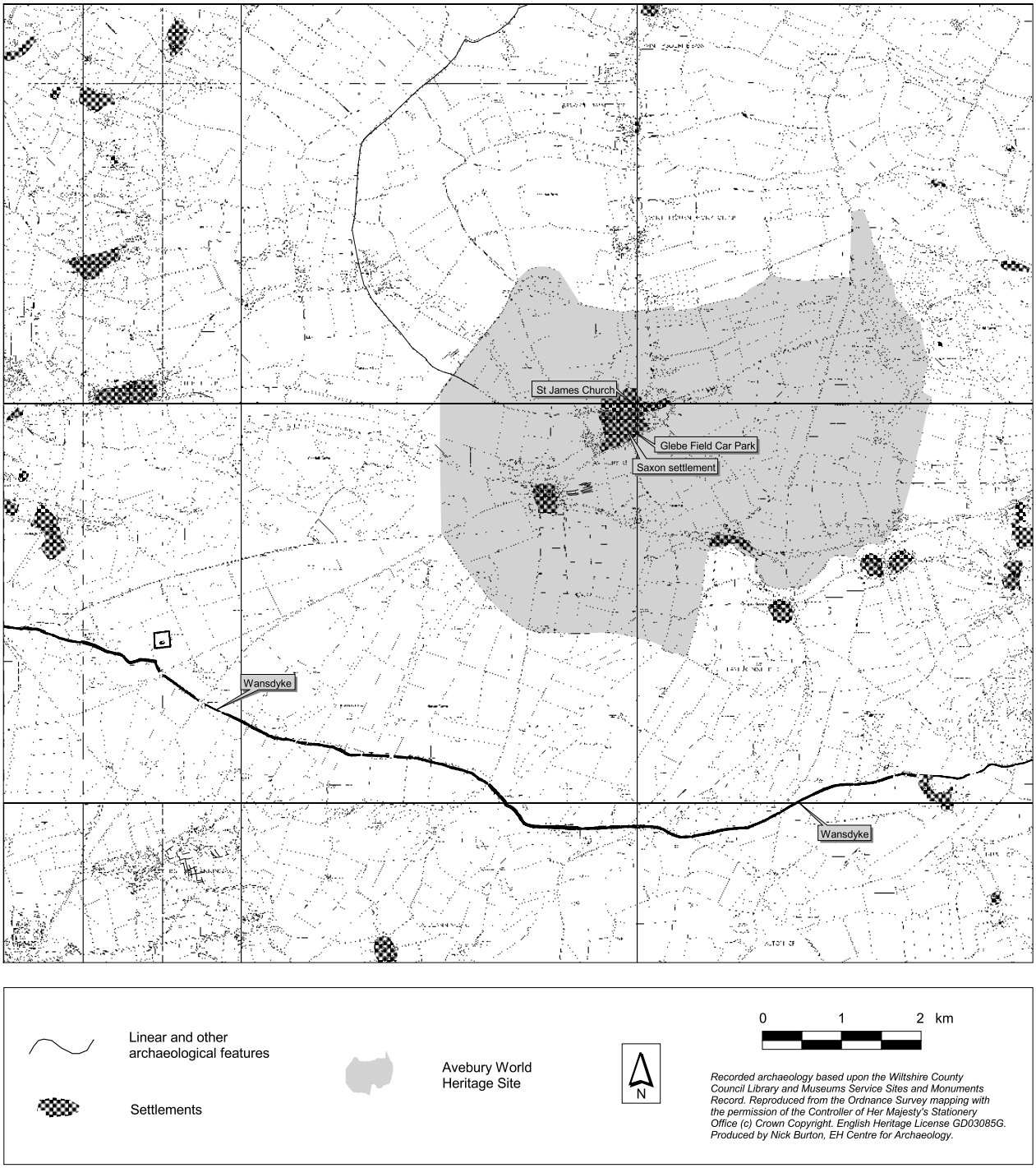

Fig. 15 Distribution of post-Roman and early Saxon sites in the study area

2.7 Post-Roman and Early Saxon
Gill Swanton and Peter Fowler

The sunken-floored houses discovered in the Glebe Field Car Park and excavated by Mrs Vatcher and by Chippenham College provide the bulk of the evidence currently known for early Saxon settlement in the immediate area. There have been further finds of pottery of the period at West Kennett and there may well be more in the collections of the local museums at Devizes and Avebury.

Local charters, although of later date, are likely to indicate land divisions which are relevant to this period. Other sites which are highly likely to bear a relationship to events in the immediate Avebury area are the late-occupied Roman villas, *Cunetio*, Wansdyke, Overton Down Site XII, Bishops Cannings hoard and local hill forts such as Oldbury which has produced post-Roman metalwork.

Glebe Field Car Park Site, Avebury: This area contains the remains of a number of sunken featured buildings

which produced, in terms of finds, mainly grass-tempered pottery, bone objects and animal bone together with a small amount of metalwork and a few glass beads. Further evidence from this site will be forthcoming when the material from the Chippenham College excavations is available. Sunken-featured buildings and chaff-tempered pottery occur throughout the Anglo-Saxon period but the indications are, in the case of Avebury, that these are early; the glass beads are 6th century (unless they are heirlooms) and Andrew Reynolds research has identified shifts in settlement in the Avebury area throughout the Saxon period.

*Wansdyke, Cunetio and Bishops Canning*s: There is evidence for massive fortifications being built at *Cunetio* in the late Roman period, though not enough research has been done yet to establish for how long this stronghold was in use. There is a consensus of current thought that the construction of the Wansdyke (Fig. 16) took place around AD 500. At Bishops Cannings, not far from the conjunction of the Roman Road and Wansdyke at Morgans Hill, a hoard of coins, jewellery and military metalwork had been deposited adjacent to a large villa. These sites indicate considerable activity in the late and immediately post Roman periods.

2.8 Later Saxon and Medieval
Andrew Reynolds

Avebury is one of the few places in north Wiltshire for which excavated and standing structural evidence exists for an Anglo-Saxon settlement with a long history, that then developed into the medieval period and later. The research potential is high and it is a matter of some concern that no full synthesis has been published. Consequently, the importance of the Anglo-Saxon and medieval remains has yet to be fully realised.

The only work to attempt to draw together all forms of evidence for Anglo-Saxon and medieval settlement at Avebury is that prepared by Professor Martyn Jope and intended for publication in Isobel Smith's 1965 volume *Windmill Hill and Avebury*. The absence of Jope's paper from the volume has meant that an important aspect of Avebury's archaeology has remained without public assessment, although a version of the article has recently been published (Jope 1999). A recent undergraduate dissertation undertaken at University College London has listed the unpublished excavations and provided a useful overview of the current state of knowledge based upon the work of the present writer (Harward 1997).

The documentary evidence for Avebury and its parish has been synthesised and published in the *VCH* account of the Hundred of Selkley (Freeman 1983), whilst the evidence for transport and communications in and around the monument has recently been clarified and expanded (Reynolds 1995).

Fig. 16 The Wansdyke from the air

Anglo-Saxon and Medieval Settlement at Avebury: an assessment

Excavations to the west of the henge monument at the present visitor car park have provided evidence for settlement in the early Anglo-Saxon period, although the density, character and dating of occupation is hard to determine on the basis of current knowledge. Dating rests on three glass beads considered by Peggy Guido to be of 6th-century date associated with at least two sunken featured buildings identified in excavations inside the entrance to the Glebe Field car park in 1976 (DoE 1977, 32–3). Further structural evidence, probably broadly contemporary, includes a sunken featured building in the northern part of the car park, found in 1985, and a further example adjacent to the Vatchers' earlier excavation found in 1988 (Borthwick 1985; Leah 1988).

The 1985 excavations revealed further features which were not excavated owing to time constraints – a situation to be very much regretted given Avebury's potential for understanding settlement processes in the pre-Conquest period. The 1988 excavations revealed a series of post-holes, which might represent either fence-lines or perhaps fragments of earthfast timber halls; the former would indicate a date in the 6th century or later,

when property boundaries became common again on rural settlement sites (Reynolds 1999, 48–50). Anglo-Saxon interest in the henge itself is revealed by the finding of chaff-tempered pottery in the upper fills of the henge ditch during St George Gray's excavations in the earlier part of the 20th century (Gray 1935). This type of pottery, however, can only be broadly dated to between the 5th and early 10th centuries (Hamerow *et al.* 1994, 15) in the absence of sherds displaying diagnostic decoration or form.

Excavations by John Evans *et al*. to the north of the car park settlement in Butlers Field have provided a series of radiocarbon dates between AD 800 and AD 1200, which indicate occupation in the middle to late Anglo-Saxon period and beyond (Evans 1993, 146, table 1). Of particular importance is a calibrated date of AD 680–1030 (OxA-1220; 1160±80 BP) obtained from faunal remains apparently in an occupation deposit (Evans *et al*. 1993, 146, table 1 and 190). This middle to late Anglo-Saxon date was obtained from Evans's Cutting J, which lay on the south side of an eliptical plan-form arguably of this period (see below).

At the School site, on the south side of the west entrance of the henge, Faith and Lance Vatcher revealed occupation earlier than, contemporary with, and later than, that found by Evans, including a date of AD 660–1020 (HAR-1696; 1200±80 BP) from a pit containing grain in association with occupation debris (Wilson 1970, 200-1; Cleal pers. comm. 2000). Although the Vatchers' excavations remain unpublished, the excavation plan indicates dense and successive occupation phases. Timber structures are seemingly represented, although the stratigraphic relationships between the various features are not shown. Structures and boundaries are clearly perpendicular to the current high street but little more can be ascertained without a detailed analysis of all aspects of the excavation archive.

Medieval Assize Rolls of 1289 describe the henge itself as *waledich* (ditch of the Britons) (Kempson 1955, 60–1), and it seems highly likely that the modern place-name of Avebury refers to an Anglo-Saxon settlement to the west of the monument rather than the henge itself. The English Place-Name Society interpretation of the name meaning 'fortified place by the Avon' (Gover *et al.* 1939, 293–4) would fit well with the evidence from the RCHME survey (Fig. 17) which shows a rectangular enclosure, surrounding the church and regular house plots, extending westward from the west entrance of the henge toward the Winterbourne. The most likely historical context for such a settlement plan is the later 9th or early 10th century, when fortified settlements, or *burhs*, were either refortified or newly established across southern England in response to the Viking threat after Alfred's defeat of Guthrum and his army at Edington in Wiltshire in 878 (*Anglo-Saxon Chronicles* s.a. 878). The RCHME survey appears to show an underlying, and thus earlier, settlement extending to the west of the suggested *burh*; a situation of no small academic importance.

It may be significant that the morphology of the earlier layout is comparable with the elliptical plans of both Ramsbury and Kintbury to the east; both important Anglo-Saxon *towns* with minster churches and *burh* suffixes. To the south, at Tilshead, and at Winchcombe in Gloucestershire, further elliptical plan forms can be observed in combination with later Anglo-Saxon administrative centres and minster churches (although there is no documented minster at Tilshead) (Haslam 1984, 117–18, fig. 49; Bassett 1985).

Within the suggested *burh*, which survives as an earthwork along the southern and western sides of the enclosure, regular plots of land are laid out perpendicular to the east–west *herepað* route that passes through both the henge and the *burh*: the course of the *herepað* itself can be reconstructed from a variety of sources (Reynolds 1995). Settlement planning of this type is commonly found in the *Burghal Hidage* towns, such as Cricklade and Wallingford, but not in *normal* rural settlements. It is of interest to note that the area encompassed by the proposed *burh* is comparable to estimations made for the extent of Anglo-Saxon Marlborough and Wilton (listed in the *Burghal Hidage)* (see Haslam 1984, 99, fig. 39 and 126, fig. 52). It might also be suggested that the henge itself served as an area where stock could be kept in times of emergency. The plan forms of many of the larger burghal towns indicates open spaces within the major fortifications, but the henge would have served the purpose perfectly and thus have minimised the labour requirement for the initial building of the *burh.*

On the basis of plan form, the existence of a substantial church, the association of the henge and settlement with a *herepað*, and the various archaeological discoveries, it is possible to suggest that Avebury is a failed small town of 9th and 10th to early 11th century date (Reynolds 2001). The early radiocarbon date from the School site could just as easily belong to the initial phase of settlement within the proposed *burh* as to the underlying plan-form, particularily as the earthwork phases at most excavated *burh* sites are undated. Jeremy Haslam has suggested that the decline of Chisbury and Bedwyn (both east of Marlborough) can be ascribed to the growth of Marlborough and Ramsbury in the late Anglo-Saxon period (Haslam 1984, 140). It seems equally likely that competing settlements to the west of Marlborough could have experienced decline to the benefit of Marlborough and perhaps also to Calne. By 1086 the *Domesday Survey* records only the presence of the church and its holding of two hides of land under the entry for Avebury, itself an indicator of the former's minster status (Blair 1985, 108, fig. 7.1).

St James' Church itself contains displaced sculpture of the 9th–10th centuries. Recent work on the building by the Compton Bassett Area Research Project and

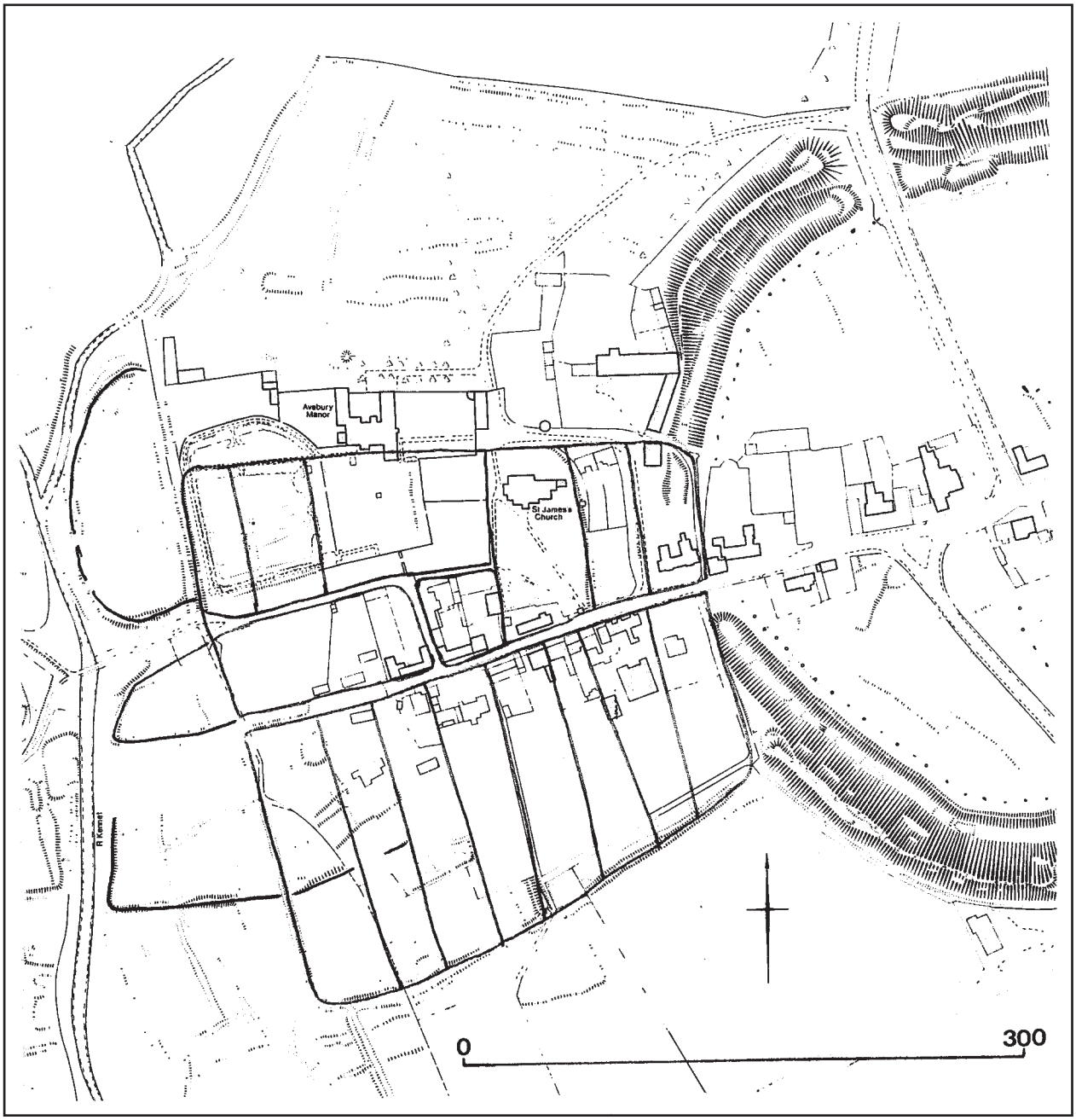

Fig. 17 Extract from the RCHME survey of Avebury with outline of the possible 9th century burh and earlier enclosures

(independently) Professor Rosemary Cramp has revised both the dating and recording of the structure undertaken by Harold and Joan Taylor (Taylor and Taylor 1965, 32–4; Semple in prep.). The north-west corner of the present nave is composed of side alternate megalithic quoins incorporating a fragment of Anglo-Saxon sculpture, of later 9th or 10th-century date and originally part of either a cross shaft or a coffin lid. This displaced stone indicates that the standing Anglo-Saxon fabric might represent the second masonry church on the site. Monumental sculpture is more likely to be associated with an important church rather than, for example, representing an isolated preaching cross as is often presumed (*cf.* Jope 1999, 61 who mistakenly refers to the sculpture being set into the tower rather than the north-west corner of the nave). It may be further conjectured that the displaced sculpture is related to a church contemporary with the building of the putative *burh* . The rebuilding of *c.* AD 1000 described below, therefore, apparently occurred shortly before Avebury's decline to a settlement of a more rural character.

The 10th- or 11th-century fabric of St James' includes single splay windows, with external rebates for wooden frames, on either side at the west end of the nave. Circular windows with holes for wicker formers appear to have been positioned above the single-splay windows and it seems probable that each side of the

nave was furnished with four single-splay windows with circular lights above each one. The chancel of the Anglo-Saxon church was apparently discovered during restoration in 1878 being shorter than the present chancel and probably of a single bay (see Taylor and Taylor 1965, 32–4 for a fuller description and Semple forthcoming for a revision of aspects of the Taylor's work). St James' Church (dedicated to All Saints in the 13th century) would have been an impressive building by local standards in the years around AD 1000.

The medieval settlement can only be viewed in terms of continuity from the Anglo-Saxon period as its location (and that of later settlement) was clearly established by the late Anglo-Saxon period. This is evidenced by the Vatchers' school site excavations and by the often-substantial finds of medieval pottery from the majority of excavations within and adjacent to the henge monument (Jope 1999). Clearly though, the medieval settlement was complex and dynamic with a number of foci and the precise chronology of expansion and contraction is not yet established. The finding of a late Anglo-Saxon coin brooch at Avebury Trusloe may indicate that the origins of that settlement lie in the pre-Conquest period, although the find might equally well represent a casual loss (Wilts SMR SU06NE404). A sherd of 'possibly Saxon' pottery was found on the south side of Beckhampton Road at Avebury Trusloe in 1997 (Wilts SMR SU06NE405).

St James' Church was comprehensively remodelled in the Norman period, during the early to mid 12th century, when aisles were added on both sides of the nave. Towards the end of the 12th century, the church acquired its finely decorated font. The font is seemingly not Anglo-Saxon as is often claimed, (*cf*. Powell *et al.* 1996, 59), although certain stylistic details of the upper band of decoration do suggest Anglo-Scandinavian influence/survival/revival and there are indications that the lower band of decoration might be a later addition. There is 13th-century work, including the chancel and a lancet window at the west end of the north aisle, but also several reset groups of encaustic floor tiles at the east end of both aisles. The tower is late medieval (15th century), with archaeological indicators that its west door is a later insertion, perhaps of the 16th century. Both aisles were widened during the 15th century, presumably on different occasions as they are of differing widths, and the south doorway (of the second half of the 12th century) which gave access into the Norman church was reset into its current position. The rood loft at the east end of the nave is 15th century, but much of the screen itself is later, probably Victorian.

The presence of an alien priory at Avebury in the medieval period is of significance yet remains uninvestigated by archaeological techniques (excepting the RCHME survey). Traditionally the priory is thought have occupied the site of Avebury Manor, ie, immediately adjacent to the Parish church (Burl 1979, 34). Avebury was one of only two English holdings (the other being Edith Weston in Rutland) of the Benedictine Abbey of St Georges de Boscherville near Rouen (Kirby 1956, 392). The priory at Avebury was set up soon after grants of land were made for its support in 1114 (*ibid.*). The peculiar position of the French monks is borne out by the fact that they were granted leave from Shire and Hundredal jurisdiction by Henry I; privileges which were later confirmed by Henry II and Richard I in 1189 and 1198 respectively (*ibid.*). The priory seems to have been a small-scale operation, probably with a small staff, but a series of disputes with the parish church (and its owner by 1133, Cirencester Abbey) is recorded throughout the Middle Ages (*ibid.*).

A number of potentially medieval vernacular buildings survive in the village, but only a thorough investigation behind the present frontages would enable this aspect to be elucidated. A small amount is known about medieval domestic structures from excavations over a wide area including the Vatcher's School site excavations noted above for their earlier remains. The recent Kennet Valley Foul Sewer pipeline revealed apparently dense occupation in Butler's Field, to the south and west of the henge, characterised by pits, ditches and a possible sarsen wall-foundation sealed by a layer containing a single sherd of 13th–14th century pottery (*cf*. Powell *et al.* 1996, 63–5). These results concur with those from the cuttings made in Butler's Field by Evans *et al.* (1993), which suggest that the dry valley floor either side of the Winterbourne was cultivated and settled from the mid- 12th to late 13th century, with the subsequent consolidation of settlement on higher ground on either side of the river (Avebury Trusloe to the west and Avebury to the east) (Powell *et al.* 1996, 61). The recent RCHME survey has recorded complex and well-preserved earthworks in and around the monument with features of several phases clearly visible west of the henge. These latter features include water meadow earthworks and the well-preserved remains, seemingly of at least two phases, of the settlement earthworks of Avebury Trusloe.

The use of the henge up to the 14th century is largely unremarkable in archaeological terms. Pottery of 12th- and 13th-century date has been recovered with frequency from excavations and other interventions within the monument, both from excavated boundary banks and ditches, largely in the south-east sector of the henge, but also from what was presumably ploughsoil (Burl 1979, 37; Jope 1999, 68). During the 14th century interest in the stones themselves is brought sharply into focus via evidence for the burial of up to 40 (and perhaps more) of the stones (Smith 1965, 176–8). Jope's analysis of medieval ceramics from stone burial pits concluded that there was little material earlier than the late 13th or 14th century (Jope 1999, 67), whilst the recent discovery and excavation of buried stones of the Beckhampton Avenue has revealed

at least four as yet undated stone burials which are probably con-temporary with those found within the henge (Gillings *et al.* 2000a, 7).

There is a tendency to ascribe the destruction of stones at Avebury by medieval populations to ecclesiastical concerns about pagan practices or revivals, but to view the better documented stone burning and burial of the 18th century in more practical terms (*cf.* Burl 1979, 66–7; Gillings *et al.* 2000a, 7). Impressive as the prehistoric stone settings are in terms of scale, if medieval populations driven by religious fervour desired the removal of the stones this could surely have been done in totality quickly and relatively easily. Of particular interest is the discovery of the so-called 'barber-surgeon' found during Keiller's campaign in 1938 (see Burl 1979, 39–40 for a description and discussion of this remarkable find). The burial is dated to *c.* 1320–1350 on the basis of associated coins (Ucko *et al.* 1991, 178) and concurs well with that suggested by ceramics for the general period of medieval stone burial at Avebury. Further, a buried stone along the line of the Kennet Avenue was associated with a worn silver penny of Henry III, minted between 1222 and 1237 (Burl 1979, 37). The condition of the coin indicates its loss after a considerable period of circulation and a date of deposition *c.* 1300 is not unlikely.

The late middle ages at Avebury are represented largely by additions and alterations to St James' Church, as described above. Interestingly, Jope notes that late medieval ceramics are largely absent from excavated assemblages at Avebury, although this most likely reflects the reversion to pasture of the henge interior as opposed to a contraction of settlement (Jope 1999, 69).

Summary

From the evidence available, it can be argued that early medieval settlement began immediately to the south-west of the henge monument, probably during the 6th century, and most likely comprised a single farmstead. By the early 9th century the settlement had moved northwards and eastwards, up to the west entrance of the henge itself. During the 8th or perhaps the 9th century an elliptical plan-form developed, with evidence for further enclosures to the north and south, which perhaps included the precinct of a minster church (the present-day St James). In the 9th century the settlement was arguably replanned on a major scale and the minster church, either rebuilt or newly built, leaving the fragments of Anglo-Saxon sculpture which survive today incorporated into the late Anglo-Saxon church and the present south porch. The extent of the proposed 9th century settlement indicates speculative urban development, but by the time of the *Domesday Survey* the rural character of Avebury, which has persisted into modern times, was established. With the exception of property boundaries, settlement lay largely without the henge until the post-medieval period, but extended and expanded westwards and northwards in the form of Avebury Trusloe and the growth of Avebury village itself.

The Avebury Area

Archaeological evidence for Anglo-Saxon settlements of the period up to *c.* 950 in the vicinity is poorly researched and almost entirely unpublished. Settlement sites have been recognised at Yatesbury, Liddington, Swindon and Littlecote among other less well investigated examples (Fig. 18). Burial sites of the early period comprise intrusive interments in round barrows such as those at Yatesbury and West Overton (Smith 1884; Eagles 1986), although flat cemeteries are known to the east at Blacknall Field, Pewsey and in the south of the county, most notably in the Salisbury region (Eagles 1994).

The Late Anglo-Saxon timber fortification on the top of Silbury Hill is of considerable interest as studies of Anglo-Saxon civil defence have relied almost wholly upon the evidence from the major fortified sites listed in the *Burghal Hidage* of the early 10th century. Richard Atkinson's discovery of postholes, associated with iron nails and a coin of Æthelred of 'about 1010', on the shelf of the upper terrace of the hill indicate a fortified site (Atkinson 1970, 313–14) suggesting that the name Silbury is best interpreted as OE *sele-burh* meaning 'fortified structure or hall'. The presence of a Viking burial on the top of Silbury Hill has been suggested on the basis of the finding of human bones, including a skull, 'deers horns', an iron knife with a bone handle, two 'brass bits of money' and an iron horse-bit on the summit of the hill in 1723 (Stukeley 1743, 158). Stukeley's draft manuscript for his 1743 *Abury*, however, describes the horse-bit as being found separately and seemingly on the slopes of the hill rather than the summit (Evison 1969, 335–6, note 9). The condition of the skeletal remains and the 'deers horns' is described as 'excessively' and 'very' rotten by Stukeley, and all of the finds, with the apparent exception of the horse-bit were made in the area of a 'great hole' sunk into the top of the hill in 1723. In other words, none of the finds need be associated with the human and animal bones, which may well be prehistoric to judge by their condition. The horse-bit itself is probably not of 9th- or 10th-century date as suggested by Vera Evison, but more likely an 11th-century piece (J. Graham-Campbell pers. comm. 1998) associated with late Anglo-Saxon military activity on the summit of the hill.

Fieldwork at Yatesbury to the north-west of Avebury has suggested that the region was defended by a network of minor fortifications which relied on intervisible signal stations and military roads (Reynolds 1999, 92–4; 2000, 113–18). Viking activity in the

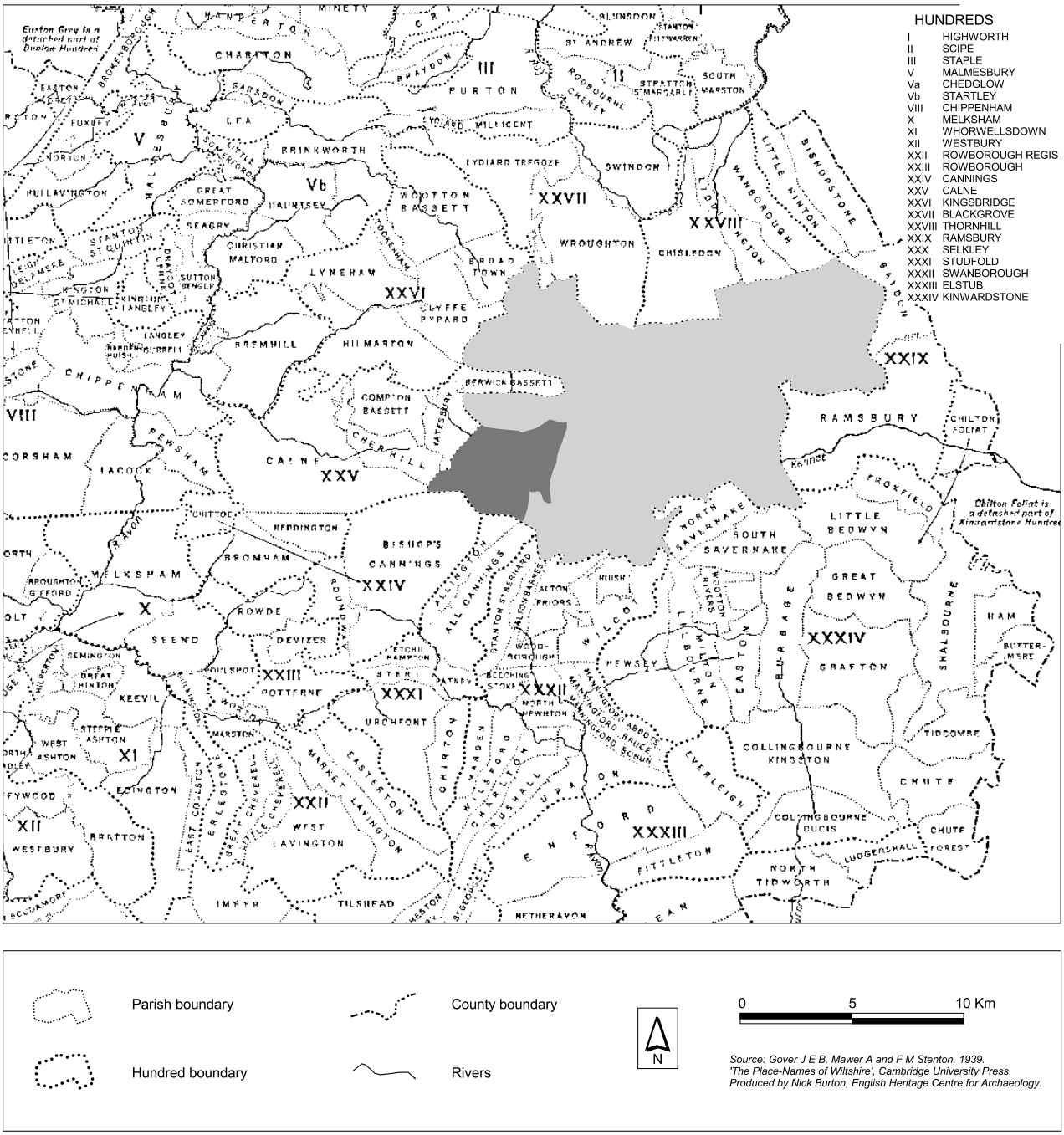

Fig. 18 Hundreds and parishes in north Wiltshire with Avebury parish and the Hundred of Selkley highlighted

vicinity of Avebury is recorded in *Anglo-Saxon Chronicle* entries for 1006 and 1010.

Archaeological evidence for late Anglo-Saxon settlement in the locality is notably sparse, although this is probably due to a lack of fieldwork rather than any other factor. The Pewsey Vale in particular possesses an impressive number of Anglo-Saxon land charters, largely of the 10th century, which indicate that the basic framework of the landscape in the Avebury region is a product of that period. The origins of the manorial system, viewed more clearly in the *Domesday Survey* a century later, lie in the 10th century during which time the medieval settlement pattern was largely fixed. Two substantial field projects, on Fyfield and Overton Downs to the east of Avebury and at Yatesbury to the west, provide important comparative data from which to assess the relative economies and status of nearby Anglo-Saxon and medieval settlements (Fowler 2000; Reynolds in prep.).

Apart from existing settlements with medieval or earlier origins, there are also extensive traces of deserted or shrunken settlement in the region (for example Bupton, Richardson and Beversbrook to the west and Shaw to the east). Medieval archaeologists

now view such sites as part of the continuum of human settlement and not as a phenomenon in their own right. Work on the individual settlements of the region has tended toward morphological analysis in recent years (Lewis 1994), although the deserted settlements of the broader western region have recently been reviewed (Aston 1989) along with aspects of medieval settlement in general (Aston and Lewis 1994). There are limitations with morphological approaches and it is clear from the archaeological record that settlements were subject, in many cases, to continual morphological change. There has been only limited work in the market towns. Jeremy Haslam's 1984 review of Wiltshire's Anglo-Saxon towns still provides the research agenda as little new data has become known, apart from that, for example, at Warminster and Wilton (Smith 1997; Andrews *et al.* 2000), although Wiltshire County Council are currently preparing a new assessment of the urban archaeological resource in the county.

The potential of the pre-Conquest charter evidence for landscape reconstruction has been clearly demonstrated (Hooke 1998; Costen 1994), although much remains to be done with this material and with the later cartographic and documentary sources. Of particular importance is the reconstruction of the agrarian landscape in both the early and middle Anglo-Saxon periods, prior to the establishment of open field systems in the region.

The precise chronology of the introduction of open fields in the broader Wessex region is a fundamental research issue, which requires extensive fieldwork if broader patterns are to be understood. The recent discoveries of buried stones along the line of the former Beckhampton Avenue highlights this aspect given that extensive traces of ridge and furrow were found underneath the modern ploughsoil over the area in which buried stones were found (Gillings *et al.* 2000a, 3, fig. 1). If the Beckhampton stones were buried during the early 14th century (see above), then a late date is apparent for the ridge and furrow given that the field would be difficult to plough if the stones were still present. Open fields are generally considered to develop from the 10th century (Reynolds 1999, 155–6). The social and settlement organisation that their existence implies emphasises the importance of establishing chronologies, particularly when settlement evidence is sparse. Medieval strip-lynchets have been recorded in the Avebury area, recently at Waden Hill, Beckhampton and Compton Bassett, but one of the most extensive excavations undertaken on such field remains is close by at Horton (Powell *et al.* 1996, 65–6; Soffe 1993, 145; Reynolds 1994, 180–5; Wood and Whittington 1959).

Conclusion

In conclusion, the Anglo-Saxon and medieval archaeology of Avebury and its environs is complex and varied, but also of a high quality and with significant potential for addressing national research questions in addition to local and regional issues. The potential to examine long-term trends in the development of settlement at Avebury from the post-Roman period through to the end of the middle ages and beyond makes the medieval archaeology of Avebury very special indeed.

2.9 The Palaeo-environmental Data
Michael J. Allen

In this review and research agenda, the term 'palaeo-environmental' refers to data, material or analyses which help us to formulate opinions about the nature of the past physical landscape; how it changed, and the nature, use and management of the biological resources it supported. It refers to evidence which relates to the nature of the broader landscape and of vegetation type, landscape form, soil type, and land use categories. In other words what did the landscape look like? and what did people do in it in terms of acquisition of resources for life and to eat, rather than the 'economy' *per se*. In earlier periods exploitation occurred without major modification and in later periods highly sophisticated schemes of management of introduced biological resources existed; ie, farming of livestock and of cereal and other food plants together with a wider economic basis including trade and import of these food stuffs. This document attempts to cover a period from 18,000 BP (Late Glacial) to the later Saxon and medieval period (AD 1500). The landscape and its resources essentially define the parameters of human activities (environmental possibilism) as outlined by Allen (2000c). In later periods (Iron Age on) land use relates closely to aspects of the economy, subsistence and the environment.

The review and the palaeo-environmental research agenda here largely concentrates on the nature of the physical landscape, as this provides a framework, and outlines the preservation of the palaeo-environmental material. In concentrating more on landscape rather than economic issues it is biased towards the prehistoric and earlier historic periods rather than later episodes. In addition, although evidence of crops and plants are included, evidence derived from animal bone is not overtly included this section as this is more readily available and is dealt with in the period reviews.

The nature of the presence and preservation of palaeo-environmental information is largely contingent upon the physical and climatic characteristics of the area under study. In this case the largely calcareous Cretaceous chalklands produced rolling landforms incised by river valleys that support rendzinas and typical brown earths (see Evans *et al.* 1993, fig. 3). Southern England has lower rainfall totals than upland Britain, and has a summer rainfall deficit which precludes ombrotrophic and blanket peat bog formations, and the accumulation of deep peat and

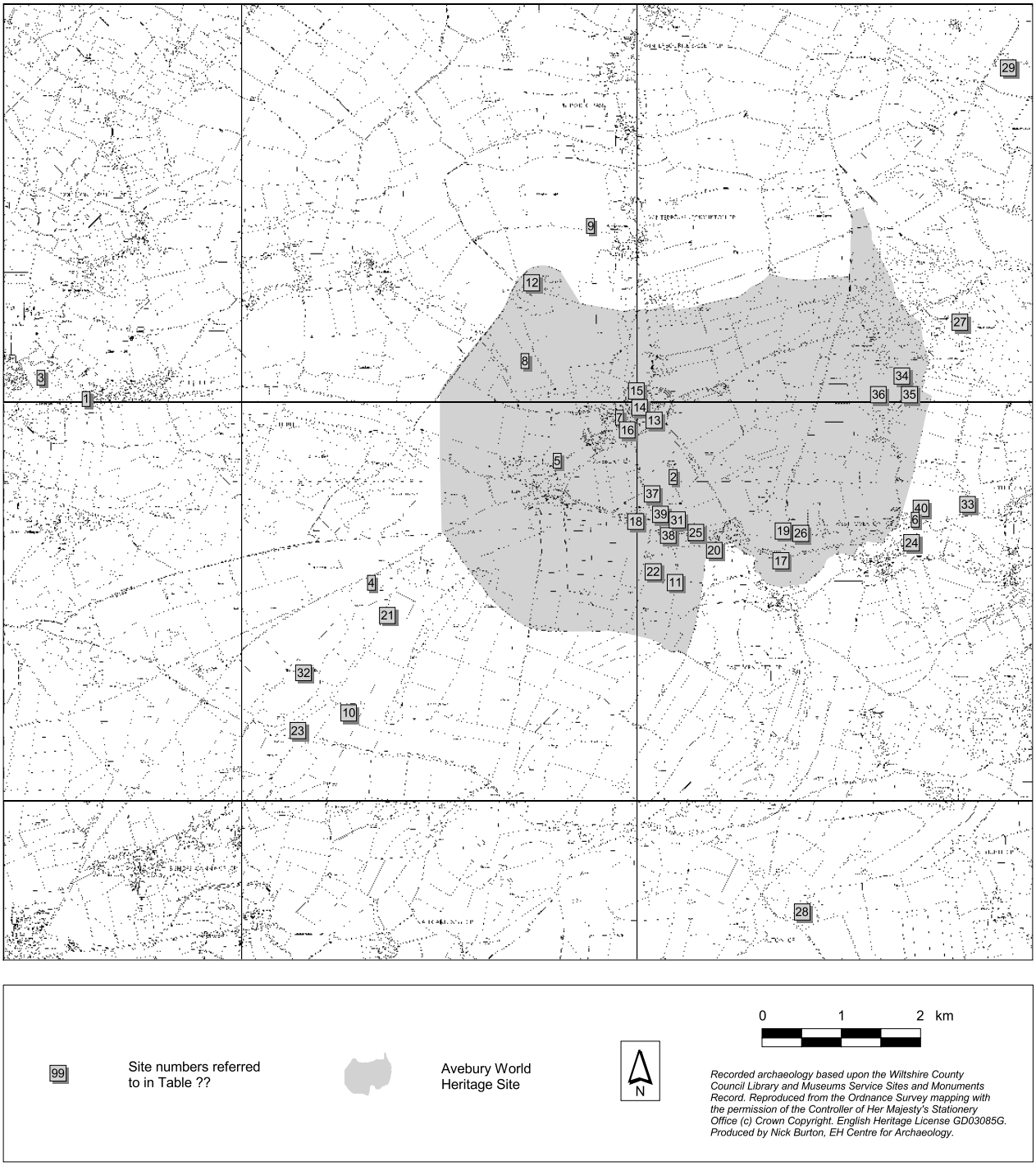

Fig. 19 Location of sites in the Avebury area where environmental evidence has been recovered

sediment in sequences such as occur in upland glacial valleys.

The predominately calcareous geology largely produces strongly alkaline hydrological, peat, soil and sediment conditions. Such alkalinity and biogenically active conditions are generally detrimental to the preservation of pollen (Scaife 1987, 126–7), but often ideal for calcareous shells and bones. To a large extent these geological and climatic parameters define the nature of the preserved remains and it is, therefore, no surprise to see that the resources, and study of them, are highly biased towards snails and bone which are well preserved, and biased against waterlogged remains in this largely free draining and dry landscape. It is perhaps a surprise, in view of the nature of the area, that a relatively high number of pollen analyses have been conducted for a chalkland region. This largely due to the research and personal interests of Dimbleby (1965) and Dimbleby and Evans (1974).

The majority of the palaeo-environmental data that can be offered for more detailed scrutiny has been recovered from archaeological excavation or specific

Table 4.sites in the Avebury area where environmental evidence has been recovered

	Site	*Grid Ref (SU)*	*References*	*Late Glacial*	*Mesolithic*	*Neolithic*	*Bronze Age*	*Iron Age*	*Roman*	*Later Saxon & medieval*
1	Cherhill	031 701	Evans & Smith 1967; Evans 1968a	×						
2	Waden Hill	104 685	Evans 1968a	×						
3	Cherhill tufa/long barrow	025 703	Evans & Smith 1983	×	×	×				
4	Beckhampton Rd long barrow	0666 6773	Evans 1968a	×		×				
5	South Street long barrow	902 6928	Evans 1968a	×		×				
6	West Overton alluvium	1354 6854	Evans *et al.* 1993	×	×					
7	Butler's Field	0979 6982	Mount 1991; Evans *et al.* 1993		×					×
8	Horslip long barrow	0860 7052	Ashbee *et al.* 1979							
9	Milbarrow long barrow	0943 7220	Whittle 1994			×				
10	Easton Down long barrow		Whittle *et al.* 1993			×				
11	West Kennet long barrow	105 677	Evans 1972; Piggott 1962			×				
12	Windmill Hill causewayed enc.	087 715	Evans 1965; Evans 1972; Whittle *et al.* 1999			×				
13	Avebury ditch		Gray 1935			×				
14	Avebury bank (school)	101 698	Evans 1969; 1972	×		×				
15	Avebury bank (Great barn)	101 698	Evans *et al.* 1985		×	×				
16	Avebury Truslow, alluvium	098 697	Evans *et al.* 1993	×	×					
17	The Santuary henge	118 679	Cunnington 1935			×				
18	Silbury Hill	100 685	Evans 1972; Whittle 1997			×				
19	Overton Down G6a pit	1193 6834	Smith 1964			×				
20	East Kennett Farm/Palisade	111 683	Allen & Carruthers 1989; Whittle 1997			×				×
21	Hemp Knoll round barrow/pit	1024 6788	Roberston MacKay 1980			×	×			
22	G55 round barrow/pit	1024 6788	Smith 1965a			×	×			
23	Roughridge Hill A round barrow	060 660	Evans 1972				×			
24	Pound Field round barrow	1346 6819	Powell *et al.* 1996				×			
25	'Stukeley' barrow, Waden Hill	1072 6838	Evans 1968b; Powell *et al.* 1996				×			
26	West Overton G6b barrow	1196 6835	Smith & Simpson 1966				×			
27	Fyfield Down I lynchet	141 710	Bowen & Fowler 1962; Evans 1972; Fowler 1967; Fowler & Evans 1967				×			
28	Knap Hill	121 636	Dimbleby & Evans 1974				×			
29	Dean Bottom	147 742	Gingell 1992				×			
30	Burderop Down	169 764	Gingell 1992				×			
31	Waden Hill, lynchet	1072 6838	Wyles & Allen 1996							×
32	Bishops Canning Down	0580 6660	Gingell 1992				×			
33	Piggledene colluvium	1417 6867	Allen in Fowler 2000				×			
34	Overton Down X/XI	134 702	Fowler 2001, FWP 63					×		
35	Overton Down, lynchet	134 702	Bowen & Fowler 1962; Fowler 1967; Fowler & Evans 1967					×		
36	Overton Down XII	133 701	Fowler 2001, FWP 65						×	
37	Winterbourne colluvium	1022 6880	Powell *et al.* 1996						×	
38	Winterboune Roman site	1045/49 6838/43	Powell *at al.* 1996						×	
39	Winterbourne burial	1037 6855	Evans 1966						×	
40	West Overton, colluvium	1354 6862	Evans *et al.* 1993							×

environmental enquiry since 1970 (Table 4). It is fortunate in that Professor John Evans has had a long-term interest in the area, working with Isobel Smith in the late 1960s, publishing data from a series of small excavations and a wider landscape interpretation in his book (Evans 1972), then publishing the data with the full archaeological reports (eg, Ashbee *et al.* 1979; Evans and Smith 1983). His research in the area concluded with a major research project (Evans *et al.* 1993), but his influence, or that of his research students and colleagues, is still seen in the corpus of data and excavations undertaken and published by Whittle, comprising one of the most outstanding ongoing research projects in the chalklands of southern England.

The Data

A relatively large number of specific investigations of Late Glacial deposits is derived from John Evans's early research interest in the environment and climate under which periglacial solifluction deposits occurred. The majority of the data in the area are, however, heavily skewed towards the monumental aspects and accompanying Neolithic and Bronze Age sites. In the Iron Age and later periods, it is fair to say that this landscape is not served particularly well by environmental enquiry (Allen 2000a, figs 2 and 3).

There has been an emphasis on the understanding of the local environment around individual sites or, more recently, on the ecological and historical development of individual components of the landscape, eg, the Upper Kennet river valley system (Evans *et al.* 1988; 1993). Apart from the novel and ground breaking review by Smith (1984), there has been little attempt to examine the WHS as a whole 'site' in terms of its palaeo-environmental landscape. review of the palaeo-environmental history and general development of the WHS is given in the archive to the archaeological works along the Kennet Valley Foul Sewer pipeline undertaken by Wessex Archaeology, and in Landscape Assessment and Planning Framework (Chris Blandford Associates 1997, section 2.4). These generally indicate the typical landscape succession published by Evans (Evans and Jones 1979, 209).

Endnote

[1]All radiocarbon dates, unless otherwise stated, are presented at 2 sigma (95% confidence). Calibrations have been calculated using the maximum intercept method (Stuiver and Reimer 1986) and the data of Stuiver *et al.* (1998)

Part 3. Research Agenda

3.1 Lower and Middle Palaeolithic
Julie Scott-Jackson

Lower and Middle Palaeolithic artefacts represent the earliest evidence of human occupation in the Avebury area. They may be found in a variety of geological contexts, namely: deposits mapped as Clay-with-flints; low-level gravels; and the topsoil overlying the Chalk. The deposits mapped as Clay-with-flints, which are held in solution features on the highest-levels of the Chalk downlands and particular environments in the low-level gravels, have the greatest potential for the retention of Palaeolithic sites *in situ*. Lower and Middle Palaeolithic artefacts found on/in the topsoil above the Chalk and shallow deposits of valley gravel are in a derived context.

Such artefacts are not without importance, as each one reflects both the action of a Palaeolithic person and a geological process or processes. The findspot will provide clues to both the processes that have moved them and, as they will have eroded out from a higher level – the possible existence of a previously undiscovered Palaeolithic sites. One findsite 15 km east from Avebury that requires special mention is the Palaeolithic site at Knowle Farm, Savernake, which is situated in soliflucted head gravel. Excavated by H.G.O. Kendall and others, this site produced many handaxes. As the site poses major geological and archaeological problems, the recommendations are that the site itself should be left until appropriated dating techniques are developed.

Settlement and Land Use

As Lower and Middle Palaeolithic people were hunter-scavengers-gatherers, the Downland area provided them with many opportunities. Although no actual structures have survived, we know from the stone tools which have been found that these early visitors to the Avebury area camped by the rivers and streams and on top of the downs. Whether these camps were home-bases, butchering areas or consumption/resting areas we do not know. The hilltops and plateaux edges of the downlands were important to Palaeolithic people. From these high places they could (safely) watch the movements of animals (and other groups of people!) on both the hillsides and in the valleys below. They could also manufacture stone tools from the readily available flint or stone. High-level vantage points and knappable material are consistent unifying features of all high-level occurrences on the deposits mapped as Clay-with-flints. The burnt flint often found at these working sites is indicative of the presence of small hearths.

The Lower and Middle Palaeolithic site on Hackpen Hill in the Avebury area is one of the rare, very important, well documented 'embedded' high-level stone tool-manufacturing sites on deposits mapped as Clay-with-flints. Carefully controlled, detailed investigations at Hackpen Hill, using the new methodology developed for such sites which identifies subtle stratigraphies in high-level excavated sites allowing inferences to be made, is now recommended (Scott-Jackson 2000). As most of the Avebury artefacts have been recovered as surface finds, the information that they impart is somewhat limited. However, distribution of artefacts in the wider landscape provides valuable information in itself, as these stone tools testify to Palaeolithic peoples' use of the landscape as a whole (Gamble 1996).

Economy and Subsistence

The subsistence strategies of Lower and Middle Palaeolithic peoples in Britain can only be inferred through detailed excavation of sites in primary context. In general, the evidence from contemporary sites in other areas of Britain, shows that these Palaeolithic peoples were hunter-scavenger-gatherers who appear to have gradually adapted their subsistence strategies to maximise their success in the face of climatic changes. However, their exploitation of the natural resources has, in certain areas appears to have been greater than their actual needs and may well have contributed to the demise of particular species. Suitable sites providing the necessary level of resolution await discovery in the Avebury area.

Ceremony and Ritual

There is no evidence for any Lower and Middle Palaeolithic ritual behaviour or ceremony in the Avebury area, indeed there is little evidence in the overall record of the British Palaeolithic.

Transport and Communication

No evidence exists to suggest that transport in the Lower and Middle Palaeolithic was not entirely on foot. Lithic procurement studies have shown that in some area materials were collected often from some distance and brought to the site. It is not inconceivable that particular paths and routes were used by these early hunters and gatherers. However, no such system of communication is now identifiable.

3.2 Late Glacial and Early Post-glacial
Andrew Lawson

Settlement and Land Use

No Upper Palaeolithic remains have been identified in the Avebury region. Both activity (hunting and temporary stay) and settlement (base) sites have been suggested for the Mesolithic although extensive sites have not been investigated by excavation. The recognition of Mesolithic artefacts in different topographic locations indicates that, whereas river valleys may have provided the greatest range of natural resources and hence were attractive for settlement, a variety of activities occurred throughout the landscape.

A few sites in the British Isles have provided evidence for light, stake-supported structures while others have revealed pits of various forms (for example, Jacobi 1981; Allen 1995) . Further evidence for any Mesolithic structures would be an important addition to the current, small national repertoire. Excavations in 1997 by Mike Hamilton and Ian Dennison (University College, Cardiff), 7 km south-east of Avebury, at Golden Ball Hill investigated a site previously identified from a surface lithic scatter. Flint pebble floors, hearths and post-holes, probably representing light buildings, were associated with the lithics (Dennison 1997). However, the date and nature of the lithics and features, whether Late Mesolithic, Early Neolithic or Bronze Age, has yet to be established. It is likely that Late Mesolithic flints were incidentally incorporated into later prehistoric surfaces and structures.

Environment

Evans *et al.* have established that throughout the Windermere Interstadial and Loch Lomond Stadial, the period of the later Upper Palaeolithic settlement of Britain, the Avebury area was open country, albeit that the hydrological regime, and consequently the vegetation, varied depending upon the topographic situation. This open country gradually gave way to woodland (attested at Avebury in the 9th millennium BP and at Cherhill in the 8th millennium BP), which was apparently ubiquitous in the study area by the middle Holocene. Further afield, in the Kennet Valley near Newbury, wide tracts of peat formed from Pre-Boreal times onwards, probably effecting the depositional regime upstream, but contemporaneous peat deposits have not been located in the Avebury region itself.

Mesolithic artefacts have been found in stratified deposits at Avebury, West Overton and Cherhill in soils which formed under such woodland conditions, and from beneath Neolithic monuments. Elsewhere in Britain there is evidence that Mesolithic hunters periodically burned tracts of woodland, presumably to assist in hunting and the encouragement of fresh vegetational growth. Clearance through the felling of trees was not widespread but probably restricted to the margins of natural glades and watercourses.

Chronology

Only about 125 late Upper Palaeolithic sites have been identified in Britain and few open air sites (as opposed to cave sites) have produced radiocarbon dates earlier than 10,000 BP (Barton 1991). However, these include Thatcham Site 3 in the Kennet Valley and Three Ways Wharf in another tributary of the Thames. The recognition of other Upper Palaeolithic sites in the Kennet Valley (Bonsall 1977) demonstrates the potential for similar sites of this period in the Avebury area, possibly masked by the later deposits demonstrated by Evans

Generally, the chronology of the Mesolithic activity in the Avebury area is poorly understood. In consequence, discussions of the adaptation of hunting communities to their changing environment or of transition to an agricultural economy are difficult. The recovery of such information is fundamental to an understanding of the establishment of communities who constructed the first monuments of the Avebury WHS.

Ceremony, Ritual and Burial

Little is known of the belief systems of Upper Palaeolithic and Mesolithic peoples in Britain. However, the later Upper Palaeolithic industries are coeval with the later Magdalenian (V–VI) of France and its astonishing array of works of art which can be related to belief systems (Bahn and Vertut 1997). Mobiliary art is uncommon in Britain but there is no reason why examples should not be found on open air sites.

The discovery of substantial Early Mesolithic post-pits near Stonehenge has raised questions of their function and the suggestion that ceremonial posts were erected has been put forward (Allen 1995). It is possible that the occurrence of such features has been overlooked on other sites (Allen and Gardiner forthcoming). It may be significant, therefore, that Mesolithic flints have been found during the investigation of three Neolithic long barrows (Horslip, South Street, West Kennet) and at Windmill Hill. It might be postulated that the earthwork monuments at such sites do not reflect primary ceremonial activity but that they were built at locations with established traditions or with ceremonial connotations.

The national absence of cemeteries (except possibly in the Mendip caves), or indeed of many burials, of this

period makes the study of human populations difficult. No human skeletal remains have been attributed to the period in the Avebury area but any discovery would be of great significance.

Technology

Advances in lithic technology are apparent throughout this period. However, the subtle distinctions between Upper Palaeolithic, Early Mesolithic, Late Mesolithic and Early Neolithic typologies have not been systematically sought in the assemblages from Avebury. In consequence, uncertainty remains over the true identifications of many individual artefacts and assemblages. Upper Palaeolithic artefacts may have been overlooked, tranchet axes may have been confused with unpolished Neolithic axes, small blade industries may have been assigned a Mesolithic or an early Neolithic date without rationale and so forth.

Economy and Subsistence

The population at this time were hunter-gatherers and entirely dependent upon the natural resources of the area. Only four sites in Britain (Star Carr, Thatcham, Three Ways Wharf and Morton) have produced substantial faunal assemblages to enable the hunting economy to be reasonably assessed. At these sites, red and roe deer predominate with small quantities of elk, aurochs and horse. Smaller animals, such as beaver, marten, hare, wolf and fox are represented here and elsewhere and were probably taken for their furs. In northern Europe, examples of nets, bows, rope, etc, demonstrate the range of equipment used in hunting, fishing and fowling. Charred hazel nut shells are a frequent find on Mesolithic sites and offer limited evidence for seasonal gathering.

The discovery of any substantial mesolithic site with associated faunal remains would be of national significance but if it were associated with organic deposits it would be all the more significant.

Transport and Communication

The development of ubiquitous woodland cover during the Holocene would naturally have restricted the open movement formerly possible in the tundra conditions of the Late Glacial. Communication would have been easier along watercourses and the discovery of logboats elsewhere demonstrates the development of water transport. The Kennet Valley has many known Mesolithic sites (Lobb and Rose 1996,73) and, hence, it may have been a well-known axis for communication.

3.3 Neolithic and Early Bronze Age
Rosamund M.J. Cleal

Settlement and Land Use

Research within the World Heritage Site has been largely, although not exclusively, concentrated on the major archaeological sites of the Neolithic and Bronze Age monument complexes, as is inevitable and understandable. The setting of those sites remains less well-understood than the sites themselves, despite research projects over the last 10–15 years which have done much to fill some of the gaps. Of the gaps remaining it is possible to suggest remedies for some, while for others it is difficult to suggest targeted research which could easily offer solutions.

Areas in which much could be added to our understanding of the period in the WHS include:

a) The early stages of Neolithic settlement in the Avebury area.

   Evidence for earliest Neolithic settlement in this area is thin, with only a single radiocarbon date for Horslip long barrow to supply confirmation of an early date for Neolithic activity (ie in Whittle's Neolithic phase A, Whittle 1993, 31), though more may be represented by undated pre-monument episodes. Whittle has suggested that Mesolithic use of the area may have been 'slight and episodic' in part because of the lack of water, and that this may have continued into the late 5th/early 4th millennium BC when Neolithic activity is attested elsewhere in the country (1993, 31).

b) The nature and frequency of settlement between and around the major Neolithic/Early Bronze Age ceremonial/ritual sites during the period of their use (ie from the appearance of long barrows and causewayed enclosures to the end of the Early Bronze Age use of round barrows).

   Unlike the area around Stonehenge, which was extensively fieldwalked as part of the Stonehenge Environs Project, only just over 15% of the World Heritage Site has been subject to methodical surface collection (see Section 2.3). Much more was collected in a less structured and methodical manner in the early years of the century, largely by Kendall (see Section 2.3) and by Passmore. Clearly there will only be a limited amount of information to be derived from the earlier collections but it should not be dismissed. Gardiner, among others (1987), has argued that some information of value can be extracted from old collections, and it is also important to recognise that areas collected in this way are not necessarily now bare of finds. Study of the

behaviour of artefacts in the plough zone has shown that it is simplistic to assume that an area is stripped clean of artefacts by being collected once, or even on multiple occasions. An examination of the old records and collected material could offer both some insight into the density of occupation, possibly with some crude indication of date, and in addition give some indication of the duration and intensity of collecting by area. This could offer both information on settlement, and information for management, particularly in identifying those areas which *are* likely to have been depleted by repeated collecting. Moreover, consideration needs to be given to the meaning of flint scatters in the light of discoveries in other areas such as the Walton Basin (Gibson 1997).

As an adjunct to this is it is clearly necessary to define those areas within the WHS landscape which are likely to be masked by colluvium and therefore may be presenting 'false' blank areas within the distributions. This fits well with the environmental research objectives.

c) The date and nature of the change from an unenclosed landscape to one with extensive field systems; most importantly, whether any change takes place earlier than the Middle Bronze Age.

To summarise: there are indications of much use of the landscape during this period, with locations varying in date and in intensity of use. At present there is very little indication of a very early Neolithic date for any of this. The present state of knowledge can only be summarised as poor, and the context in which the monuments developed and were used remains largely unknown.

Towards the end of the period, or, perhaps more probably, in the succeeding period, the development of large scale field systems appears to have radically altered the character of the landscape. The date of the inception of these field systems remains largely conjectural.

Environment

The Avebury area is fortunate in having been a focus for well-directed and intensive environmental research for some years. Useful summaries are included, with the results of specific projects, by Evans (*et al.* 1993) and Whittle (1993; 1997). The outline of the environmental history is now well-established but much detail could be usefully added to the picture. (See sections 2.9 and 3.9 by Mike Allen in this volume).

Chronology: Relative and Absolute

The relative sequence of the major monuments in the area is known in broad terms, but the fine detail is poorly understood. It is still not possible to determine, for instance, the sequence of enclosure (or enclosures) and stone monuments at the henge and Avenues, nor the chronological relationship of Silbury Hill's construction to those elements.

In the case of isolated elements in the landscape, such as, in particular, the long and round barrows and stone circles, chronological definition is even weaker. This leaves a situation in which attempts at explanation for the exceptional developments at Avebury are handicapped not only by lack of information about which monuments were in contemporary use with which, thereby giving some idea of the scale of the complex in use, but also by there being little knowledge of the time periods necessary to construct the monuments. Very different interpretations are legitimately possible at present depending on whether a long or short timescale is taken.

Ceremony, Ritual, Burial, Religion

The elucidation of these aspects of human use of the area has formed a large part of the research to date. In particular the ritual and ceremonial use of Windmill Hill causewayed enclosure has emerged as a strong theme in recent research, replacing the more functional interpretation current in earlier decades, and much of this was achieved by re-analysis of earlier work.

It is clear that even in terms of the complexity of the known ritual/ceremonial sites there may be more to be revealed, as demonstrated by the discovery of the West Kennet palisaded enclosures and the newly discovered double ditched feature within the henge (Fig. 20). Areas which clearly demand further work include the area of the Longstones and the Beckhampton Avenue in general; the areas immediately outside the henge monument (where, for instance, Crawford and Keiller noted pit-like features showing during the photography for *Wessex from the Air* – although not photographed; Crawford and Keiller 1928, 31, observation of 22 June); the stone circles inside and outside the present boundary of the WHS, and the existence or non-existence of the Yatesbury cursus.

An appreciation of monuments as spaces which were created and used by real people has led to greater attention being focussed on the three-dimensional form of monuments, rather than their appearance in plan. As most of the monuments concerned are denuded or destroyed, wholly or partially, this is a field where new

Fig. 20 New 'double-ditched feature' in the Avebury henge, 1995

techniques such as virtual reality modelling come into their own. Some work is already underway (jointly by universities of Newcastle, Leicester, Southampton and Wales (Newport)) but the potential offered by techniques such as this, which also have the advantage of being non-destructive and non-intrusive, is clearly great.

Engineering, Craft and Technology

These themes have been addressed in the past in, for example, the calculation of number of work hours required for the construction of the large monuments or the likely organisation of pottery production (Howard 1981). These two major areas – techniques and organisation of construction, and techniques and organisation of production of items of material culture, particularly ceramics and lithics – seem likely to be dominant in this area of research in future.

Obvious gaps in knowledge which could be rectified by quite limited investigative work include using neutron activation to further the research by Smith (1965) and later by Howard (1981) on local clay sources, and it is possible that more detail could be added to the sourcing of the shelly fabrics by further examination.

People (Diet and Health)

For the Neolithic and Bronze Age periods people as represented by excavated human remains are relatively well-represented, compared with some periods within the WHS. In terms of number of individuals represented by excavated bone, there are more from the Neolithic period and Early Bronze Age than from all the others.

The occurrence of human bone in causewayed enclosures has been a recent theme in Neolithic studies

and Windmill Hill is no exception to most in having at least a small number of individuals represented by some body elements. West Kennet long barrow has the largest assemblage from the area, with 40–50 people represented, of all ages, and relatively few modern techniques of elucidating family relationships, diet and health have been applied to this assemblage. If bone from here and elsewhere in the area proved suitable for DNA analysis there might be much scope for investigating family relationships.

Recent research on earlier Neolithic human bones using stable isotope analysis has revealed some patterns of use of plant, animal and marine resources in the diets of the Neolithic population of the 4th millennium BC in southern Britain, including three samples from West Kennet long barrow (M. Richards, lecture to Prehistoric Society, February 2000). Further work on diet could indicate whether these are part of a wider pattern within the Avebury and surrounding area, or whether, for instance, the populations of causewayed enclosures and long barrows differed in their diets.

The use of absorbed residue analysis and SEM analysis of carbonised organic residues on pottery may be fruitful in indicating the original contents and use of ceramics in the Avebury area.

Social Organisation, Economy and Subsistence

These inter-related themes have been a recurrent concern for this period for the entire history of interest in the Neolithic and Bronze Age periods in the area. Attention has been focused, however, largely on the major monuments, and particularly on Windmill Hill, the henge, and West Kennet long barrow. Whether settlement was transitory or otherwise is unknown, and building up a picture of this is difficult when some of the settlement sites are certainly buried in the valley bottoms and so much emphasis has been laid on the monuments. Much remains to be done in terms of integrating the known evidence from environmental and economic analysis, with the very incomplete settlement picture and the still uncertain sequence of monument building.

Transport and Communication

This theme seems likely to remain marginal to this period, not because of lack of importance during the Neolithic period and Bronze Age, but because its archaeological visibility is low. The area must, for most of this period, have been criss-crossed by networks of paths and tracks, well-known and recognised to their users but unknown and unrecoverable to us. Indirect evidence for transport and communication is, however, provided by material goods which were carried long distances (pots, foreign stone, etc), which links this theme with that of Engineering, Technology and Craft.

3.4 Late Bronze Age
Gill Swanton, C. Gingell and Andrew J. Lawson

Settlement and Land Use

The Marlborough Downs Project (Gingell 1992) identified settlements to the north and south of the WHS. Gingell assigns these to the Middle and later (but not latest) Bronze Age (see also Piggott 1942). There may be some further sites in the study area: eg, investigations of earthworks on the western scarp of the Upper/Middle Chalk could prove valuable.

The Marlborough Downs Project found little trace of the latest Bronze Age/Early Iron Age transition which the excavator postulated was due to a change of use of the area (Gingell 1992, 153.). The Fyfod project (Fowler 2000) has identified enclosed Late Bronze Age/Early Iron Age sites (Little Woodbury type) spaced across the Downs (Totterdown, Overton Down, West Overton, East Kennett). These late settlements appear to be as carefully positioned in the landscape as the already extant co-axial field systems into which they were set. The Overton Down settlement evidence indicates that it was established in the 8th century BC and by 600 BC had been destroyed. The West Overton 'Headlands' site indicates intense activity (Fowler and Blackwell 1998; Fowler 2000) at this time.

The surviving evidence for physical organisation of the landscape appears to stem from the Middle Bronze Age, as elsewhere in Britain (eg, Fleming 1998). The relationship between fields and settlements; their geographical and chronological distribution; their roots in preceding land use and succeeding practices; and their significance of the monuments of the past (eg, was there 'zoning'?). All merit further research.

Environment

Evidence comes from settlements, burial sites, ditches and valley bottoms (dry and riverine). This provides a widely distributed sample, possibly reflecting very localised conditions. There is considerable potential for environmental study in the area, building on the work of Evans (Evans *et al.* 1993) in the Upper Kennet Valley.

Chronology

The dates available are widely scattered geographically. The dates available from the excavation of the cremation cemetery at West Overton (WO G19)

indicates prolonged use, which may have been linked to reference to the past: availability of similar dating evidence would assist in building a framework for studying burial practice, land use, environmental evidence and social links.

Ceremony, Ritual, Burial, Religion

The potential existence of further cremation cemeteries (in the current absence of settlement evidence) provides the possibility of further careful sampling for environmental, population and ceremonial activity. The cremation cemetery at West Overton G19 site indicates careful selection of pyre materials and design of burial situation (use of pot, stone, pits, etc) and subsequent curation of the site.

Engineering, Craft and Technology

A study of the orientation and extent of the co-axial fields in the area, followed by comparison with other studies would be helpful for the investigation of local/regional/large-scale land organisation.

Ceramic analyses modelled on those carried out for the Marlborough Downs report (Gingell 1992) would be useful. The Upper Kennet Valley has been a communication route for thousands of years and the opportunities for exchange/trade optimum. Long distant trade/exchange is known from earlier periods; the continuation of such practices should be studies alongside detailed analysis of local trade and manufacture. (eg, the sarsen trade identified by Gingell 1992), sources of raw materials (eg, bronze workshops). It would be useful to investigate the possibilities of nearby organic deposits (eg, Cannings Marsh in the Pewsey Vale).

People (Diet and Health)

Bone evidence from the settlements excavated by Gingell indicates that availability of meat products (though what was consumed on site of production may not be truly representative of marketable goods). Some cereal seeds from the period have been recovered (WO G19, Marlborough Downs Project) and parts of other edible plants from the WO G19 cemetery. Ceramics could be investigated for residues.

The bones from West Overton G19 are being studied for indications of health, age of death, etc. Bone collections in archives could receive the same treatment. Bones recovered in the future should be carefully lifted to avoid modern contamination and undergo rigorous study.

Social Organisation, Economy and Subsistence

The nature of land division, settlements and the possible ranking in the West Overton G19 cemetery should be taken together to approach this theme. Study of nearby latest Bronze Age/Early Iron Age sites (Black Patch, All Cannings Cross, Potterne, Bishops Cannings) and clarification of the 'start dates' of local hilltop enclosures may help to elucidate activities towards the end of the period.

Extension of the economic analysis in carried out as part of the Marlborough Downs Project (Gingell 1992) would be useful; and the work carried out in the Fyfod project (Fowler 2000) will be valuable. Closer studies of bronze tools may indicate their source and their use. Were, for example, the axes recovered from near West Woods buried near to where they were utilised? Can they be used to identify nearby woodland?

A study of the nature of land transport (human, cattle, horse) would be extremely valuable, as would an extension of the examination of the nature of the River Kennet – did it provide a method of communication or a barrier to it?

3.5 Iron Age

Amanda Chadburn and
Mark Corney

Settlement and Land Use

As we have seen, there is some evidence that Avebury itself and its surroundings was avoided or lightly used during the Iron Age. The relative rarity of Iron Age material in specific areas needs to be investigated as a priority; if this is a 'real' phenomenon, then explanations for this pattern will be needed.

There appear to be several main Iron Age settlement types represented in this area; a possible *oppidum* in the Marlborough area, hillforts, and both enclosed and unenclosed settlements. Avebury may have been located in the immediate hinterland of the *oppidum*, and this may be significant in understanding the Iron Age archaeology of the area. The relationship between all these types of settlement is not well understood, and further work is needed here.

A great area of potential, especially for earlier Iron Age settlement, is the Vale of Pewsey, where a number of important Late Bronze Age/Early Iron Age sites are known or suspected. This potential is partly suggested by the number of important Early Iron Age sites to the south of the Vale, for example, Potterne, Erlestoke, and Black Patch, the last of which is associated with an Anglo-Saxon cemetery.

Field systems are not well understood in the WHS and its environs, and these have the potential to tell us much about the division of land, and when it was

divided, as well as the economy and subsistence – if studied in depth. The pattern of land division, land use and settlement during the earlier 1st millennium BC is an area of great interest, and the publication of Fowler's investigations of the Fyfield and Overton Downs (2000) will be of considerable value, and enable a more coherent view of land division to the south and east of Avebury to be taken (Fowler 2000). Gingell's work, although principally concerned with the Bronze Age on the Marlborough Downs, has provided useful data for this region (Gingell 1992).

We have noted an apparent archaeological 'gap' which exists to the north and west of Avebury henge on the Lower Chalk plateau, where no field systems or enclosures of presumed Iron Age/Romano-British date seem to exist. This raises an obvious parallel with the immediate environs of Stonehenge, where intensive field-survey demonstrated a dearth of later prehistoric activity (Richards 1990, 280). Such an apparent pattern is clearly worthy of more detailed investigation. This land block seemingly devoid of significant subsistence and domestic activity starts at the bottom of the Ridgeway scarp on the east and about 1 km to the south of the current A4 road in the south, and includes the henge itself, and the palisaded enclosures at West Kennett Farm. Wessex Archaeology's work on the foul sewer pipeline also found little Iron Age activity (Powell *et al*. 1996). We need to investigate whether the local Britons deliberately avoided certain kinds of activity within parts of this possible sacred or taboo landscape during the Iron Age.

Hillforts in the region are situated at the edge of chalk escarpments, but have received little modern study. The Martinsell/Giant's Grave complex has great potential, especially as Meyrick and other local fieldworkers recovered large quantities of Early Iron Age ceramics from between the two forts. The full results of the English Heritage Ancient Monument's Laboratory surveys in this area are eagerly awaited (Payne forthcoming). An area of especial interest is likely to be at the foot of the Martinsell Hill/Giant's Grave and Knap Hill complex. The 'midden' at Oare and the earthworks of Late Iron Age form on Huish Hill also have potential. The possible relationship between the Martinsell complex and the Forest Hill/Folly Farm complex during the Iron Age also needs investigation. The functions of hillforts in the area – as evidenced by the Barbury Castle blacksmith's hoard – and whether they are similar or varied – are also largely unknown.

Environment, Economy, and Subsistence

Land use in the Iron Age is covered above, and relates closely to the topics of the economy, subsistence and the environment. On the latter, what little is known comes from John Evans work in the Kennet Valley and at North Farm, and from Peter Fowler's work on the Fyfield and Overton Downs (Fowler 2000). Wessex Archaeology's work on the Kennet Valley foul sewer pipeline (Powell *et al.* 1996) found remarkably little evidence for Iron Age activity – a fact they found surprising given the proximity of 'Celtic' field systems nearby. This is clearly an area where much remains to be understood.

The economy in the WHS during the Iron Age may have been similar to other Wessex mixed arable and livestock regimes. This is reflected in the ordered and structured landscape containing field systems, although as we have seen, the detailed distribution of 'Celtic' field systems means some parts of the WHS were probably not under cultivation. This land use pattern needs detailed investigation to complement Fowler's work in the east.

Chronology: Relative and Absolute

Relative dates provide most of the evidence for the Iron Age of the WHS. The ceramic sequence is sufficiently well understood in this area for sites with ceramics to be given broad date ranges. However, there is certainly more work needed refining the ceramic type series for the area. Generally, more dating evidence is needed especially for the hillforts, enclosures and field systems. In particular, the Middle Iron Age sequence is not well understood and needs further work.

Absolute dating methods might have some application for the Iron Age of the WHS. However, at present radiocarbon dates are unlikely to provide more precise data than relative methods, as it is not yet possible to determine high precision dates for this period. This is especially true of the Early Iron Age, as the radiocarbon curve between *c*. 750 and *c*. 400 BC makes precise dating during this period extremely difficult. The curve is better in the Middle and Late Iron Age, where dating to *c*. 75 years at 2 sigma is possible. Other absolute dating methods might include dating the remains of lipids in Iron Age pottery, and the OSL dating of colluvium.

We have no absolute dates for the hillforts yet, although Martinsell should be early on morphological grounds, and may have acted as a focal point during the Early Iron Age, perhaps falling out of use when the focus apparently shifted further towards Marlborough in the late Iron Age.

Ceremony, Ritual, Burial and Religion

The distribution of coins, and the morphology of cropmarks suggests that there is a major Iron Age religious site at Brown's Farm, which is likely – on

analogy with other British sites – to be Late Iron Age in date. All this needs confirmation however, which could only be done by excavation, even if limited in scope.

We are totally lacking any Early and Middle Iron Age data on these subjects. However, the reuse of the Neolithic and Bronze Age monuments cannot be discounted, and indeed the paucity of Iron Age domestic and secular activity *around* the Avebury henge may suggest it was a recognised space for ceremonial functions. We need to investigate whether there was a deliberate avoidance of a 'sacred' or taboo landscape during the Iron Age in this area. Conversely, perhaps Silbury Hill acted as a focus for Iron Age activity, as evidenced by the finds of brooches, coins and an urn near to it.

It is also the case that we have no idea when the religion(s) of the Iron Age peoples came into being, and it is not impossible – perhaps even likely – that such religion(s) commenced before the Iron Age started. If so, this could have serious implications for the continuity of use of ritual and ceremonial monuments, and in the beliefs and rituals of the Britons. It could be fruitful to investigate the degree of ceremonial/ritual/religious continuation (if any) between the Iron Age and earlier periods. To this end, the immediate environs of the major Neolithic and Early Bronze Age monuments in the WHS, such as Avebury henge, Silbury Hill, and West Kennet long barrow should be investigated. All recorded finds should be re-examined with a view to understanding Iron Age activity on and in the vicinity of these major monuments.

Some evidence suggests that there was Iron Age activity on or immediately around such monuments: Iron Age radiocarbon dates have been recovered from Avebury henge (Whittle 1990, although by way of contrast Smith 1965, 243 citing St George Gray, noted the absence of an Iron Age horizon in the Avebury henge ditches); there is a square enclosure at Windmill Hill which is reminiscent in plan of Iron Age/Romano-British temples (Smith 1965, 30–3; Smith ruled out a Romano-British date for this enclosure, although Romano-British pottery was recovered from the bottom of the ditch and from the interior); Early Iron Age finds were made from elsewhere in the ditches of the Windmill Hill causewayed enclosure (Smith 1965, 170–1); and Iron Age pottery was recovered during the 1989 excavations by Whittle at the Winterbourne Monkton Long Barrow (Whittle 1994, 40). But such apparent activity contrasts with the lack of evidence previously discussed, for secular and domestic activity on a large scale around Avebury henge. Could all this evidence suggest that the monuments were still regarded as sacred in the Iron Age, and domestic or secular activity could not take place near them, although perhaps religious or ceremonial activity could? This whole theme deserves fuller attention from archaeologists and scholars in the future.

It is possible that certain Iron Age sites may themselves have had ritual or ceremonial functions. For example, if All Cannings Cross and Bishops Cannings were midden-type deposits, that might imply feasting, seasonal gathering and other ceremonial activities. Around 30 miniature Late Iron Age/early Romano-British *fibulae* have been recovered from Monkton Down, and are likely to have come from a structured, ritual deposit, possibly a temple. A concentration of finds north of All Cannings Cross included miniature Romano-British axeheads, and there is a Romano-British shrine here which might have had an Iron Age predecessor. Similarly, the unusual Romano-British pits around Silbury Hill, which probably had a ritual function to judge from their contents, may have started earlier during the Iron Age. However it is also worth considering that many current scholars of the Iron Age believe that ritual and secular categories have little meaning, as they were seemingly intertwined in everyday life during this period.

There are no known Iron Age burials from the WHS, although we would not necessarily expect this, given there general dearth of burials from the British Iron Age. One might, however, on analogy with other sites in southern Britain, expect to find dismembered human remains in deliberate deposits within settlement sites – for example at ditch terminals, entrances, pits, etc. The nearest Iron Age human remains come from around Marlborough; from a burial at Monkton Down, Winterbourne Monkton; and some modified human crania were recovered from All Cannings Cross. The only candidates within the WHS are the undated burials from Waden Hill, and on balance, it is unlikely they are Iron Age. Data is urgently required before this theme can be investigated in any meaningful way. It would be worthwhile re-assessing the evidence for the Iron Age burial at Winterbourne Monkton excavated in 1922–3. It would not be surprising if human remains were recovered from the enclosed and unenclosed settlements as discussed above.

Engineering, Craft, Technology, and Industry

The Iron Age ceramics recovered from the area are not well-understood. The nearest identified major pottery was in the Savernake Forest, where large quantities of wheel-turned Iron Age/Romano-British ceramics were produced. There are the remains of a possible local pottery near Withy Copse and Martinsell Hill, where a mound containing numerous waster sherds of Iron Age date has been found, which requires further investigation. Ideally, a good ceramic series and sequence should be recovered for Iron Age sites in the WHS, which should then be thoroughly investigated, to establish the likely sources of ceramics during the Iron Age in and around the WHS.

A group of coins (Dobunnic M types) appear to have a localised distribution in the south of the Dobunnic territory. It is possible that the *oppidum* at Forest Hill may have been their mint site – it is as likely as anywhere else on present evidence. It is also possible that the *oppidum* was the centre for a *pagus* or sub-tribal group of the Dobunni during at least part of the Iron Age (Van Arsdell 1989; Van Arsdell and de Jersey 1994). The relationship between the Atrebates and Dobunni through time in this area is not well understood.

The presence of iron ore deposits at Westbury, which were certainly exploited during the Romano-British period, may suggest that iron was being mined and worked here during the Iron Age too. Again, we need more details on the sources of Iron and other raw materials in the Iron Age.

Social Organisation

Some suggestions of social stratification and ranking are apparent from the variety of settlement types and the apparently rich burial from Marlborough, but only in the later Iron Age.

There is little information for the Early and Middle Iron Age, where our only evidence for this period comes from the enclosures such as that at North Farm (SU 1368) which are not yet well understood. However, during the Later Iron Age, there is a possible differentiation of settlements, from the high status presumed *oppidum* at Forest Hill to presumed lower status enclosed and unenclosed settlements elsewhere. However, models of social stratification as expressed by ranked settlements in terms of plan and size (Cunliffe 1984) have been challenged by others such as J.D. Hill who argue that high status goods are found as often on presumed 'low status' settlements in Wessex as in 'high status' hillforts. This theme requires investigation in and around the WHS.

Our lack of firm dating evidence for the unenclosed and enclosed settlements, makes it difficult to investigate social ranking or change in settlement types. This could be rectified by an investigation of several contemporaneous sites of varied size and plan.

Coin evidence suggests the WHS is on a tribal boundary largely between the Dobunni and the Atrebates; this boundary may shift through time. However, some Durotrigian influence is also apparent. It would be worthwhile undertaking further investigation of artefacts including coins, to understand this pattern further. The coin evidence, however, contrasts with the distribution of certain Iron Age *fibulae*. Iron La Tène *fibulae* and involuted La Tène II brooches have a marked distribution in central and southern Wiltshire, and the WHS is on the northern edge of this distribution. It would be worth trying to investigate whether this area was on a tribal boundary during the Iron Age, or during parts of it. At present, the evidence is confused according to the distribution of different artefact types (see for example the contrasting distribution of pottery types to coin types in Cunliffe, 1984) We should also remember that political boundaries are unlikely to have remained static during this period.

Transport and Communication

There are three main natural routes within the area: the Kennet valley; the Avon valley and the Vale of Pewsey. These natural routes are likely to have been used during many periods. However, it is possible that the WHS sits on the edge of a number of Iron Age socio-politcal boundaries, which themselves perhaps date back to earlier periods (see coin distributions in Van Arsdell (1989) and pottery and artefact distributions in Cunliffe (1984)).

In the Early Iron Age, it appears that the Vale of Pewsey was a fairly important communication route associated with the movement of iron ore. This needs investigation, as do other key communication routes such as the Kennet and Avon. For example, it appears that some Durotrigian coins were entering the area up the Avon Valley.

Local routes and networks could be investigated from air photographs, especially where extensive field systems are known. It is worth stating that the modern Ridgeway route does not appear to be in use during the Iron Age/Romano-British period, as it cuts a number of 'Celtic' field systems (Fowler and Blackwell 1998; Fowler 2000).

Other routes through the area are likely to have broadly followed the modern A345 road, the Lockeridge to Alton-Barnes road, and the modern A361 road. Cross ridge dykes from the Bronze Age may also have continued in use into the Iron Age. However, until we understand the settlement and land use of the area rather better, we cannot understand the transport networks within it in detail.

3.6 Romano-British
Mark Corney and Bryn Walters

Settlement and Land Use

Of the larger settlements in the Avebury region two, *Cunetio* and Silbury Hill are of special importance. At the former an early origin, possibly including a Claudian military phase, seems certain and the site marks a continuation of the major Late Iron Age complex centred on Forest Hill and the north-west fringe of Savernake Forest (Corney 1997b). The intensification of activity at *Cunetio* in the last third of the 4th century AD (including the provision of a

monumental defensive walled circuit) strongly suggests a state interest in the area – possibly as a regional garrison centre for *Comitatensian* forces and a local tax collection and administrative centre. A detailed reappraisal of this site is urgently required.

The settlement adjacent to Silbury Hill demonstrates the continuing Roman potential of the core study area. Recent excavation and air photography (Powell *et al.* 1996; Corney 1997a; Fig. 14) has shown the extent of the settlement to be in excess of 10 ha and on two distinct axes; an east–west line astride the Roman road from *Cunetio* to Bath and a north–south axis on the west slope of Waden Hill, possibly along a minor route leading to Avebury and beyond. This settlement could also include a *mutatio* or *mansio*. The possibility of a religious component also needs to be assessed. Roman wells or shafts at the base of Silbury Hill appear to be forming an arc around the outer edge of the surrounding ditch and could be considered as having a ritual function. The large number of late Roman coins from the Silbury ditch excavation undertaken by Atkinson has recently been assessed as being of a probable votive character (Moorehead, pers. comm.).

The work by Fowler (2000) on the chalk downland gives an insight into rural settlement and land use patterns in the immediate environs of Avebury. A pre-Roman origin for many of the chalkland field systems is certain in the light of recent work (Gingell 1992; Fowler 2000). It is probable that many of these systems continued to be used (and probably modified) during the Roman period. Any additional research into field systems should address this question. Beyond the chalk, notably in the Vale of Pewsey, we still lack a coherent picture of Roman settlement and landuse. The concentration of finds around Honeystreet, including burials, suggests a substantial settlement of unknown extent and character. It is possible that this site is located on a route across the Vale, linking the Marlborough Downs with the Avon Valley and Salisbury Plain. Along the northern edge of the Vale there appears to be, on the available limited evidence, a preference for settlement (including substantial buildings and villas) close to the foot of the chalk escarpment of the Marlborough Downs. This pattern appears to mirror that already noted on the southern side of the Vale below the northern limit of Salisbury Plain (Corney in prep.). As yet we have very little evidence for landuse and division in the Vale of Pewsey, although the work by Bonney (1979) on boundaries in the central part of the Vale and the southern Marlborough Downs may point the way forward. This area is one of high priority.

If the general pattern of villa settlement observed elsewhere in Wessex is the same in the Avebury region we can expect a number of villa-based estates in the region. The known distribution of villas and probable villas should be investigated in conjunction with the greater definition of other settlement types and compared with known Anglo-Saxon estates in an attempt to define possible late Roman land units. This approach has had considerable success in a recent study of Salisbury Plain (RCHME in prep.).

The possibility of late Roman and early post-Roman reoccupation of hillforts in the region is felt to be high, with evidence for activity known from Oliver's Castle and Oldbury. The character of this re-use, whether secular or ritual, should be given serious consideration and, given the probable 5th century AD date for Wansdyke (Eagles 1994), will have implications for the post-Roman research strategy.

Environment, Land Use, Economy and Subsistence

Landuse has already been mentioned in passing above. It is probable that much of the chalk downland field systems are still being used in one form or another in the Roman period, although the precise detail of this is still lacking. The questions relating to land use and environment will be pertinent to many of the other periods being reviewed. The recovery of detailed environmental evidence is still restricted and largely derived from John Evans's work close to Avebury and the Kennet Valley. Recent work by Wessex Archaeology around Silbury Hill has demonstrated that a metre or more of colluvium (Powell *et al.* 1996) may mask much of the Roman settlement pattern on valley floors. The deep deposits of clay with flints overlying the chalk between Marlborough and Pewsey require further investigation to ascertain whether extensive areas of managed woodland may have existed here. The Savernake pottery industry in the study area would certainly have required extensive tracts of managed woodland to provide fuel for the kilns as well as access to sources of good quality clay.

The Vale of Pewsey is very much an unknown quantity in terms of Roman land use and environment and should be a priority for future investigation. The same is true for the area of lower chalk to the north of Avebury, where, like the Vale of Pewsey, the local geology has proved to be a poor reflector of buried archaeology thus reducing the application of aerial reconnaissance.

The pattern observed by Fowler on Overton Down and Fyfield Down of an apparent move away from arable to pastoral farming in the late Roman period is of some interest. A similar phenomenon was observed on the Berkshire Downs (Gaffney and Tingle 1989) and further investigation of this apparent change in emphasis would be important in formulating a view of whether there is a widespread change in the late Roman rural economy. If this should prove to be so it is possible that it *could* be linked with late Imperial policy towards the province of *Britannia Prima*.

Chronology: Relative and Absolute

The Roman period is of great importance in that it is the first period where an artefact-based absolute chronology can be established with a high degree of certainty. Having said this there are, as ever, problem areas. Most of the Roman artefacts from the region can be tolerably well-dated, however the ceramic sequence for the early and late Roman period has considerable scope for improvement. The origins of the Savernake industry now appear to have a pre-Roman origin and the date of the final demise of the tradition is still uncertain. Further work is still required on late Roman local coarse wares including 'shell-tempered' wares and hand made forms. The recent debate on the length of time that late Roman silver coins continue to circulate beyond AD 411 has been given renewed import by the study of the Bishops Cannings hoard by Dr P. Guest. His conclusion, that such coins *could* still be circulating as late as the 420s may have important implications for the late Roman chronology of the region (Guest 1997). Further radiocarbon determinations, especially from otherwise undated and unaccompanied inhumation burials may prove to be a fruitful avenue of enquiry, especially for late and post-Roman studies.

Ceremony, Ritual, Burial and Religion

The possibility of a ritual focus at Oldbury hillfort and around Silbury Hill has already been referred to above. Other potential sites are known within the region. At All Cannings Cross (SU 0764) numerous finds of Romano-British miniature bronze axe-heads are most likely votive deposits as are the large number of miniature bronze *fibulae* from Winterbourne Monkton Down (SU 1272). Evidence for more formal Romano-British temples or shrines comes from Mother Anthony's Well (ST 9964) and Brown's Farm, Marlborough (SU 1967). At the latter site air photographs show a hexagonal structure to the east of an L-shaped building. A perimeter wall that may be associated with a ditch encloses both features. It is possible that the whole complex may be a major religious centre of a form akin to Pagan's Hill, Somerset. The proximity of this site to a multangular enclosure on the findspot of the 'Savernake Hoard' of Late Iron Age coins may suggest a pre-Roman origin. Most important however is the possibility of Roman religious reuse of Avebury henge. The curious parchmark discovered in the north-west quadrant in the drought of 1995 is of particular interest (Featherstone *et al.* 1995; Fig. 20). This comprises of a circular feature surrounding a square. The location, respecting the existing stone settings and the form of the marks must raise at least the possibility of a Roman date. The recent discovery of Roman stratigraphy within the henge during service trench work requires careful evaluation (Walter, pers. obs.).

The discovery of Roman round barrows on Overton Hill (Smith 1964), of a quite different character to those known in eastern England, must also raise the possibility of a deliberate archaic funerary tradition in the region. This may be underscored by the late Roman material from the West Kennet long barrow (Piggott 1962), a practice which can be parallelled at other megalithic sites in Wessex (Williams 1998) and abroad (Carnac, Brittany).

Engineering, Craft, Technology and Industry

The major Romano-British industry in the region is the production of Savernake pottery. Two main concentrations of kilns are known, at Column Ride (Annable 1962) and Broomsgrove Farm in the Vale of Pewsey (Swan 1984). The problems relating to the origins and decline of this industry have already been discussed above.

Evidence for metalworking is, to date, sparse. However the probable Roman exploitation of the iron deposits at Westbury, at the western end of the Vale of Pewsey, would suggest that localised smithing and production should be expected.

Engineering is most obviously represented by the construction of formal roads in the Roman period. This is covered below. Although there is no evidence to date, the possibility of Roman water management in the Kennet Valley should be borne in mind when research strategies are reviewed.

People (Diet and Health)

The obvious source for such an avenue of enquiry will come from the burial record. Whilst scattered Roman burials, both cremation and inhumation, are known, there are no large samples available at present. The location of both urban and rural cemeteries is a high priority as comparative studies may be illuminating in assessing the socio-economic relationship between the two communities.

Social Organisation

The range of settlement types known suggests a wide range of social groups in the Roman period. Whilst at one level this may appear straightforward, we need to know more of the details of the settlement hierarchy before embarking upon a detailed analysis. None of the villas in the area has been examined in sufficient detail to allow full analysis of its plan or economic base. This could have a significant bearing on how we choose to

interpret the social structure. For example are we dealing with developed aisled buildings or 'multiple unit' plan villas?

A more detailed picture of the non-villa settlement morphology is also desirable before we can begin to make informed reconstructions of the social composition and complexities. At a coarse level it possible to see urban and rural components, but whether these distinctions are really meaningful in what was essentially a rural province is still a moot point. The presence of two small towns close to the Avebury region, Wanborough and *Cunetio*, may indicate that the area lay in two different *pagi*. If this is the case then they are most likely to reflect pre-conquest groupings and some variation could be expected. More detailed analysis of the coarse pottery in the region could assist in the identification of micro-regional trends.

Transport and Communication

One major Roman road runs through the study area from east to west. This is the route linking London with Bath and the Bristol Channel at Sea Mills, near Bristol. Where still extant, most notably to the south-west of Beckhampton, the road survives as a substantial *agger*. Much of the remainder of its course through the study area is now known with reasonable certainty and current investigations by Gill Swanton are providing details of an unexpectedly complex construction and development. The road from *Cunetio* to *Sorviodunum* cuts across the eastern extremity of the study area although its exact course is uncertain where it crosses the east end of the Vale of Pewsey. Other roads must be anticipated in the region, although they need not be of the same high standard of construction.

A route across the centre of the Vale of Pewsey should be anticipated, perhaps through Honeystreet and climbing the chalk escarpment between Alton and New Town. A further east-west route through the Vale may also be reasonably expected. The newly discovered north–south axis of the settlement by Silbury Hill (see above) appears to be laid out either side of a route branching northwards from the London–Bath route, towards Avebury and, perhaps, ultimately Wanborough.

At a more local level tracks etc through field systems and downland pasture will be required for day to day activities. Careful scrutiny of air photographs in conjunction with study of the settlement pattern should be able to build upon the work already done by Fowler on Overton Down and Fyfield Down (Fowler 2000).

The possibility of the Kennet being navigable to shallow draught vessels as far as *Cunetio* is perhaps a controversial point, but nevertheless should be considered if any large scale environmental studies are planned in the Marlborough region.

3.7 Post-Roman and Early Saxon
Gill Swanton and Peter Fowler

Settlement and Land Use

Currently there is no correlation between existing villages and Anglo-Saxon settlement archaeology although the Glebe Field Car Park site and the finds from West Kennett, both alongside present villages, may indicate the position of early settlements. If there is any continuity, there has been later settlement shift. Similarly, the now-known site of the original West Overton (which may have already been deserted by the later 10th century) is alongside East Kennett.

Another hint of correlation might be that 'early settlements' are connected in some way with boundaries (eg, East Kennett, the Overtons, Lockeridge, Fyfield). Apart from the probable villa at Fyfield, all known pre-Anglo-Saxon settlements are not under present or Anglo-Saxon villages: it appears that early Anglo-Saxon settlement occurred at the edge of existing estates, away from where people were already living. This may imply a gradual influx of people rather than a sudden arrival *en masse*. Following the evidence from Avebury and West Kennett it may therefore be necessary to investigate the Kennet Valley in the vicinity of present villages for further indications of early settlement.

It would be useful to understand the relationship of the early Anglo-Saxon settlement to the henge and to the church and to the later abandoned village around the winterbourne and east of Avebury Trusloe. Following or in parallel with this a programme of research along the valley could establish whether there are similar relationships between other prehistoric monuments, possible early settlement (for instance, the palisaded enclosures and the early Anglo-Saxon pottery from West Kennett and the recently discovered barrow east of Overton church), later settlement and churches.

To the east, the town of *Cunetio*, also in the Kennet valley, with its late Roman fortifications requires further investigation, as does *Verlucio* to the west together with the Wansdyke and its relationship to both of these towns. The Wansdyke has been the subject of much debate; the following is a model which could be tested by research, offered as an alternative to the 'don't know' syndrome Wansdyke was built in a great hurry *c*. 500 before the battle of *Mons Badonicus* as a defensive frontier across the 'Ridgeway zone' by Britons v Thames Saxons and was abandoned, unfinished and redundant, immediately after that battle. Since the next tide of Saxons came from the south, 'up its backside', so to speak, it was not reused since it was facing the wrong way – a neat argument which clearly dates it before *c*. AD 550 but means that it played no role in the Anglo-Saxon settlement of the area.

Away from the river valley, there is the possibility of the reuse of hillforts and the continued occupation of villas and 'village' sites such as OD XII on Overton Down. The latter site was created in abandoned fields *c.* AD 330 and continued in use into the mid 5th century, its inhabitants' possessions including some of high status. When abandoned the site was robbed of its materials, presumably for reuse nearby; its successor may lie in the adjacent valley bottom.

There is very little evidence of what type of land use was taking place during this period. Recent research has indicated that alterations in sea levels may have affected trade towards the end of the Roman period (ARA Conference *BRITANNIA: the Maritime Links* October 1997). That this may have had an effect on the inland economy would be an interesting avenue to explore. Such settlements that are known may yield some indications as to land use: this subject needs detailed investigation.

Environment

The little evidence which exists for the period comes from:

(a) Green's excavations along the Wansdyke where at Red Shore pasture was indicated and at New Buildings where there was evidence for woodland or forest;

(b) Evans's work in the Kennet Valley where although there is no specific early Anglo-Saxon horizon during the preceding Roman period the valley floor appears to have been used for grazing.

There is no evidence of any major change in the landscape; when it is possible to decipher a landscape from the 10th century charters it is a familiar one, not only like today's but with major features from earlier times.

Chronology

Dating of the finds from the Glebe Field Car Park sites will be useful (taking into account the difficulties over the recording of the Vatcher excavations). Should other settlements be discovered careful sampling for dating should be carried out. Late coins from the area (OD XII and Bishops Cannings Hoard) may indicate continuing circulation during the 5th century. An examination of late coins from the area and their contexts would be useful. The Anglo-Saxon cemetery on Overton Hill, excavated in 1962, produced objects of 5th–6th century date. There are texts and documents, such as the *Anglo Saxon Chronicles*, which refer to this period and generally to the area; these are useful but require cautious treatment.

Ceremony, Ritual, Burial, Religion

Both ODXII and the Glebe Field Car Park sites yielded objects which seem likely to have been hoarded, collected on the spot or brought from other sites (eg, pennant sandstone tile on ODXII, worn stones on Glebe Field Car Park). The possibility of a continuing Christian tradition in the post-Roman period must not be ruled out. The mention of a tessellated pavement at Fyfield House and the proximity of that building (with its medieval origins) to Fyfield church indicates the possibility of a villa church in the late Roman period with continuity of use or memory into the mediaeval period. (note the Anglo-Saxon burial in the top of a Bronze Age barrow in the churchyard at Ogbourne St Andrew). The pagan burials referred to above consisted of two warriors, one female and two children. There are references in the East Overton charter to 'heathen burials'.

Engineering, Craft and Technology

The chaff-tempered pottery of the period is very fragile and survives only in protected conditions. That from Avebury and West Kennett will shortly be examined. There is little else known for this period: a study of museum archives would be a preliminary to further research.

People (Diet and Health)

Very little is currently known; some evidence may be forthcoming from the Avebury Glebe Field Car Park site; together with what is known from OD XII, this only gives a glimpse of eating habits and health matters. Investigation of further settlements and burials which are discovered would greatly assist this line of investigation.

Social Organisation, Economy and Subsistence

The economic and social changes taking place during and beyond the 5th century require examination, although the evidence upon which it is possible to draw is very sparse. Some documents and texts may assist; the later charters may enshrine arrangements stretching back into the Roman period and beyond. (See also above, Settlement and Land Use).

Transport and Communication

The presence of a major Roman road (The Roman 'A4') may have given the area an importance in

communication terms. Investigations in 1997 showed that in the lower lying sections of its route it appears to have been subject to flooding and 'side shifting' as well as resurfacing. The dates of these occurrences have not yet been established. It cannot be ruled out that some of this activity may be of post-Roman date: indeed it is more likely that an established and well surfaced route would continue in use than not, at least for a while, unless (in the case of low lying areas) further flooding made this impossible.

Later documentary evidence suggests that at some time the route eastwards from Piggledene shifted to the north of the Roman Road and followed much the same route as it does now. The minor lanes and tracks in use in early Anglo-Saxon times were probably already old and are also probably those which are still in use today – the argument behind this is that there has been no basic change in land use or the centres to which it relates for 1500 years. The Ridgeway possibly began developing during the early Saxon period but its existence is not documented until the 10th century charters. It was one of several north–south routes which served the area. It may have evolved as a convenient throughway between land holdings on either side and has been used to define a number of local parish boundaries.

3.8 Late Saxon and Medieval
Andrew Reynolds

Any consideration of the Anglo-Saxon settlement at Avebury should involve attempts to reconstruct early territorial units. With this factor in mind the research area should include the *Domesday* (and probably much earlier) Hundred of Selkley – the parish of Avebury lies at the western end of the hundred (Fig. 18), which extends eastward as far as Aldbourne and southwards as far as the northern edge of the vale of Pewsey. The presence in the local landscape of substantial ancient features such as Roman roads and Wansdyke can allow sequences of landscape development to be suggested upon the basis of horizontal stratigraphy. The dating of Wansdyke, however, is not yet closely established and limited fieldwork might allow this problem to be resolved.

The study of settlement patterns should include an element not dictated by documented territories. In this respect, it is important that the study area includes a sample of landscape of geological and topographical contrast to the chalk downland. In common with research into earlier periods, there has been a paucity of fieldwork in adjacent areas, although the Fyfield Down and Compton Bassett projects have made significant progress in this respect.

Settlement and Land Use

In general terms, the location of Anglo-Saxon and medieval settlement at Avebury is clearly established, but all too little is known about internal organisation. Excavation could establish the extent of the car-park settlement, and limited cuttings the nature of tenement boundaries within the present settlement in order to test hypotheses based upon topographical data. Fieldwalking has high potential for the identification of associated Later Anglo-Saxon and medieval settlements, although earlier sites are less likely to be recognised by ceramic scatters owing to the poor quality and overall paucity of such finds on settlement sites. Analysis of the composition and nature of assemblages derived from fieldwalking should enable areas of manured arable cultivation to be distinguished from ploughed settlement sites.

In the 1970s Peter Fowler showed that Fyfield and West Overton parish units contained evidence for Roman villas and medieval villages (1976) and a reappraisal of this hypothesis has demonstrated an unbroken chain of eight such land units stretching from Preshute to Compton Bassett (Langlands 1998). Further work will probably extend this group. Fieldwork and aerial photographic evidence has high potential to examine evidence for field systems of ridge-and-furrow type. Fieldwork at Yatesbury, however, has shown that evidence for such fields may only survive where enclosure period droveways have preserved traces of former fields along their course; thus indicating the need for field investigation.

Environment

There is little environmental material from which to reconstruct agricultural systems and landscapes and it should be viewed as a principal research objective to obtain environmental evidence pertaining to the Anglo-Saxon and medieval periods: John Evans's work has demonstrated its potential value. Valley sediments have the potential to throw light on the post-Roman period, particularly where features such as dump lynchets and field banks that may be broadly datable seal them. The potential of sediments from the Abberd Brook valley to the west of Avebury at Compton Bassett should not be overlooked. Documentary sources (Anglo-Saxon charter boundaries and medieval estate records) and place-name evidence can establish an outline of the environment, but further excavated data is required.

Chronology

Although radiocarbon dates have been obtained for Middle to Late Anglo-Saxon occupation deposits, there

are queries regarding the dating of the car-park site and the chronology of the various phases of earthworks visible on the RCHME plan. Chaff-tempered pottery is broadly dated between the 5th and 10th centuries, but there is still a tendency to assign an early Anglo-Saxon date (5th–7th centuries) to such material. The RCHME plan should allow the elucidation of a clear relative chronology for the various phases, but further scientific dates are needed – particularly for the sub-rectangular *burh* and for the apparently planned settlement it overlies. A full analysis of the RCHME plan would allow a refined sampling programme to be achieved. Almost all post-Roman artefacts from previous excavations remain unpublished and/or unstudied and require assessment.

Ceremony, Ritual, Burial and Religion

The new feature within the henge (Fig. 20) bears close affinities with a newly identified type of early Anglo-Saxon shrine (Blair 1995). Such shrines comprise square structures, which are either sited within or encapsulate circular monuments of earlier date. Hence, the new feature may be of more than one period. There is considerable scope here to investigate monument reuse (*cf.* Bradley 1992).

The SMR includes a number of groups of burials near the monument. These include secondary interments in barrows (usually 6th–7th century Anglo-Saxon) but also other undated burials. A detailed reappraisal of these may well provide a framework for interpretation, eg, relationships to boundaries. The presence of a probable minster church at Avebury by the 9th century suggests Christian control of burial rites in the area by the end of that century, with the burials of executed felons probably on the southern boundary of Selkley Hundred at Stanton St Bernard – where charter bounds of 957 and 960 record a *wearh roda* (*OE* criminals cross/gallows) on Wansdyke (Reynolds 1999, figs 28, 83 and 109).

The nature of burial between the 7th and 10th centuries, however, is poorly understood and it seems that field cemeteries continued in the manner of the late pagan burial grounds until much later that is commonly perceived (Lucy and Reynolds forthcoming). Exploratory fieldwork could establish the date and character of the undated burial(s) at the foot of Waden Hill and of the possible cemetery near the sanctuary. Burial in the medieval period presumably took place at St James' Church.

The siting of Anglo-Saxon burials and religious structures (including churches) in proximity to pagan monuments is of considerable interest (with notable concentrations in Wiltshire, Dorset and Yorkshire) and Avebury presents important opportunities for such studies.

Engineering, Technology and Craft

Detailed study of the building stone employed in St James's Church would contribute to an understanding of the mechanisms of the local building industry. Topographical evidence from the RCHME survey suggests middle and late Anglo-Saxon planned phases to the settlement. A study of property boundaries and plot dimensions would help address issues of public planning policy the early England. The nature of industrial production in Anglo-Saxon and medieval Avebury is very poorly understood owing to a lack of excavated data, although petrological analyses of excavated ceramics is likely to shed light on patterns of local and regional manufacture and supply.

People (Diet and Health)

There is little available data from which to assess the physical attributes of local populations, although documentary sources will generally assist the reconstruction of population size in the post-Conquest period. Burial sites other than at St James's Church are known (see Ceremony, Ritual, Burial and Religion above) but their potential is difficult to assess without further data.

Social Organisation, Economy and Subsistence

Social organisation is reasonably well understood on a broad level, although there is high potential for detailed local and regional research into this material. Charter and place-name evidence, combined with the administrative framework of hundreds and estate organisation provided by the *Domesday Survey*, should allow a relatively clear view of landscape organisation and management. The status of Avebury in the Anglo-Saxon period is hard to assess without further excavation, although the presence of a minster church from the 9th century ensures that there will be evidence for social hierarchy from at least that time.

Understanding Anglo-Saxon agriculture through archaeological evidence is arguably far more problematic than it is in prehistory or in the Roman period as there are no characteristic field types. Study of documentary and aerial photographic evidence together with an analysis of the features on the RCHME plan should further understanding of the nature of medieval agriculture. It is important, however, that the period should not be seen in blanket terms. The RCHME survey indicates that agricultural regimes were altered and farming practices changed over time. Properly excavated and recorded assemblages of faunal remains are required to understand the nature of animal husbandry (parti-

cularly in the Anglo-Saxon period), as the material excavated to date is not suitable for detailed analysis.

Transport and Communication

Study of the Anglo-Saxon road network in the Avebury area has been undertaken since 1994 by the Compton Bassett Area Research Project using a combination of documentary, placename, cartographic and archaeological evidence. Provenance studies of building stones and ceramics (see Engineering, Technology and Craft above) would provide further data from which to assess the relative importance of communication networks already identified.

3.9 Palaeo-environmental
Michael J. Allen

No archaeological research projects have attempted to embrace the WHS as a single site with all of its complexities either in a project, or as a concept. It is clear that, in order to understand this arbitrarily defined area, we need information to provide interpretation not just of individual sites but of the area as a whole. In many respects this requires the aggregation of site-based data (*cf.* Allen 1997a), and the inclusion of studies of specific landscape zones, eg, the Upper Kennet valley (Evans *et al.* 1988; 1993; Mount 1991).

Key issues in understanding human activity, exploitation and use of the area, modification of, and constructions within the landscape are based upon the distribution of both the natural and modified biological resources. As a result of the extensive research of John Evans we have a general chronological scheme for the chalklands of southern England (Evans and Jones 1979, 209; see also Entwistle and bowden 1991, table 2) but little information of the pattern of land use within this area. The definition not only of land use around local sites but of the pattern of land use across the region (the WHS) will help us to construct the 'archaeological stage' upon, and in which, communities lived and by which their activities were constrained (Allen 2000b; 2000c). It provides the resource base and potential in terms of the flora and fauna; ie, food, fuel and shelter. Examining evidence for the past landscape and of landscape *change* can help us understand the development of how prehistoric families used and lived the landscape in terms of clearance, farming and cultivation, and how the consequences of any changes were met by those communities. In effect, the landscape is as important as the sites within it; it is more that just the backdrop to the stage, it is integral to, and defines, the parameters of human activity (environmental possibilism).

Looking Forward or Looking Back

In determining a research agenda for the entire landscape there are two main approaches to the creation of a structured research agenda for environmental archaeology. One is by review (Allen 2000a) – 'looking back', and the other by questioning – 'looking forward' (see Allen 1998). The assiduous review of past work can indicate obvious gaps and weaknesses in our overall picture. These can then form the basis of prioritised lists. Review, therefore, isolates areas we need to concentrate upon to increase coverage (in space and time) of our database. It does not, however, necessarily advance our interpretational power or knowledge or even greatly enhance our *understanding* of landscape history and land use. For this reason the major concept of 'looking forward' is offered as a basis for providing the essential key framework of enquiry for the entire WHS, and within which a series of broadly chronological themes may also be addressed. In many ways this reiterates some of the research ideas outlined for Wessex as a whole (Allen 1998), but includes points specific to the Avebury WHS. The environmental archaeological research agenda therefore comprises three elements:

- Research Framework
- Chronological and Thematic Priorities
- Environmental Enquiry

The first of these underpins the other two but will be dealt with along with the framework for thematic exploration of the archaeological evidence proposed by Cleal (Section 3.10, below).

Chronological and Thematic Priorities

Many of the broader chronological and thematic priorities defined here for the Avebury WHS, are applicable elsewhere in Wessex (Allen 1998). These are set out in broadly chronological order, though nearly all themes are relevant to more than one period or series of events.

Late Glacial/Upper Palaeolithic
Defining the Late Glacial environment (Alleröd phase soils) and the potential for early habitation in the chalkland should be a priority. Alleröd phase buried soils have recently been discovered in dry valleys in Wessex (Burleston Down, Dorset; Watcombe Bottom, Isle of Wight), and in wetter locations (Westhampnett, West Sussex) which may contain evidence not only of the warming climatic conditions that prevailed, but also the possibility of human habitation in this ameliorating period (Housley *et al.* 1997).

Palaeolithic

Studies of the environment during the Palaeolithic have generally been undertaken within a broad palaeo-geographic framework with aims such as examining climatic change, chronology, broad vegetation changes, faunal catalogues and regional sedimentological patterns (see sections by Lawson and Scott-Jackson, this volume). Balaam and Scaife offer concerns on a national scale that 'No concerted attempt has been made to examine the possible effects, if any, of Palaeolithic man upon his local environment' and in all palaeo-geographical studies it has been assumed that the role of prehistoric communities was subordinate to that of natural causes' (1987, 8). What is of particularly importance in both archaeological and environmental science is the presence of *in situ*, and not derived, deposits and assemblages. Evans *et al.* (1988; 1993) have demonstrated the date and variation of deposits within the Upper Kennet and Winterbourne (see also Allen and Powell 1996) and the potential for finding slack-water deposits and *in situ* remains in these valleys must be considered.

The climatic changes had a major influence in resculpting the physical nature of the local landscape from the dry valleys infilled with periglacial solifluction material to the underfit rivers in the Kennet and Winterbourne valleys (see Wymer 1999). These major changes in the physical landscape ensure that defining the nature of Avebury area, even in broad terms, is important in understanding the physical topography, the potential or likely location of both derived Palaeolithic artefacts, but more importantly potential *in situ* deposits and assemblages.

Composition and seasonal distribution of wild fauna (Palaeolithic–Neolithic)

The presence, diversity, locational occurrence and seasonal availability of wild fauna is important from Palaeolithic to Neolithic periods. Research needs to address the presence and availability in the Avebury region, and their contribution to the diet for which we can construct hunting and culling strategies. Spatial variation may occur as herds migrate along river and dry valley routes, as opposed to those which browse and range across the higher land.

Composition and distribution of the woodland mosaic (Palaeolithic–Medieval)

What was the wildwood like? There is a need to characterise the early Post-glacial woodland vegetation in terms of species composition, variability, and nature of the woodland canopy, the subcanopy and the woodland floor flora. It is necessary to examine this over space to consider the mosaics of woodland and of glades (both natural and created) in that woodland. Further, there is a need to challenge the Tansleyain concept that the woodland was both uniform across each topographic unit, and that the floral development was chronological uniform (Tansley 1939). Was the early Post-glacial to Atlantic woodland present ubiquitously across the landscape? Did the deciduous Atlantic woodland develop over the whole of the Avebury WHS? Or were there natural large openings and glades which were exploited and modified by prehistoric communities as has been tentatively suggested for the Dorchester area (see Allen 1997b, 278). Would this provide some explanation for the foci of Neolithic monuments in this region?

How did the woodland in the Kennet and Winterbourne valleys differ from that on the lowland chalk (around Avebury) and on the upland chalk? Did the nature of the early woodland on Windmill Hill, Beckhampton Penning–West Kennett, and Overton Down vary, and is this reflected in the sites and occupation patterns?

Clearance of the woodland (Mesolithic to Roman period)

When did the first woodland clearances occur? We have evidence in Dorset (Down Farm) and Wiltshire (Stonehenge) for clearance in the Mesolithic – what did it represent? How extensive was clearance around some of the Neolithic sites (eg, Windmill Hill), and what viewsheds did this reveal? Was clearance species-selective? In what locations did this occur? How was clearance achieved? Can we define the nature and extent of clearance rather than just acknowledge that it occurred? Is this indicative of woodland management? Was clearance for the timber or to create openings in the woodland canopy which may have encouraged the growth of grasses and wild fruits to eat and which would have attracted animals which could be hunted, or for the creation of an open space for occupation. Is clearance evidence of settlement? How big were these clearances? How did they expand and grow – can we map them? How did they relate to monuments, and to settlement?

Management of the woodland (Mesolithic to post-medieval)

What evidence is there for specific management within the woodland? What was this for – the timber, an open woodland resource to entice animals, or the encouragement of other floral communities (shrubs with fruits and berries etc)? Were woods specifically planted, designated and managed? Was there a 'woodland allocation', or ownership which related to specific communities, settlements or farms? Were there different types of woodland which were used and managed for different resources?

Why is this area a focus of Late Neolithic–Early Bronze Age monuments? Was there an environmental reason for this location?

Can we detect any environmental reason for the choice and focus of Late Neolithic–Early Bronze Age activity

and monuments in this location? Does this relate to previous activity and clearance (Allen and Gardiner forthcoming)? What was the *land use* and economy of the communities who built the monuments? Despite the high level of research over the past 15 years, use of the landscape in which the Neolithic and Bronze Age monument complexes occur still remains less well understood than the sites themselves. This is beginning to be addressed indirectly through analytical programmes of individual sites or projects, rather than overtly through the analysis with a common goal to examine some of the elements of the broader WHS as a whole.

How was the landscape inadvertently modified by human action?

The development of the physical landscape can be seen as a theme running through many archaeological enquiries. But what changes did human activities engender? (eg, Allen 1996). How, when, where and why did anthropogenically driven colluviation and alluviation occur? and what was the extent of sedimentation? When and how much sediment was carried out of the topographic system encompassed by the WHS? What was the consequence of the erosion of the soils, sediments and natural geology, and of the deposition of the sediments in terms of pedology, agronomy, floral potential, and topographical modification? What consequence did this have, if any, upon consequent land use and settlement patterns?

What was the economic basis of the societies in the Avebury area – can we quantify this; what was the land take required to support that economy and what was the 'whole diet'?

For each period or phase of activity one integral element to understanding the communities and their individual or corporate actions is the 'whole diet' and subsistence of those people. When was the first evidence of agriculture? When did communities start to rely on agricultural produce rather than use it as supplement in a broader-based hunting-foraging-gardening economy? Can this change to reliance of agricultural produce be seen to relate to any specific events in the archaeological record, eg, monuments building, settlement evidence? What was the subsistence and farming economy? What was the proportion of animal husbandry (meat or dairy) to plant foods? What is desired is a greater understanding of the nature of the whole diet, not just disparate elements of it, and the management of the land, plant and animal resources both by individuals and at a community (market) level.

Land division and land allotment

From the Bronze Age onwards (if not earlier) formal division of the landscape occurred. At the wider scale this included the dividing or defining of large blocks (estates, farms or parishes) of land, and the smaller scale of individuals fields and paddocks. The type, reason and date of division, and the use within those divisions may characterise the nature of the whole community. This is relevant from prehistory and throughout the historic periods. There is noticeable difference in land allotment in the Overton–Fyfield area and Windmill Hill to West Kennett area – is this due to local topography, soils, former vegetation patterns, or is this a cultural choice (routeways, settlement inertia)?

Agricultural systems: field systems and how they operated

How field systems were operated as a unit is an important issue in understanding them as archaeological sites, and understanding the economy of their owners. Where they for crops or animals? or were they used in rotation? Which crops were grown, and where – where fields or field systems used simultaneously but on differing soil types used for different crops? Did the same apply to animals? How were the field systems used as stockyards and paddocks (see Pryor (1996) and Fowler (2000) for examples). Well defined field systems exist on Overton–Fyfield Down, but do more open, less well-defined systems exist elsewhere to the west, eg, Windmill Hill, etc.

Change in livestock, crops and agricultural systems

Changes in both the species of animals husbanded and plants cultivated and in the morphology of those species can be documented. Was the change of species (plants and animals) a cultural one (fashion, cultural preference/taste), or an economic one (changing environ-ment, soil conditions, vegetation growth making previous selections untenable, or requirement for increased or change in productivity)? How did these changes manifest themselves in the economy, the settlement and *land use* patterns and the archaeological remains (both materials and architecture of the field monument and archaeological remains)? Changes in the use of the land in the historic periods are as important as in prehistory (Bell and Dark 1998). The combination of the environmental data with cartographic and documentary evidence provides an opportunity for a much higher resolution of understanding.

Establishing the rural economy and defining changes cause and reason (all periods)

The establishment of the rural economy is fundamental to all periods. Defining changes, cause and reasons allows us to explore the changing nature of settlements, of community and of lifestyle.

Recording the changing land use and land organisation and ownership. In the historic periods the combination of environmental and landscape data with

Anglo-Saxon charter bounds, placenames and later historical documents is probably the most effective research path.

People
Humans peopled the landscape, but who were they? Where did they come from? Were they related? Academic discussion has been prolonged about whether different cultures represent developments and the arrival or new ideas, or of new people. The presence of skeletal material from Neolithic to Bronze Age enables the possibility of examining DNA between periods, and close family links within single burials (eg, West Kennett).

Environmental Enquiry

In addition to the main themes addressed above, we can identify a few pertinent lines of environmental enquiry relating to the soils, vegetation and archaeological science of the area.

Soils
Although buried soils are recognised and sampled where they occur beneath archaeological monuments (eg, Cornwall *et al.* 1997), they are rarely examined in detail themselves (soil micromorphology). We have little evidence of their character and type. Detailed environmental enquiry can determine the soil type, the nature of the *land use* and start to build the soil signatures for the region which relate to the pattern of human activity. Wider scale questions of the nature of the Late Neolithic and Early Bronze Age landuse can be addressed, and also the nature of the woodland regeneration in the later Neolithic. Was this a landscape or local (site) phenomenon (Allen and Scaife in prep.)?

Pollen sequences
There is a high relatively high degree of soil pollen analysis, but fewer attempts has been made to look at long palynological sequences that might survive in alluvial sequences, or even in fine-grained ditch fills.

Bracken
The presence of bracken is recorded by Dimbleby on a number of chalkland sites. It occurs in a number of places. The ecology of this floral community and its eradication from the chalkland landscape around Avebury might help us understand the nature of the soils and of *land use* (Dimbleby pers. comm.).

Sedimentary deposits
Many of the Holocene sediments (colluvium and alluvium) have been shown to be related to human activity, and themselves provide excellent resources for environmental enquiry. In view of this, and their potential to mask archaeological sites, the occurrence and date of these deposits over the whole area is therefore important. In this respect field testing and prediction models (eg, GIS) such as that used by Day (1999) should be developed.

Buried soils and landscapes of the post Roman and Saxon periods are likely to exist, and the occurrence of later medieval ridge and furrow lynchets may themselves mask, obscure and preserve important data of post-Roman and pre 10th century AD date. The creation of ridge and furrow may protect portions of older, even prehistoric, evidence as Palmer illustrates (Palmer 1996).

Waterlogged deposits
The presence of waterlogged deposits with the preservation of waterlogged plant remains and of insects should be realised and examined to provide an additional suite of data usually lacking from generally free-drained chalkland areas.

3.11 Towards a Research Framework for the Avebury Landscape

Rosamund M.J. Cleal and
Michael J. Allen

The Archaeological Record

Rosamund M.J. Cleal

Ritual and ceremony
No study of the history and prehistory of the Avebury area could fail to acknowledge that it is an area dominated by ritual and ceremony, but it is important to remember that the period of use of the monumental complex, including even most of the funerary monuments of the Early Bronze Age, may only be 1500-2000 calendar years out of the last 6000. For only a third of its recent history, therefore, did the primary ritual and ceremonial use of the monuments dominate the area. In the early centuries after this time memory and folklore may have perpetuated some of the original meanings, but for the majority of the period only the tangible, and increasingly denuded, physical remains have stood as a reminder of previous activities.

For most of this time the meaning of the monuments has therefore been obscure and in each period an understanding of what they meant, a reinterpretation of their meaning, or an ascription of meaning to them will have taken place. These will have varied from, perhaps, their origins being ascribed to natural forces, or to supernatural ones, or the ascription to them of associations with the spiritual which may be quite different to their primary associations.

The effect of these tangible remains on both practical considerations of settlement and landuse, and on ritual and ceremony through time are important and

legitimate concerns for archaeology. In an area where monuments and settlement have stood in such a close relationship over such a long time period there must be great potential for addressing these problems, as is recognised in this volume in the period reviews.

Two questions relevant to this theme may be seen as applicable *in every period*:

- *What* was – as far as can be established by archaeology – the *nature* of ritual and ceremony?
- *How* did that involve – or how was it influenced by – the existence of the Neolithic and Bronze Age monuments. ?

Applying these questions to every period is an acknowledgement that the importance and influence of the monuments for which the area is listed as a WHS did not cease with the changes of the 2nd millennium BC which saw the end of their primary use.

Shedding light on ritual & ceremony

In this volume the potential for research to reveal new details of the Neolithic and Bronze Age monuments and to reveal other manifestations of ritual and ceremony at every period has been suggested. For every period, probably from the Mesolithic onwards, there is potential for recognising new sites or elements of sites which may have a ritual or ceremonial content. This has been amply demonstrated in recent years, for example, by the recognition of the West Kennett palisaded enclosures, by the newly discovered Middle Bronze Age cremation cemetery and other ritual and ceremonial features at West Overton G19, and by the unusual Roman barrows excavated in the 1960s on Overton Hill. The increasing acknowledgement of a ritual element in everyday life in the past is also bound to lead to increasing recognition in the archaeological record, and this area is peculiarly well-suited to such approaches particularly if the focus does not rest exclusively on the Neolithic and Early Bronze Age monuments: the content of the period reviews here shows that it should not.

The influence of monuments

From the building of the earliest dated monument within the WHS (which at present is Horslip long barrow) in the earlier Neolithic period, no period can be considered in isolation from what went before. Even in the case of that 'first' monument, its location, although almost certainly not the result of a relationship with other above-ground tangible monuments, may well have been due to that place's history of previous use, stretching back into the Mesolithic, which may have endowed it with some special qualities for the early Neolithic users of this area (see Allen and Gardiner forthcoming, for instance).

For the Neolithic and Bronze Age the influence on the surrounding area of the monuments and the activities involved in them are likely to have been very marked, and this has been covered at length in the period review, particularly with regard to the identification of settlement. For periods subsequent to the Early Bronze Age ritual and ceremony is also inextricably linked with the theme of settlement, land use and land division in that one factor in such use may have been avoidance of areas with a ritual or ceremonial 'history', which in itself implies a recognition of some areas as having such a 'special' nature. Such possibilities emerge particularly strongly with the development of permanent boundaries, and culminate in the question of the reality or otherwise of the apparent 'black hole' in settlement and use of the area around Avebury in the 1st millennium BC.

The possibility of a direct connection between the monumental complex and ritual or ceremony in later periods has been suggested in this volume most strongly for the Late Iron Age and Romano-British periods. In several areas there are indications of Roman activity which possibly or probably included a ritual or ceremonial element which was prompted by the existing monuments. Finds from areas around Silbury Hill seem to include a votive element, finds from the henge may likewise be in part a result of non-domestic activity, and choice of location for the unusual Roman barrows was presumably prompted by the existing Bronze Age mounds.

Saxon burials also occur in the same barrow cemetery, so bringing ritual and ceremonial use of that area into historic times. The question of the motivation for the burying of stones in the henge during the medieval period may be one in which historical rather archaeological techniques are more productive, but that too is a reminder that the influence of the monuments is long-lasting.

Settlement, land use and land division

This emerges as a major priority in almost every period although the nature of the concern varies through time. In the earlier periods it is the *identification* and *nature* of settlement which predominates, while later it is the details of *morphology* and *hierarchy* which assume greater importance. In all periods from the Neolithic onwards there is the additional, but critical concern with identifying the nature of the relationship between settlement and the Neolithic complex of monuments.

Identification and nature of settlement

For the pre-Neolithic periods identification of occupation episodes is of paramount concern, given the paucity of known sites. Some potential exists in the re-examination of existing collections, and through excavation of later sites. It is acknowledged that the Avebury area is not one in which the potential for investigating the Lower and Middle Palaeolithic, Late Glacial and Early Post-glacial is necessarily higher than in other areas within the region, but that the potential

for elucidation of these periods should not be forgotten when investigating the Neolithic and later periods.

The Late Mesolithic to earliest Neolithic periods emerge as of critical importance but with very little known at present. Whittle has identified the area as one little used in the Late Mesolithic and in which Neolithic use cannot easily be dated on any scale until well into the 4th millennium BC. At the same time hints of early use such as evidence from beneath long barrows and for a pre-enclosure phase at Windmill Hill serve as a reminder that pre-monument use of the area should be sought.

The settlement context of the Neolithic monuments has been stressed as little known and understood, and the potential for shedding some light on this is high. While large artefact scatters have been identified in overall terms, little is yet known of the detail of Neolithic use of the Avebury landscape at the time of the monuments. High priority should be given to approaching this problem through analysis of existing material, formulation of an approach to *in situ* surface material which would both identify foci of settlement without accumulating large collections of material, and investigating by geophysical survey and targeted excavation any likely occupation locations with features.

An approach along these lines would enable some comparisons to be made with the other half of the World Heritage Site, where the results of the Stonehenge Environs Project enable a more detailed picture of the context of the monuments to be formulated than is possible at Avebury. Not only is there potential for identifying areas of use, but for identifying the nature of use to a degree greater than is known at present. Ultimately, however, some comparison needs to be made with areas outside the immediate area of Avebury and the WHS in order to establish whether what is represented close to the monument sites is settlement at all and not some other form of use.

Towards the end of the main period of monument building and use the related themes of land use and land division assume a major importance. Use of the landscape clearly undergoes a fundamental change between the period of monument use in the 3rd millennium BC and the end of the 1st millennium BC. In the earlier period the structure is largely one in which boundaries in a permanent physical form are absent, while later on boundaries become solid features of the landscape. This almost certainly does not mean that the earlier landscape was unstructured and the later structured, but the nature of the way in which it was structured must have undergone some fundamental change. The date and nature of this change, the rate at which it occurred and the location and nature of settlement which developed within the structure of land boundaries are questions which must dominate this theme in the 2nd and 1st millennia BC.

For later prehistoric periods locating settlements is an equally high priority, although the emphasis appears to have shifted away from Avebury. Indeed, for the later Bronze Age and Iron Age establishing that the apparent absence of settlement from the core area of the World Heritage is real is a particular priority.

By the Roman period identification of settlement assumes less importance, although the recent discovery of the Silbury/Winterbourne settlement shows that there still may be discoveries to be made. The potential for this is difficult to evaluate, but any surface collections conducted as part of work directed at identifying earlier settlement should also identify foci of later use as well.

Locating settlement remains a high priority in the sub-Roman and early Saxon periods, but becomes progressively less important through time as the general outline of the settlement pattern is fairly well established for the historic periods.

Settlement morphology and hierarchy

The nature of settlement is a research interest at all periods, but there is little on which to base research into morphology of earlier occupation. The form of the newly identified Winterbourne/Silbury settlement and its relationship to roads and routeways is as yet little understood, as in the undoubtedly complex nature of land use and land division. Land division in particular is a theme which runs through much of the later prehistoric, Roman and more recent periods, and it is intrinsically bound up with consideration of the settlements themselves. The possible continuation of Roman estates into the Saxon period is one which has been highlighted in at least three period discussions, and clearly calls for integrated research.

Moving into the historic period, morphology becomes a prime consideration, with the developmental history of Avebury village very poorly sketched at present. Its standing in the earlier part of this period and the use made, if any, of the henge monument, is a pressing question and one which does have the potential to be approached with some hope of success.

The Environmental Record
Michael J. Allen

The research framework provides a way forward for the examination of the Avebury WHS landscape and comprises three interlinked component elements.

1. Mapping land use

Mapping interpretations of the patterns of vegetation character and *land use* provides the basis for the understanding of whole 'archaeological' landscapes. The map provides a major interpretative tool in its own right (Allen 2000c) and does not merely provide the

background, like a 'landscape' painting, in which to place the cultural objects and sites of study. The large environmental datasets within confined and defined spatial parameters, enable the interpretational mapping of *land use* and vegetation character by period. The interpretation of the environmental data for each site, or 'catchment area' can be draped over a terrain model of the study area. Informed interpretation of the areas between those interpretation envelopes enables the production of a completed map (see Allen 2000c; 1997a, pls 1–5). Such maps can be challenged, interrogated and modified by further work. They provide the basis for understanding the economic and resource base for society and for the development of their settlement patterns. These maps can contribute to the understanding of social action and social power, especially in prehistoric monumental landscapes (cf Allen 1997a).

The environmental data, and the interpretation derived from them need to be spatially fixed, cover the study area with relative uniformity, and be chronologically defined (Allen 2000c). The mapping of the whole Avebury WHS by a series of defined chronological stages or archaeological periods will enable and/or provide:

a) indication of *changing* and *developing* landscapes which reflect the socio-economic status and development of the local communities;
b) possible indications of changes in emphasis, new ideologies, or of changing potential of the landscape to maintain specific soil, animal and plant resources;
c) indication of how communities have modified and used the wider, non-monumental landscape;
d) information of the distribution of that land use (though this is skewed to data sources which are normally 'archaeological sites');
e) the distribution, pattern and nature of exploitation of the area, and may enable information about the economy and social landscape which created the physical land use landscape;
f) a physical map which can be tested, modified, and amended with new fieldwork and new data. It is good base which can be continually updated;
g) information from the maps provides a framework to query and helps drive targeted research;
h) the information provides an ideal basis for visual representation (eg, preliminary illustrations by Jayne Brayne);
i) an aid in isolating potential important and fragile datasets which can be incorporated into the management issues into the overall plan;
j) a basis for defining the most important deposits on a site or non-site basis for advancing the environmental and archaeological framework of the area.

Beneath the land use map is a dataset of site and environmental data and of the environmental interpretation of that information. Within this lies the confidence or weakness of presented mapped interpretation. The overall map is, therefore, comprised of a series of 'interpretive pixels', the physical distance from the dataset (sites) and nature of that interpretation enables some sort of confidence level to be attributed to every area (pixel) of the map.

2. Chronological framework

Directly linked the creation of maps of *land use* and vegetation character is the question of chronological resolution. In order to facilitate the chronological and physical mapping of these data it is important that the environmental datasets, and not just the archaeological events, are well and closely dated. In order to map and to examine development within a study area it is, therefore, necessary to ensure that datasets can be related between sites to ensure contemporariety or succession (Allen 1997a, 139). Often much of the data will be derived from *sequences* of land snails or soil events from deposits such as ditch fills which are not, therefore, well dated. Often only the base of the sequence (ie, construction/digging of the ditch/feature) is dated; thus any events and changes in that sequence, which may cover centuries if not millennia, cannot be related to the temporal framework. It is critical that both the fills and the included environmental datasets are closely dated (Allen 1997a, 138–40).

3. Avebury WHS landscape issues

Within the study area we can immediately isolate some issues relating to the local landscape. These are neither exclusive nor inclusive, but provide an outline of some issues derived from contributors to the period reviews of this Research Agenda. Some issues are encapsulated in the mapping *land use* proposal, and in the chronological themes listed below.

Rivers and streams

The course, nature, flow, size, and depth of the rivers and streams (Winterbourne, Kennet and Og) within the study area for each defined period. Where were the spring heads, and what was the nature of the valley floors and sides? What was the vegetation on the river edges and in the valleys floors and how did this contrast with that on the interfluves. Are these differences reflected in the artefact distribution, settlement and activity patterns? Variation in the sediment sequences within the river valleys indicate that no one section is necessarily representative of the whole (see Allen and

Powell 1996). Major studies have been conducted in the Kennet, but little is known of the sedimentation regime in the Kennet downstream from the Og (Mount 1991; Evans *et al*. 1993, 189, 191, point 8).

Colluvium
The presence and absence of colluvium on the chalk downland and on river valley edges (which may mask prehistoric or historic sites; eg, Allen 1996). Note especially the Beaker sites recorded under hillwash in Piggledene (Allen in Fowler 2000) and other earlier Bronze Age sites recorded under hillwash in the Overton–Fyfield Area, eg, Down Barn, Overton (Fowler 2000).

Land in between
The use of the land between the foci of Neolithic and Bronze Age monuments sites is particularly significant – these are areas particularly poor in study and weak in data as few archaeological sites are defined or have been examined in these areas. Indeed few 'sites' *per se* may occur in them, but these areas form an integral part of the resource base which supported them.
In the sections of this chapter that follow, strategies are listed in no particular order of priority unless otherwise stated.

Part 4: Research Strategies

In the sections that follow, strategies are presented in no particular order of priority unless otherwise stated.

4.1 Lower and Middle Palaeolithic
Julie Scott-Jackson

If *in situ* Lower and Middle Palaeolithic sites are to be found on the highest hilltops and plateaux in Downland areas mapped as Clay-with-flints in the Avebury area and the integrity of these high-level sites is to be maintained, then the new methodological approach developed for identifying and analysing them must be used (for details see Scott-Jackson 2000). High- and low-level Palaeolithic sites should only be investigated by fieldworkers with sufficient expertise, using all appropriate techniques. Such investigations should only be permitted where adequate resources for proper investigation, analysis and reporting have been secured in advance. Controlled surface collection (fieldwalking) may locate Palaeolithic artefacts. Both the findspots of the surface finds and the artefacts themselves must be recorded in detail. No augering, coring or removal of topsoil must take place on high-level Palaeolithic findspots/sites on deposits mapped as Clay-with-flints, as such disturbances can result in the loss of crucial data and/or damage to the underlying archaeology. All such investigations are to be undertaken only as part of a controlled excavation programme.

Geological exposures should be cleaned, recorded, sampled and analysed by appropriated experienced fieldworkers. The precise context of any archaeology or faunal remains should be plotted with accuracy. Such requirements should be specified wherever exposures are likely to occur (such as quarrying or deep excavation). *PPG* 16 and pertinent development plan policies should always be referred to in case of any threat from development to a known or potential Palaeolithic site.

Strategies

As Lower and Middle Palaeolithic people were hunter/scavengers/gatherers in the Avebury area from around 500,000 BP to approximately 40,000 BP, we must consider the Avebury area landscape as whole and in consequence accept that no one site, in any one specific area, is likely to hold all the clues to the activities of a particular group or groups, of Palaeolithic people.

The discovery of *in situ* Lower and Middle Palaeolithic sites (particularly on the deposits mapped as Clay-with-flints) is the ideal, but such discoveries cannot be guaranteed, however many investigations prior to excavation take place or money spent.

1. Accurate and detailed recording using appropriate scientific techniques is required for all Palaeolithic artefacts (however worn or derived), the geological contexts of their findspots and any associated Pleistocene fauna (bones) and flora (pollen samples).
2. Where opportunities exist, investigations should be undertaken to examine, record and analyse the Pleistocene sediments. Data derived from such investigations will provide important additions to the Lower and Middle Palaeolithic framework in the Avebury area.
3. All existing data on the Avebury Lower and Middle Palaeolithic findspots/sites should be reviewed and the artefact collections re-examined. The results of these investigations should be collated and published.
4. Given the importance of the context of the findspots/sites, detailed information on geology and topography should stated in addition to the grid reference. A great deal of this information is already to be found in Wessex Archaeology (1993) and Scott-Jackson (1999).

4.2 Late Glacial and Early Post-glacial
Andrew J. Lawson

1. The location and controlled excavation of any *in situ* Upper Palaeolithic or Mesolithic material would be of the greatest significance because no extensive investigation of such a site has occurred in the Avebury area. The site would be all the more significant if were associated with preserved organic deposits or artefacts.
2. The comparison of different sites in different topographical locations would help to develop a picture of mobility, seasonality, communication and land use.
3. An outline environmental history of the area has been developed and every opportunity should be taken to enhance and develop the picture of late Pleistocene and Holocene environments in the Avebury area. Upper Palaeolithic and Mesolithic sites may occur beneath or within any of the valley sediments (solifluction, gravel, alluvium, peat) and the analysis of the physical context of the artefacts would be essential in determining its contemporaneous environmental setting.

4. Whenever later prehistoric monuments (especially those of the Neolithic) are excavated particular vigilance must be maintained in the recording of earlier, Mesolithic artefacts and features. The soil within which such artefacts are found may itself hold clues to the land use history of the site. Any evidence for structures, ceremonial or domestic, must be regarded as of the greatest national priority. Similarly, any evidence which throws light on the mechanism of transition from the Mesolithic to the Neolithic must be given the greatest priority.
5. Radiocarbon dates are essential to give greater precision to the differentiation of different lithic technologies, environmental changes and the initiation of built structures.
6. A re-examination of extant collections would confirm the identity of imprecisely described objects.

4.3 Neolithic and Early Bronze Age
Rosamund M. J. Cleal

1. Establishing the Monument and Settlement Sequence: dating

Despite much well-directed work in the 1980s and 1990s, particularly by M. Pitts and A. Whittle (Pitts and Whittle 1992; Whittle 1993) there are still problems in identifying a sequence to the monuments and in establishing dates for them. The problem is one which also extends to other elements of the landscape. Refinement of all of this is vital to a further understanding of Avebury.

There are two possible approaches which may be considered, which should probably be tackled sequentially. Firstly, the examination of existing dates in the light of newly applied statistical approaches aided by acquiring new dates from material existing in the archive, including reviewing the possibilities for high precision dating. Secondly, it is inevitable that after a particular point no further progress will be made with the first approach, and targeted excavation for further material will have to be considered to answer remaining questions

Dating of the monuments and other use of the area is vital if we are to understand the societies which created them. There is a very great difference between, say, a society which is able to construct a monument like Avebury in a decade, and one in which such an undertaking would take 500 years. Specific questions to be answered include the following (references to existing dates are to dates as summarised by Whittle 1993; ranges of dates have been rounded outwards to ten years; based on one sigma ranges, as quoted in Whittle unless noted otherwise):

1. Can the dating of the use of West Kennet long barrow in its primary funerary role be refined sufficiently so that the number of generations this represents may be estimated to within four to five (ie, within 100 years) (4 existing dates within the range 3780–3360 cal BC)?
2. Can the date for the construction of the causewayed enclosure on Windmill Hill be refined to within 100 years or less (19 existing dates from the site (one of which has been rejected as it was on a bulked sample), six of which are from primary contexts. These almost all fall within the period 3700–3100 at 2 sigma; 3640–3350 at 1 sigma). Here the question might be whether high precision dating of antler from primary contexts (and therefore strongly associated with the construction) might refine the dating.
3. Can the dates of construction of all long barrows previously excavated be refined to within two hundred and fifty years, or preferably within a century or less? (Existing dates: Horslip, one date 4240–3810 cal BC; South Street, two dates primary in ditches, one from mound all within 3640–3040 cal BC; Millbarrow, three dates primary in ditch *c*. 3380–2930 cal BC).
4. *If* the construction dates of monuments can be refined, can existing dates (and any additional dates obtained) for *pre*-monument activity be re-examined and modelled using the now better-defined construction dates of the monuments succeeding them?
5. Can the date of construction of the henge bank and ditch be refined to within a century or less? Existing date: (one date for henge ditch primary fill of 3040–2780 cal BC)?
6. Can the date or dates of the stone settings within the henge be refined to within at least 250 years, or preferably to within a century (Existing dates: two dates 2870–2200 cal BC)?
7. Can the date of the construction of the West Kennet Avenue be established to within 250 years, or preferably within a century, and the chronological relationship with the Avenue settlement be established (no dates for the Avenue; three for the settlement, two within the range 3030–2700, one 4780–4530 cal BC)?
8. Can the date of the Sanctuary be established to within 250 years, and preferably within a century or less. (No dates)?
9. Can the date of the inception of Silbury Hill be established within 250 years, or preferably within a century, and the subsequent enlargement dated likewise (Three existing conventional dates plus six experimental on turf. Excluding the turf dates, two from ditch (presumably therefore not from Phase 1)

2460–2040 cal BC, and one from the surface of the primary mound: 2880–2490 cal BC.)?

10. Is it possible to refine the dates of the West Kennet palisaded enclosures, to within a century or less, including any internal sequence (Six dates from the ditches, 2860–1890 cal BC)?
11. Are Beaker flat graves earlier than burials within barrows, as if so they could represent the first funerary use of areas which later became barrow sites or barrow cemeteries? A considerable number of flat graves were also discovered to the north of Windmill Hill (Grinsell 1957, 34, 126) in an area not used for round barrows. This might be a useful area for investigating the question of flat graves, as it has not been subject to research (I.F. Smith pers. comm.), and the potential for survival of evidence in this area should be assessed.

Most of the above questions are, deliberately, posed to date events – in most cases the construction of the monuments or major episodes in their constructional history, rather than their use. If this seems limited, it must be argued in defence that the present state of knowledge is so lacking in detail that establishing a reliable sequence of events in terms of the appearance of the monuments and sites seems vital. The definition of that sequence alone in a trustworthy form would immeasurably increase the potential for interpreting the monumental complex, and further programmes of work to establish the life histories of the monuments and sites could then be formulated.

A first step in answering these questions must be to undertake a full assessment of all material suitable for radiocarbon dating surviving in the archives, with a rigorous consideration of their suitability for dating in terms of their contexts and associations (and to be followed by a specialist assessment of the suitability for dating in terms of the physical condition of the material).

To undertake such an assessment as a single project would be a large task, but sub-division could be possible, to carried out over a substantial time period, and might perhaps usefully include material from sites neighbouring the WHS. Suggested sub-divisions could include material from:

- long barrows: South Street, Milbarrow, Horslip, Beckhampton, West Kennet
- causewayed enclosures: Windmill Hill, Knap Hill, Rybury
- Beaker period flat graves, including those adjacent to the stones of the major monuments
- round barrows
- the henge, avenues and the Sanctuary

Some (perhaps the majority) of the questions listed above may not be answerable from existing material but this cannot be certain until an assessment such as that suggested is carried out. The following questions, however, certainly could *not* be answered from the existing material:

1. Is the construction of Falkner's Circle contemporary with (within 250 years or, preferably, a century) the construction of Avebury henge, West Kennet Avenue or other ceremonial/ritual sites This obviously could be extended to the other small circles of the area, mostly outside the present WHS boundaries. An important consideration in looking at the area is whether ceremonial/ritual monuments were part of a landscape of largely contemporary monuments or whether use was spread over many centuries and differed in scale with time (eg, the smaller stone circles are considered by some to be a late and small scale continuation of earlier ritual/ceremonial practices).
2. What date is the double ditched feature within the henge; is it earlier than, contemporary with (even in broad terms), or later than the henge monument? Is it prehistoric at all? Because of the uncertainty over dating, even a date within a millennium would considerably increase the present state of knowledge.

2. Environmental

Although much environmental work has been done within the World Heritage Site, much potential for increasing knowledge of the area remains. The degree of clearance between monuments is little documented, as is the possible 'regeneration' phase of the middle Neolithic. A number of research areas appear immediately of interest (see sections by Mike Allen in this volume).

3. Detail within Monuments

Even within the major monuments there is scope for further elucidation of the detail of those monuments. In particular, and given that henge monuments often contain complex internal settings, the existence of settings other than the known stone ones within the henge must be considered a possibility. Neither the Northern Circle nor the Southern Circle's internal settings are completely known, the southern settings to the east of the Obelisk being particularly problematic and anywhere within the henge there is the possibility of timber settings as well as former stone settings. There are also problems in interpreting 'extra' stone and post holes around the northern and southern entrances. Within the henge geophysical survey has not always provided easily interpretable results, but new techniques may offer further opportunities.

The form of the henge is asymmetrical east to west, for no obvious reason, in that its western side is flattened, but it appears to be largely symmetrical north to south. A reason could perhaps be sought in the avoidance of something to the west. Similarly, the course of the Avenue and the 'hollow' immediately to the south of the henge's southern entrance suggest that there may be features in this area which could be targeted in future work (D. Field pers. comm.).

Away from the henge much is still not known about areas which were clearly foci of ceremonial or ritual activity. In particular the following are questions which should be approached if we are to add further substantial detail to an understanding of the monumental complexes:

1. Does the Beckhampton Avenue run wholly or only partly along the line suggested by Stukeley, or elsewhere? The potential for finding further settings around the area of the Longstones, and perhaps also at the Avenue's terminus, if that is to the west, must be high.
2. Does the Yatesbury cursus exist or not? Geophysical survey and trial trenching (University of Wales, Cardiff) have so far proved unproductive but the existence of the cursus has not yet convincingly been dismissed. In the original photograph by Major Allen there are two large ring ditches beside the putative cursus: it is possible that these might be more readily identifiable than the narrower and perhaps slighter 'cursus' ditches, given the disturbance and dislocation of identifiable landscape features in this area. One of the ring ditches encloses a circular setting of holes (Grinsell 1957, 55). A cursus would certainly fill what at present seems to be something of a 'gap' in monument construction in the later 4th millennium cal BC and around the turn of that millennium into the third. There is a case here for using close-interval caesium-vapour magnetometry here, as elsewhere in the WHS.
3. What is the line of the West Kennet Avenue around West Kennet? It is not clear at present.

Three other major areas of research fall into this general theme.

Long mounds

Barker (1985) in his valuable survey and gazetteer of long mounds in a wide area centred on Avebury comments on how Stukeley's account of long barrows in the Avebury region has 'confused successive generations of archaeologists. Even allowing for the inclusion of the stone enclosure at Beckhampton Penning and a certain amount of repetition, too few monuments are known to account for all the sites he mentioned' (*ibid.*, 25).

That this should still be true of a World Heritage Site which is probably regarded by non-archaeologists as having been well-investigated is telling. Barker's paper suggests several possible lines of enquiry, and the identification of 'new' long barrows through aerial photography by the RCHME is also encouraging (eg, the 'new' barrow at Lockeridge illustrated in Fowler and Blackwell 1998, pl. 25). Sites which certainly merit attention include Beckhampton Plantation, Beckhampton Penning and possibly Avebury Down within the present boundaries of the WHS, and the two as yet unexcavated barrows in the 'cluster' of three certain sites immediately to the north (ie, Shelving Stone and Monkton Down; Millbarrow has been partially excavated in recent years; Whittle 1994). The results from Millbarrow indicate the nature of surviving evidence in such ploughed-out sites, and the value particularly of the environmental sequences preserved in the ditches.

Recently, a research project by Dr A. Gibson for English Heritage has been proposed which fits well within this field of enquiry; this would examine West Kennet long barrow by targeted excavation to try and establish whether the monument is single or multi-phase, in particular focusing on the possibility of their being an earlier mound to which a later mound had been added (A. Gibson presentation to AAHRG, Spring 2000).

Round Barrows

The survival of round barrows within the World Heritage Site varies from those which have been plough-damaged to such an extent that only an eroded ditch remains, to substantial surviving mounds (most of which have been damaged to varying degrees by antiquarian activity). The RCHME is compiling a gazetteer of barrows, with history and finds listed, and a more rudimentary gazetteer exists for Avebury parish at the Alexander Keiller Museum.

It has become clear, however, from geophysical survey carried out prior to taking ploughed-down barrows out of cultivation (work commissioned by The National Trust), that the locations of such barrows are not always accurately recorded. Some work is clearly needed to establish accurately the sites of former barrows, some of which are known only or primarily from antiquarian sources (such as that identified during work commissioned by Thames Water at the southern end of Waden Hill (Powell *et al.* 1996)).

The value of excavation in the case even of ploughed barrows has been demonstrated by the recent excavation of West Overton G19, where a long and complex history of use proved to be recoverable (Excavation and fieldwork in Wiltshire 1987, *WAM* 82, 181–2). Barrow ditches may provide good environmental sequences for post-construction phases, some

of which fall within the Early Bronze Age (and may also of course provide evidence for later periods), and work by Dr C. French and colleagues in Cranborne Chase has demonstrated that buried soils can be preserved even under fairly unpromising, damaged, barrows (M. Allen pers. comm).

It has also become apparent that the areas around barrows are likely to provide evidence of earlier occupation, some of which has often become incorporated in barrow mounds (and from them into the ditches). Any work in the area of barrows should recognise the likelihood of encountering pits or other features of later Neolithic or earlier date. The areas between mounds must also be regarded as important for traces of activities contemporary with the use of the barrow (ie, with the funerary practices associated with it) and very little work has been done in the area to investigate the forms of barrow mounds to look for traces of ritual or funerary practices (D. Field pers. comm.).

Stone circles

It is clear that the state of knowledge regarding the smaller stone circles within, and immediately outside, the WHS is seriously deficient. The small stone circles are sometimes referred to as later than the Avebury stone settings (as in Burl 1979, chapter 9), but there is no firm evidence for date in any of them. In every case there is doubt either about the location of the circle, its form or its reality: for Falkner's the location is known in general but not the detail of the stone settings; for Broadstones (Clatford) the location has not been certainly identified; for Langdean and Winterbourne Bassett the features are known but are not certainly stone circles.

A particularly interesting possibility which should be considered is that stone circles may be late replacements for timber settings on the same sites, as this is an increasingly recognised pattern. It is worth noting that The Sanctuary was recorded only as a stone circle by Stukeley (with another concentric circle marked by depressions) and is now known to be on the site of timber circles.

4. Surface Scatters and Locating Settlement

Assessment and publication of existing material from surface collection

There is a considerable body of surface collected material (outlined in Section 2.3 above) which is largely unpublished. Those parts of it collected as part of recent organised surface collection by the National Trust will be published by the National Trust, which is also considering integrating this material with previously collected material from the area.

Future surface collection or assessment

Further surface collections may be made in future if land within the WHS is put down to grass to protect the archaeological evidence, and appropriate sampling strategies would need to be considered in that case to avoid the accumulation of large surface collections both because of the pressure this puts on museum resources and because of the impoverishment caused to the *in situ* material. Such strategies are being developed elsewhere and a review of current research on this and the formulation of an appropriate approach would be useful in the near future. Such guidance would be useful both for landowners wishing to carry out or commission their own work (such as the National Trust) or those approached by other bodies wishing to carry out research.

Some surface collection within the WHS in the recent past was not carried out to professional standards and has left a legacy of virtually unprovenanced finds; this must clearly be avoided in the future at all costs. Although study of surface artefact scatters is obviously easiest and most effective before any conversion of existing arable land takes place, it is also possible to make some assessment of the existence, nature and extent of such material under existing grassland through the excavation of test-pits (M. Pitts pers. comm.). This would be a useful method of filling in those gaps in the landscape which are due to the existence of grassland since before the time at which surface collection began in earnest (ie, the early years of the last century).

Establishing the locations of settlement foci could be furthered by a combination of analysis of surface finds, geophysical survey, and excavation, such as was used successfully in the *Stonehenge Environs Project* at, for instance, Fargo Wood and King Barrow Ridge (Richards 1990). Locations within the WHS which might already be suggested for such investigation include Waden Hill (the northern end) and Overton Hill. In the former, a moderately dense surface scatter of worked flint (Holgate 1987, fig. 1) hints at settlement, while at the latter pre-Bronze Age finds were recovered from barrow excavations (Smith and Simpson 1966; Smith 1964). It is also now becoming increasingly apparent that barrow cemeteries were often placed in locations much used in earlier periods and any such area should be considered as having a high potential for earlier settlement evidence.

One other form of evidence for past use which is particularly relevant to the WHS, is use of the local sarsen stone. The huge spreads of sarsen both within the WHS (in its eastern part) and immediately outside are known to include utilised stones, but no full survey has yet taken place. Sarsen saddle querns and polishing stones are known as casual finds (I.F. Smith pers. comm.) but a systematic survey would almost certainly reveal more.

Field survey, geophysical survey, aerial photography, and targeted excavation and test-pitting together offer a huge potential for revealing the context in which known monuments and sites lie. Most would have little and some no impact on the fabric of the WHS and would offer tremendous rewards in terms of the understanding of this area.

4.4 Late Bronze Age
Gill Swanton, C. Gingell and Andrew J. Lawson

1. Priority must be examination of the relationship between settlements, fields and the older monuments; identification of zoning within the landscape. Detailed study of air photographs to identify field patterns and settlement distribution would be useful in this respect. Examination – initially using geophysical methods – of barrow ditches and ring ditches for evidence of Middle/Late Bronze Age use. If this was happening, did it follow the pattern suggested by Ann and Peter Woodward (1996)? Selected excavation of fields, cemeteries and valley bottom sites for environmental, ritual, social, economic and chronological evidence .
2. Museum archives may contain material with dating potential; these should be identified and a programme initiated which will give local information and fit into a wider framework.
3. Study of human remains could produce further evidence of burial practice, economy, environment, social organisation and health.
4. Examination of buried deposits should provide environmental data.
5. Study of ceramics and (perhaps) bronzes may indicate trade and communication patterns.

4.5 Iron Age
Amanda Chadburn and Mark Corney

Highest Priority

1. The highest priority, and one of national importance, is to investigate the relationship between the Neolithic and Bronze Age ceremonial monuments and Iron Age activity. If it can be proved that there is deliberate avoidance of earlier monuments by domestic and agricultural activity, then this has significant implications for our understanding of the sacred and profane in the Iron Age, and the use of the landscape in the Iron Age by the Britons. In order to do this, we need to thoroughly understand the pattern of land use within the area (especially the WHS) and the sequence of land allotment during the Iron Age (if not already allotted) and settlement patterns, including new use and expansion into previously unused areas. This would assist us in identifying the areas where Iron Age peoples were apparently active in the landscape, and those where they appear not to have been. We could start to see if the 'blank areas' are really blank or not. If they are, we can start to explore why this is the case.
2. The range, dates, and types of settlement also need to be understood for the area, including their development through time, and their status in relation to other settlement types. The possibility of an Iron Age predecessor to *Cunetio* in the Marlborough/Forest Hill area requires further investigation and the possibility that the WHS is in the immediate hinterland of an *oppidum* also needs to be investigated. The ceramic sequence is reasonably well understood in this area, and could be used to date Iron Age sites broadly (but see below), so their development and contemporaneity can be assessed.
3. Ideally, extensive geophysical surveys and earthwork surveys of the sites at Forest Hill, and all the Martinsell Plateau, hillfort, and surroundings to Huish Hill should be undertaken.

Priority

1. A well-dated ceramic sequence should be recovered for the area. The existing collections, particularly Meyrick's, should be re-examined in order to try and achieve this. After that phase, surface artefact collection within the WHS targeted on Iron Age sites would refine this data, and would be preferred in the first instance to a more destructive technique such as excavation. Once these exercises have been undertaken, if there is still insufficient data, one might then need to excavate a site with decent stratigraphy with a good range of well-stratified ceramic types in order to construct a type series for the area. The origins of Savernake Ware (probably Late Iron Age) need to be investigated too. A detailed petrological analysis of the clays and fabrics of Iron Age pottery within and around the WHS should be undertaken.
2. The site at All Cannings Cross could usefully be re-evaluated to provide evidence for the Early Iron Age. This could include fieldwalking, geophysics and limited excavation. It would be

desirable to establish the chronological link (if any) between this site and Rybury.
3. The Vale of Pewsey has a high potential for many aspects of the Iron Age of the WHS, and requires a thorough evaluation and assessment, especially along the base of the chalk escarpment which appears a favoured settlement location. The possible link between Rybury and All Cannings Cross needs investigation.
4. We need to establish the environmental evidence for this area during the Iron Age.
5. The transitional periods, ie, Late Bronze Age–Early Iron Age and Late Iron Age–Romano-British need investigation. However, the Middle Iron Age is also poorly understood for the WHS.

Lower Priority

Although we would like to find human remains, we have placed this as a lower priority because such remains are so difficult to find in the Iron Age. It is possible that a careful excavation of the Iron Age settlements might produce partial or whole skeletal remains, and the ditch terminals and pits of such sites might repay close examination.

4.6 Romano-British
Mark Corney and Bryn Walters

Highest Priority

There are both general and specific strategies required here.
1. At the general level the need to assess the development of romanisation in the region is essential and should seek to identify how much of the Romano-British settlement, social and economic patterns evolved from an existing Late Iron Age framework, or whether intrusive elements can be identified. Detailed studies of local ceramic sequences will be invaluable.
2. A further general area of enquiry should be the creation of a detailed settlement morphology for the region.
3. At a more specific level the possibility of Roman ritual reuse of the Avebury henge and surrounding monuments such as Silbury Hill should be accorded a very high rating.
4. The cumulative evidence strongly suggests that the area is one of great importance in the late Roman period and resources should be found to investigate the nature of late Roman *Cunetio* and *Verlucio*. In developing this theme the broader context of the Bishops Canning hoard, the date of Wansdyke and its relationship with the Roman road system coupled with the possibility of reuse of Oldbury hillfort must also warrant very high scourings.

Priority

1. The Vale of Pewsey is an area of high potential, as yet unrealised. The nature of the Roman settlement and economic pattern in this area requires a very thorough assessment.
2. Building on the work of Fowler we also need to increase our understanding of the land use pattern in the study area and to define the nature of any changes in emphasis in the rural economy.
3. Location of cemeteries to provide samples of the urban and rural Romano-British population and any variety in funerary practices.
4. An ambitious programme of environmental sampling to better understand land use and management.

Lower Priority

1. An evaluation of all Roman material from the study area. Much of this is poorly provenanced, but would provide a general overview of activity in the region.

4.7 Post-Roman and Early Saxon
Gill Swanton and Peter Fowler

Highest Priority

1. Recent work has indicated that the area was very important in the late Roman period, probably in communications and military terms. Establishing the duration of this importance, what form it took and the settlements from which any form of authority operated would assist in elucidating social structure and the economy upon which it depended. The need to establish pattern of settlement and its relation to past and subsequent habitation is vital, including continuity/break/re-establishment in/of occupation of sites.
2. A thorough survey of the Wansdyke would be of great benefit.
3. The establishment of a chronological framework is of very high importance.
4. A detailed topographical study relating features the landscape to all the Saxon charters of the area: these boundaries were old when 'written

down' and the charters incorporate clues to many older features in the landscape.

Priority

1. Further investigation into land use and environment to clarify the agricultural economy of the area. For example, a study of climatic changes and their effects on the river levels would assist in indicating, for instance (a) whether the use of the Roman road in the river valley was possible throughout the period or whether it fell out of use due to wet conditions and (b) the type of land management which might have been appropriate on the valley floor. Waterlogged deposits should be sought to assist in expanding the environmental evidence.
2. A study of the relationships between modern, medieval, early post-Roman and Roman settlement and churches to investigate the survival or otherwise of Christianity.
3. The study of existing human and animal remains to indicate diet, health and economy. Location of settlements and burials would greatly enhance these investigations.
4. A survey of material of the period from a greater geographical area to supplement the evidence available and place it in a wider context.
5. In general, the thrust of research for this period should shift to the valleys, their immediate slopes and denes, rather than the downs. The latter ceased to be important *c.* AD 500 and were not so again until *c.* 1050.The specific study of settlements using maps, air photographs and documents followed by field survey and geophysical investigation to trace shifts and abandonment.

4.8 Later Saxon and Medieval
Andrew Reynolds

The discovery of Anglo-Saxon and medieval settlement remains over a wide area at Avebury indicates that the development of the settlement has been complex. At most other sites in the county where Early Anglo-Saxon occupation has been found only small areas have normally been examined and occupation sequences appear to be of seemingly short duration. The importance of the Avebury evidence lies in its extent and apparent chronological range. Detailed work at Avebury should ideally be coupled with work on other Anglo-Saxon and medieval settlement sites to allow a framework for further research in the region to be established.

On a national basis, models for the development of post-Roman rural settlements are largely derived from studies of the Midland nucleated villages and, in terms of Anglo-Saxon settlements, on the recently published results of the Mucking project in Essex (Dyer *et al.* 1997; Hamerow 1993). Presentation of the Avebury results with additional fieldwork would begin to redress this geographical bias.

The post-Roman archaeology of Avebury is clearly of more than incidental significance. The south-west of England lacks a detailed case study of Early Anglo-Saxon to late medieval settlement and land use and Avebury has the potential to fulfil that role given the density, chronological range and quality of its post-Roman archaeology.

Strategies

1. Perhaps the greatest problem with Avebury's Anglo-Saxon and medieval archaeology is the lack of consistency of previous investigations in terms of aims, recording methods and publication (or not as is more frequently the case). Although it is possible to construct a general model for the development of the settlement, the first requirement must be an assessment and production of a catalogue of the existing post-Roman artefactual and ecofactual evidence. Ideally, such a catalogue should include copies of all unpublished plans, sections and photographs.
2. The potential of the RCHME survey to produce a radical reinterpretation of local and regional, if not national, importance is high and a full analysis of the plan should be given a high priority. A metrological analysis of plots within the *burh* area should be undertaken as part of this study.
3. The location of St James' Church outside the west entrance of the henge raises interesting questions about the Anglo-Saxon attitudes to ancient monuments. The church appears to have been of minster status in the later Anglo-Saxon period. This factor is likely to have influenced the development of the settlement as minsters were often foci for mercantile and judicial activities in addition to their religious functions. A complete record should be made of the surviving Anglo-Saxon fabric with a full assessment of the later building.
4. Geophysical survey of selected areas, particularly the Early, Middle and Late Anglo-Saxon settlement to the west of the monument is needed in order to attempt to determine their extent and possible function.

5. Further scientific dates are required. Most importantly, these are needed for the car-park settlement and the possible middle Anglo-Saxon planned settlement.
6. Fieldwalking has high potential for addressing questions about the chronology and pattern of local settlement and land use.
7. Integration of the Avebury evidence into wider studies offers much scope for understanding the development of early-late Anglo-Saxon and medieval settlement in north Wiltshire. A study of hundredal organisation should throw light on processes of nucleation, the relative importance of settlements in the region, trade and communications. Sites of Anglo-Saxon origin such as the royal vills and market centres at Calne and Chippenham and the religious and defensive centres at Malmesbury and Cricklade will all require integration into the study. On into the medieval period the number of archaeologically and historically visible sites is greatly increased and any research project should attempt to relate the Avebury evidence to this network.

4.9 Palaeo-environmental
Michael J. Allen

A number of research topics and questions were outlined in Sections 3.9 and 3.10, above. It goes without saying that a full palaeo-environmental programme should accompany any archaeological interventions in the WHS and that this should include pre-planned archaeological investigations, opportunistic exposures during non-archaeological interventions, and exposures made though both animal and visitor erosion. The aim of all enquiries should be in providing data towards the construction of a series of *land use* maps of the area for each period, to providing a good chronological framework for the environmental sequence, and taking the opportunity to address other of the research topics above.

Strategies

1. Opportunistic examination, recording sampling of sediment sequences and old land surfaces where they may be exposed by non-archaeological work or by erosion. In periglacial deposits and Late Glacial deposits in particular should be examined for *in situ* deposits, especially Alleröd buried soils.
2. Creation of a DEM (A WHAT?) for the area with an environmental Geographical Information System (GIS) including soils and sediment data. Field testing of sediments by augering and the development of a prediction model for the occurrence of colluvium and alluvium. Also incorporating field systems (lynchets, documentary and modern).
3. Collective database of all environmental data archives to enable cross-site comparisons
4. The development of some basic recording requirement for all environmental enquiries (but specifically faunal measurements, soil recording and analysis, data presentation/availability for charred plant remains, etc) to facilitate inter site comparisons, ie, the examination of the broader landscape
5. A concerted attempt should be made to find long sequences for palynological investigation such as those in the Avon Valley, Wiltshire, near Durrington Walls, and Testwood Lakes, Southampton, Hampshire.
6. The dating of sequences and events of environmental data from archaeological features by carefully sampling and consideration of appropriate submission of radiocarbon samples is a priority. This may require excavation of larger volumes of ditch or feature deposits to acquire appropriate material.
7. DNA and radiocarbon dating programmes on human remains are required.
8. The constant updating of the DEM and GIS with new environmental interpretation is a requirement.

Part 5: Methods and Techniques

This section provides as assessment of archaeological methods and techniques which have been successfully used in the Avebury area and have potential for further use in addressing the research strategies and priorities set out in the previous chapter. The techniques outlined are not prescriptive but merely a review of those which are commonly used. Mindful of the need for sustainable research methods, AAHRG seeks to encourage the development and use of new and experimental non-invasive techniques in the Avebury area.

5.1 Geophysical Survey
Andrew David

Geophysical survey is defined here as the ground-based and non-intrusive use of geophysical methods to locate and characterise archaeological features and deposits. Such methods are often supported by other techniques of geoarchaeological site investigation, such as augering and magnetic susceptibility survey. Much less commonly, the mapping of spatial patterns of chemical traces in the soil, as in phosphate survey, can also help characterise former land use. The purpose of this contribution to the Research Agenda is to appraise briefly the potential of specifically geophysical methods to contribute to research and site management in the Avebury area. Their application will of course be fully integral, where appropriate, with other methods of site prospection, particularly remote sensing (aerial photography and multi-spectral scanning), field walking, trial excavation and documentary research.

Apart from the obvious capabilities of geophysical survey to increase the understanding of known monuments, there is potential for the discovery of entirely new archaeological sites. Geophysical survey not only directly serves research in this way but also has a very clear role in subsequent planning and site management. By helping in the location and definition of archaeological sites, geophysical survey allows for a much more informed planning process both to protect important remains and to improve their appreciation by the world at large. The emphasis upon its deployment within the management agenda for a World Heritage Site is entirely appropriate.

The Avebury area shares its WHS designation with that around Stonehenge for which a detailed assessment of the geophysical potential has already been published (David and Payne 1997). Much of the latter's elaboration on the general potential for geophysical survey in a Chalkland environment is just as applicable to the Avebury area. The following resumé on techniques is therefore an adaptation of that account.

Geophysical Techniques

The details of the principles and methodologies of archaeological geophysics are by now very well rehearsed in the literature (eg, Tite 1972; Aitken 1974; Clark 1996; Scollar *et al.* 1990). The methods which have seen greatest employment at Avebury, resistivity and magnetic surveying, are those which already have an established role in the discipline.

Variation in soil magnetic susceptibility is the key to magnetic detection. Topsoil contains a proportion of magnetic iron oxides inherited from the parent material and when these are subjected to burning, as on a settlement or industrial site, they become magnetically enhanced. If this enhanced material becomes concentrated within archaeological features cut into a subsoil of contrasting susceptibility it can generate a detectable magnetic anomaly.

Magnetometry involves the measurement of the local magnetic field strength at close intervals (1.0 m or less) across the ground surface. The magnetometer (usually a fluxgate gradiometer in the UK) responds to the magnetic anomalies caused by the localised concentrations of magnetically enhanced soil in features such as pits, ditches and the larger post-holes. It also detects the remnant magnetisation of hearths and industrial features such as kilns and furnaces. These remains are revealed as patterns of magnetic anomalies visible in computer generated plots of the areas surveyed.

Resistivity survey, where an electrical current is introduced into the soil and the (apparent) resistance to its passage is measured, responds to contrasts in porosity and moisture content – variations which can often be archaeological in nature. The method is selected when the presence of building foundations, rubble or paving is suspected, but is also capable of detecting large stones (megaliths), pits, ditches and other features when the prevailing moisture conditions (which are seasonally variable) allow. As with magnetometry, the outcome of resistivity survey is usually a two-dimensional spatial plot of the area surveyed. The depth of detection is related to probe spacing which is often set at 0.5 m, giving a detection depth of some 0.75 m. Wider probe spacings may be appropriate in some cases.

Current research in resistivity is aimed in particular at investigating the potential of multiprobe arrays for the reconstruction of resistivity variation with depth (Aspinall 1992; Szymanski and Tsourlos 1993). The resulting vertical electrical sections (or the horizontal 'slices' through data from multiple adjacent sections) give an indication of broad variations at depth – but the resolution achieved is still only very coarse. Such work has not yet featured much in the Avebury area and is

probably some way from making a significant impact there (but see below).

Aside from resistivity and magnetometry, electromagnetic (EM) methods of detection have seen more limited use at Avebury but are likely to have a continuing and growing role as time goes on. These methods include the (continuous wave) measurement of soil conductivity, measurement of soil magnetic susceptibility (MS) and survey by ground penetrating (impulse) radar (GPR).

Soil conductivity measurement provides results which are directly comparable with those of resistivity but without the necessity for the repeated insertion of electrodes. Using the Geonics EM38 soil conductivity meter, experimental surveys have been undertaken (by Dr L. Somers) in the SE quadrant of the henge and (by the Ancient Monuments Laboratory) over the side ditches of the West Kennet Long Barrow. In both cases conventional Twin Electrode resistivity survey produced the more promising results.

Magnetic susceptibility survey provides an indication of the relative concentration of artificially enhanced material retained in the topsoil, whether or not archaeological features survive beneath. Thus, measurement of topsoil MS (at intervals of, say, 10 m) over a large area (up to many hectares) can, by isolating zones of higher readings, suggest the former presence of settlement or industrial activity. Such a generalisation is not without its problems, however: the mechanisms of magnetic enhancement, apart from burning, are still only imperfectly understood; nor is it yet possible to fully counteract the effects of natural variations in MS, or the effect of modern influences (eg, cultivation). Whilst MS survey can be a valuable approach to preliminary site reconnaissance, its results must be interpreted with caution, and preferably in accompaniment with indications provided by magnetometry and/or other survey methods (English Heritage 1995). MS measurements have been made at several locations in the Avebury area as a supplement to magnetometer survey (eg, on the route of the Kennet Valley Foul Sewer Pipeline (Powell *et al.* 1996) and at Windmill Hill (David *et al.* 1999).

Despite publicity, the use of ground penetrating radar in British archaeology is not yet very well established, although an increasingly significant impact can be forecast. The technique depends upon the detection of reflections of radio energy from major dielectric interfaces in the soil (Conyers and Goodman 1997). It is well suited to the detection of voids and some large features such as walls and megaliths, but the reflections can be very difficult to interpret. The effectiveness of the technique is further hindered by moist and clay-rich soils and it has not yet been satisfactorily demonstrated that it can unravel the more complex and subtle nature of much archaeological stratigraphy. GPR is not usually an appropriate reconnaissance tool but can certainly have a valuable role in the detailed examination of sites where there are robust targets. There should be a degree of foreknowledge of the character of underlying features and, preferably, actual 'ground-truth' should be established by coring or test trenching. With judicious selection, the technique has potential applications in the Avebury area, for example in the detection of buried megaliths and the investigation of earthworks and burial monuments (see below).

Geological Background

The Avebury WHS is underlain by Chalk. Over the higher ground there are thin cultivated soils with, in places, an intermediate capping of Clay-with-flints. Valley bottoms are infilled with superficial deposits of varying depths, including solifluction deposits, colluvium and alluvium (Evans *et al.* 1993).

The geophysical potential of such substrates can be very high. Chalkland soils, in particular, often have a magnetic susceptibility that is well suited to magnetometer survey (eg, on Windmill Hill, MS values range between 20–135 x 10^{-8} SI/kg). However, most archaeological features will become difficult to detect at soil depths exceeding a metre in the valley bottoms (Clark 1996). MS values tend to be lower in these areas too (eg, 4–30 x 10^{-8}SI/kg in the Winterbourne Valley: GSB 1992a)

Previous Geophysical Surveys within the WHS

There has been a considerable amount of geophysical activity in the area over the last 25 years with over 30 surveys have been conducted. No attempt will be made here to review all this work in any detail, but some of the main findings are summarised in the discussion of potential that follows. A listing of all the surveys known to the author is given in Table 5.

Within and around Avebury itself the Ancient Monuments Laboratory (AML) have been conducting surveys intermittently since 1975. This has been largely in response to calls for further information about the archaeology of the main monument complex, the enclosures on Windmill Hill and the West Kennet long barrow. In the last ten years surveys have also been undertaken by others, for instance the magnetometer surveys by Cardiff University over parts of the West Kennett palisaded enclosures, Overton Down and elsewhere (Table 5) and GPR surveys by Cambridge University over buried monoliths on the course of the West Kennet Avenue. Development-driven surveys include those by Geophysical Surveys of Bradford (GSB) along the course of the Kennet Valley Foul Sewer (GSB 1992a, 1992b; Powell *et al.* 1996). Also,

Table 5. Geophysical surveys in the Avebury area, 1975–2000 (WHS and beyond)

Location	*Date*	*By whom*	*Type*	*Reference*
Avebury Henge	1975–96	AML	mag, res, em	Ucko *et al.* 1990; Bewley *et al.*
Outside E entrance of Henge	1990	AML	res	Ucko *et al.* 1990
Avebury Car Park	1984	AML	mag	David 1984, unpub
West Kennet Avenue	1990	AML	res, mag	Ucko *et al.* 1990
West Kennet Avenue	1997–8	Cambridge Univ.	gpr, res, mag	unpub.
Beckhampton Avenue	1975–2000	AML, CfA	mag, res	Ucko *et al.* 1990; David 1999, David 2000, unpub.
Silbury Hill	1959	F R McKim	res	McKim 1959
Silbury Hill	1968	? Cardiff Univ.	res	Whittle 1997
Silbury Hill	2001	CfA	mag, res, gpr	Linford 2001
Silbury Hill ditch	1968-70	UCSWM	seismic	Whittle 1997
Windmill Hill	1988–93	AML	mag	Whittle *et al.* in press
Windmill Hill	1988, 1993	Cardiff Univ.	mag, ms	Banham 1995, unpub.
West Kennett Enclosures	1989	Cardiff Univ.	mag	unpub.
West Kennett Enclosures	1991–2	Cambridge Univ.	mag, res	unpub.
Easton Down long barrow	1991	Cardiff Univ.	mag	Whittle *et al.* 1993, 200; archive
Millbarrow	1989	Cardiff Univ.		unpub.
West Kennet long barrow	1991, 2001	AML,CfA	mag, res, em	unpub.
The Sanctuary	1999	Cambridge Univ.	cvmag	unpub.
Avebury G21 (SU 110 692)	1997	Cardiff Univ.	mag	unpub.
Waden Hill	1998	Cardiff Univ.	mag	unpub.
SW side of Overton Hill: barrows G24, G25, G25a	1989	Cardiff Univ.	mag	Hamilton 1997, unpub.
Avebury G29a, Overton Hill (SU 116 689)	1997	Cardiff Univ.	mag	Hamilton 1997, unpub.
Avebury G29a,Overton Hill (SU 11585 68915)	1998	Cardiff Univ.	mag	Hamilton and Dennis 1998, unpub.
Overton Hill, 'causewayed enclosure'	1989	Cardiff Univ.	mag	unpub.
Winterbourne Bassett stone circle	1998	AML	mag, res	unpub.
North Farm	1998	Cardiff Univ.	mag, res	Hamilton *et al.* 1998
Adam's Grave	1997-8	Cambridge Univ.	gpr, mag, res	unpub.
Silbury/Waden	1997	Cardiff Univ.	mag	unpub.
Silbury/Waden	1993	GSB	mag, ms	Powell *et al.* 1996
Beckhampton barrow cemetery	1993	GSB	mag, ms	Powell *et al.* 1996
Other foul sewer line sites	1993	GSB	mag, ms	Powell *et al.* 1996
Avebury Manor	1991	A Bartlett	mag, res	NT archive, unpub.
Olbury Hillfort	1996	AML	mag	In prep.
Compton Bassett	1996-8	Cardiff Univ.	mag	unpub.
Yatesbury (SU 071 699) (SU 074 707)	1993, 1996-8	Cardiff Univ.	mag, res	unpub.
Golden Ball Hill	1997-9	Cardiff Univ.	mag, res	unpub.
Overton Hill G21	1997	Cardiff Univ.	mag, res	NT archive
Sanctuary cafe	1998	Cardiff Univ.	res	unpub.
Snail Creep Field	1999	Cardiff Univ.	mag	unpub.
Easton Down long barrow	1991	Cardiff Univ.	mag	unpub.
Horslip long barrow	2000	CfA	mag	Martin 2001
South Street long barrow	1966, 2000	A J Clark, CfA	mag	Ashbee *et al.* 1979; Martin 2001
The Sanctuary	1999	Cambridge Univ.	mag	unpub.
Wansdyke	1970s	A J Clark	mag, res	unpub.

The National Trust has commissioned surveys on its property, for instance within the grounds of Avebury Manor (Bartlett 1991).

Future Potential

In line with the format adopted elsewhere in the Research Agenda the potential contribution of geophysical methodologies in the Avebury area will now be discussed on a period by period basis.

Lower and Middle Palaeolithic
Geophysical techniques are unlikely to have much application in the location of archaeological features or occupation deposits of this age – which are in any case likely to be a rarity. However, geophysics does have a role in the mapping of buried landscape features such as former drainage channels, and could therefore assist with the prediction of the potential presence of buried Lower and Middle Palaeolithic deposits. *In situ* sites have also been shown to survive in high level solution features on the deposits mapped as Clay-with-flints and these too have some potential to be located and defined (Scott-Jackson 2000; Section 4.1 above).

The choice of survey method will depend upon the prevailing site conditions and the particular requirements of each situation. Radar and seismic methods are both capable of profiling buried features such as palaeo-channels but have so far had little or no application in Quaternary archaeology in England. Conductivity survey and resistivity profiling are methods that come more readily to mind. Resistivity survey and (to a lesser degree) magnetometry are reported to have been successful in mapping the solution features referred to above (Scott-Jackson 2000: 124–9; Reynolds Geo-sciences Ltd 1999, 6–7). Such methods can be used to complement one another and are best applied as part of a carefully integrated programme of investigation. Where appropriate, advantage should be taken of opportunities to obtain ground truth from test pits and coring (eg, Bates and Bates 2000). As in any such survey, however, care has to be taken that such intrusions do not risk damaging vulnerable deposits or artefacts.

Late Glacial and Early Post-glacial
For these periods the limitations are mainly the same as those mentioned above. There are strong indications that sites may be concentrated (and will certainly be better preserved) in river valley sediments; coring and/or test pitting, linked with biostratigraphic analysis (Evans *et al.* 1993), are probably the most appropriate prospection methods to adopt in these conditions.

Mesolithic sites may include features cut into the subsoil or bedrock, as well as hearths and artificial surfaces, and theoretically these should be no less detectable than similar features of later periods. Conditions where mesolithic sites are well preserved and also shallow (<0.5 m) will be rare; however, if such conditions can be met, magnetometer survey would be the most appropriate method to adopt[1], preferably with a fine sample interval (eg, 0.5 x 0.25 m), and perhaps using a highly sensitive instrument such as a caesium magnetometer. Such a methodology would only be practical once the focus of a lithic scatter had already been located by fieldwalking. Prospecting for mesolithic sites more generally across the landscape is best achieved by fieldwalking and/or test pitting; geophysical and geochemical methods on their own will be confused by the overprinting of more recent archaeological activity.

Neolithic and Early Bronze Age
It is to monuments of this period that most of the geophysical effort in the Avebury WHS has so far been directed. Some of the most obvious potential that remains is listed below:

The henge
Previous resistivity and magnetometer surveys have demonstrated that some former stone positions and other features are detectable within the henge (Ucko *et al.* 1990). The shadowy presence of previously unsuspected circles hinted at within resistivity data from the NE quadrant (*ibid*, pl. 69) unfortunately remains too insubstantial to be fully credible. The results of recent caesium magnetometry there are also inconclusive[1]. However, recent very positive results of resistivity survey in the NW Quadrant (Bewley *et al.* 1996) demonstrate the need to:

- complete high density and high sensitivity magnetometer and resistivity survey of the entire henge; that is – to survey the SW quadrant and the unsurveyed areas of the SE and NE quadrants.

Of lower priority is a re-survey of those parts of the henge covered before 1996, using finer resolution and more sensitive instrumentation. Seasonal resistivity tests could be carried out to determine the most suitable time of year to use this method. Re-survey of the 'new' feature in the NW Quadrant (*ibid.*) with resistivity (and perhaps GPR) might refine its detail and resolve the question of the presence or absence of a central pit.

More experimentally, it ought to be possible to use resistivity profiling and GPR to examine the gross physical structure of the henge bank and ditch. GPR could be used to confirm the presence of buried sarsens.

Any disturbance to the Cove area, arising from the need to stabilise the monoliths there, should perhaps be preceded by detailed GPR, magnetic and resistivity survey; however, the level of medieval and later activity

in this vicinity suggests that very little information additional to that from previous surveys (Ucko *et al.* 1990) will be gained. GPR survey of the immediate surroundings of the Cove stones was conducted by Aperio Ltd in 1998 as part of a geotechnical study of their stability (Dodds and Eddies 1998). The same study also used acoustic methods to estimate the depth below the ground surface of the two Cove stones.

The West Kennet Avenue

The course of this Avenue has been explored with resistivity as far as the northern boundary of the West Kennett Farm buildings, with mixed results (Ucko *et al.* 1990, 186–94, pl. 62). The technique was undoubtedly able to detect some former stone positions, notably those within some 150 m of the restored part of the Avenue, but most of the others remain unlocated, as does any evidence of a 'cove' as referred to by both John Aubrey and William Stukeley (*ibid.*, 190–3). More recently, fieldwork by Cambridge University, using high resolution GPR and resistivity profiling, has successfully identified the depth and disposition of individual buried sarsens (Pierce and Shell pers. comm.).

One curiosity, perhaps worth re-investigation, is a sub-circular high resistance anomaly (encircling an area about 30 m in diameter) centred about the position of a former standing stone, assumed to be a remnant of the Avenue, recorded on the 1883 OS map at SU 1117 6856 (*ibid.*, pl. 62c). More generally, it is a priority to:

- re-survey the Avenue with resistivity to locate stone positions not previously detectable (perhaps owing to poor seasonal moisture contrasts at the time of survey);
- survey the Avenue with high sensitivity magnetometry, extending widely to either side of the estimated route;
- survey the available open ground between the A4 and the Sanctuary (fieldwalked in 1991), in the hope of tracing the exact course of the Avenue here and its articulation with the Sanctuary. It is very unlikely that geophysical methods (with the tenuous exception of GPR) will ever be able to locate stone positions under or near existing buildings (West Kennett House), lay-bys or roads.

The Sanctuary

It is perhaps unlikely that geophysics will now locate unsuspected features within the circles at the Sanctuary; however, as the site was not totally excavated, it would be sensible to:

- undertake a detailed high sensitivity and high resolution magnetic and resistivity survey in case features such as pits, burials or post-holes might still be detectable, and
- magnetic and resistivity survey of the accessible environs of the site to determine whether there are any outlying features.

The fencing around the Sanctuary will severely hamper the potential of magnetometer survey, and passing traffic would also be a difficulty. (A magnetometer survey was carried out over a limited area by Cambridge University in advance of M. Pitts's excavation in 1999).

West Kennett Enclosures

Magnetometer surveys by Cardiff and Cambridge Universities were successfully able to supplement aerial photographic evidence at West Kennett and identify parts of the palisaded enclosures and their associated features (Whittle 1997). The survey coverage was limited, however, and there can be no doubt that more extensive coverage at a higher resolution and of a higher sensitivity could provide significant additional information.

The Beckhampton Avenue

Resistivity survey in Longstones field by the AML in 1989 (Ucko *et al.* 1990, 196-9) was unable to confirm either the presence or absence of the avenue recorded by William Stukeley in the 1720s. However, potentially significant anomalies were noted and these were the subject of re-survey in 1999, prior to their investigation by excavation. The latter successfully demonstrated the presence both of buried monoliths and stone destruction pits (David 1999; Gillings *et al.* 2000a). Further survey and excavation in 2000 have together confirmed the presence of at least four pairs of stone settings aligned with the Longstones, and have successfully identified former stone settings associated with Adam (David 2000; Gillings *et al.* 2000a).

If the Beckhampton Avenue has thus been shown to be a reality at least in the vicinity of the Longstones, there still remains a need – perhaps now more than ever – to trace its full extent and its associations. In particular there is renewed speculation concerning the form of its terminus. However, despite the successes of 1999–2000, the geophysical resolution of these continuing issues remains problematic: stone positions seem only to be detectable in very few instances – insufficient to place much reliance upon large-scale reconnaissance and for the recognition of patterns over a wider area. Despite both survey and excavation in 2000, the course of the Avenue to the south-west of the Longstones remains uncertain and the location of a terminus, over an increasingly large search area, will be very difficult. Survey effort may be more productively focused on tracing the route of the avenue to the north-east, towards the henge, but again the fact that stone positions are only intermittently detectable is inhibiting.

In the light of present knowledge, the optimum approach appears to be to:

- conduct detailed resistivity survey along the projected corridor of the avenue prior to a continuing programme of verification by excavation. The wider area in which the avenue might be expected to terminate ought also to be examined by detailed magnetometry, should any associated features (pits, ditches) be detectable by this method.

Closely associated with the Avenue and centred at SU 0892 6937 is the large oval enclosure of some 100 x 140 m initially identified from aerial photographs (NMR 15653/10). Its circuit passes between the two Longstones and parts of it are visible as very faint magnetic anomalies in survey data gathered by the Ancient Monuments Laboratory (AML) in 1989. This feature has again been confirmed by a combination of additional geophysical survey and excavation (Gillings *et al.* 2000a).

Further afield, the investigation of the possible cursus at Yatesbury has not yet been completed and remains a target for continued fieldwork. Preliminary geophysical survey by Cardiff University has so far not been able to resolve the identity of the cropmarks concerned (Hamilton 1997, 3).

Stone circles

Apart from those within the henge and at the Sanctuary, at least four stone circles are recorded in the Avebury area, with varying degrees of certainty (Cleal, Section 2.3, above). The site of one of these, the supposed circle at Winterbourne Bassett (SU 6035 7550: Stukeley 1743, 45; Smith 1885, 76–7) has been surveyed by the AML using caesium and fluxgate magnetometers, and resistivity. The results, whilst not definitive, suggest that the recumbent stones in this area are not part of a deliberate arrangement (David in prep.).

Falkner's Circle (SU 1098 6931), with much better credentials as a stone circle, would clearly benefit from detailed resistivity and magnetic survey to locate stone positions, pits, large post-holes and ditches if any of these are present.

Detecting the locations of other stone circles, now lost, is much more problematic, particularly where the only features may be buried stones or former stone positions. It could be extremely time-consuming and probably unproductive to attempt to locate the Broadstones, for instance. However, it will be necessary to review the documentary evidence and to assess the likely locations on the ground at first hand before coming to a decision on the potential of this case, and that of Langdean.

Long barrows

The AML survey of the long barrow at Shepherd's Shore, between Beckhampton and Devizes (Wilts 495c: Bray 1998), and of other chalkland long barrows further afield (eg, Payne 2000), amply demonstrates the ability of magnetometry and resistivity to provide images of their basic structure. Within the WHS the AML survey of the West Kennet long barrow was able to define the general plan of the flanking ditches using magnetometry, resistivity and EM. These techniques are therefore appropriate in other instances where such knowledge might be valuable. Recent magnetometer surveys (2000) of the Horslip and South Street barrows, carried out in advance of their removal from cultivation, have successfully confirmed their exact locations but have yielded little further archaeological information (Martin 2001a). Magnetometer survey has been extended around the West Kennet long barrow (2001) confirming the disposition of the ditches.

Where the long barrow mound is not covered in trees or shrubs, resistivity profiling and GPR, linked with topographic survey, can be used to help discern structural components within the mound, and perhaps even pre-mound features. The potential ability of GPR to establish the presence and shape of sarsens can be valuable here, as in the detection of voids or chambers. Unpublished GPR survey of Adams Grave is reported to have successfully defined the barrow structure and internal chambers (Pierce and Shell pers. comm.).

The environs of long barrows, especially the forecourt areas, are worth surveying with magnetometry and detailed MS – for pits, gullies, and any evidence of burning (Marshall 1998). Resistivity survey might locate outlying structural components.

Silbury Hill

Early attempts (in 1959 and 1968) to use resistivity survey to examine Silbury Hill were unsuccessful (McKim 1959; Whittle 1997, 20) and the sheer scale of the monument has inhibited further geophysical exploration of it isurface and interior. However, the partial collapse in May 2000 of the filling of the Duke of Northumberland's shaft, by presenting the need to determine whether or not further voids are detectable, has lent a new incentive to this challenge. Shallow resistivity, magnetometer and GPR surveys of the summit area of the hill have recently been undertaken by the English Heritage Centre for Archaeology (CfA) but without any definite outcome (Linford 2001).

If the logistical constraints can be overcome, there is no reason why low frequency GPR and resistance tomography cannot be attempted over the mound and its surrounding ditch in order to try to obtain further information on its gross physical structure.[3] For higher resolution results at depth, required for the location of voids and zones of weakness, the potential of 3D seis-

mic tomography is currently being assessed (March 2001).

Less urgently, the extension of magnetometer survey to take in the environs of Silbury Hill would be of considerable value, to explore for contemporary (and later) features. Magnetometer survey undertaken in 1997 (Hamilton pers. comm.) aims to further characterise the Roman settlement identified between Silbury and Waden Hills (Powell *et al.* 1996).

The Marlborough Mound

Although well outside the bounds of the WHS, the Marlborough Mound perhaps ought not to be excluded from this review. Nevertheless, the prospects are not encouraging: since the mound is heavily vegetated and has been landscaped (Best 1997) there seems little prospect of success. It will be necessary to examine the site in detail to assess what potential it may have, if any, for geophysical survey. There may be scope for determining the presence of an associated ditch although it is unlikely that this or any other geophysical results will help determine the age of the mound.

Round barrows/ring ditches

These can usually be detected with magnetometer survey if the sites are accessible and uncontaminated by later activity, as has been demonstrated at the Beckhampton barrow cemetery (Powell *et al.* 1996), on Overton Hill (Hamilton 1997) and on Windmill Hill (David *et al.* 1999). Magnetometer survey can be expected to locate barrows whose recorded positions may be in doubt, and to add detail to the components of known barrow cemeteries, especially where aerial photographic coverage is poor. Detailed MS survey might be capable of detecting traces of cremation pyres, and it would be valuable to use detailed magnetic survey to explore for contemporary features between barrows.

Settlement sites

Routine magnetometer survey can be recommended for the examination of potential settlement sites the presence of which is indicated by lithic and/or ceramic remains at the surface, or topographic survey. Magnetometer survey can locate associated features, such as pits, ditches, hearths and gullies. Pits, mines and shafts can be examined using resistivity methods and GPR.

As the means of very rapid and detailed magnetometer coverage are developed in the future, using multiple detector arrays, it should become feasible to prospect over very large areas of the landscape. It is now foreseeable that, one day, most of the accessible parts of the entire WHS could be surveyed, but at present it is only practicable to cover much smaller areas (<80 ha) although this is time-consuming and expensive.

MS measurements, when linked with subsequent selected magnetometer survey, fieldwalking and aerial photographic data, can be used over large areas (about 100 ha) to locate topsoil enhancement associated with prolonged settlement and industrial activity. However, MS enhancement has not often been demonstrated over Neolithic and Bronze Age sites as the magnetic signature over these can be weak or non-existent. Trial excavation, as well as detailed follow-up magnetometer survey, would be necessary to characterise areas of localised MS enhancement.

Later Bronze Age

Routine magnetometer survey may be the approach that offers most potential in this period, for helping to locate and characterise settlements and field systems, and metalworking sites if these exist.

Detailed and high sensitivity magnetometry and MS might be capable of detecting subtle features such as former pyres and, perhaps, cremation burials – should such features be expected in a particular area.

Iron Age

Iron Age settlement activity on chalkland soils is often very clearly detectable using routine magnetometer survey and this method should be an indispensable aid to the exploration of any sites of this age. If no priority sites stand out in the WHS itself at present, then attention could be focused on priority sites further afield, such as the possible *oppidum* at Forest Hill within the orbit of which Avebury may have lain.

The geophysical potential of hillforts is demonstrated by the results of the Wessex Hillforts Project (Payne 1996; Payne forthcoming). Magneto-meter survey has been deployed over a sample of 20 Wessex hillfort interiors in order to improve their archaeological interpretation and thereby their better conservation. Several examples from north Wiltshire have been surveyed (those closest to Avebury being Martinsell Camp, Oldbury, Barbury Castle and Oliver's Castle) with excellent results. There can be no doubt that continued magnetic investigation of hillforts and their environs will be highly productive. In specific cases there may be scope for exploiting resistivity and GPR to examine defensive and other features such as building foundations, shafts and wells. Geophysical survey also offers the opportunity to detect and help interpret the multiple use of hilltops, from the mesolithic to the early medieval period.

Midden accumulations, such as those at All Cannings Cross, and perhaps Blackpatch, could also be explored by magnetic survey. However, given the potential depth of anthropogenic deposits known at other such sites (Potterne, East Chisenbury, Oare), thought should also be given to using EM and resistivity profiling, linked to test pitting and/or coring.

Magnetometer survey can also be used to examine areas of ceramic production and metalworking. As for the Romano-British and early medieval periods, geophysical survey ought to be directed at exploring the source areas of metal detector finds, either individual find-spots or the foci of local scatters.

Romano-British

Romano-British remains of almost every type are highly amenable to geophysical methods on Chalkland geologies, as witnessed by very many survey plots of exceptional quality from southern England (Gaffney *et al.* 1998). Towns, villas, farms, field systems, industrial areas, ceremonial and military complexes and roads may all be elucidated to some extent, and often in great detail, by routine magnetic and/or resistivity methods. Obvious initial targets include buildings (villas, temples) and other settlement sites (eg farmsteads) whose general presence is suspected from aerial photographs and/or fieldwalking. Many such sites are referred to in the foregoing resource assessment (Corney and Walters, Section 2.6, above).

Now that such surveys are being applied at ever-increasing scales of ground-coverage, it is possible for individual projects to examine entire Romano-British complexes, such as a town or estate, rather than selected component parts, such as a villa or farmstead alone. The traditional techniques, deployed more speedily, have much to offer at this enlarged scale of operation (eg, Wroxeter, 73 ha: Gaffney *et al.* 2000).

At a more focused and sensitive level, these and other methods (EM, GPR) can be used to refine detail (eg, 3D structure of buildings) and tackle the detection of the more elusive features such as burials and the evidence for horticulture. Cemeteries, so far absent in the area, are difficult to detect but not impossibly so, if the search area can be reasonably constrained.

Anglo-Saxon and medieval

At a national scale, geophysical survey has had significantly less impact in this period than in the preceding Romano-British and Iron Age periods. However, there are a growing number of exceptions to this general impression and the potential contribution of geophysical methods to the early medieval studies has been under detailed review (David 1994). There may indeed be some potential in the Avebury WHS, but hopes should not be unduly raised and very careful selection will be necessary.

Roadways

The AML resistivity survey outside the eastern entrance of the henge very clearly detected a linear anomaly confidently interpreted as a road running parallel and to the north of the course of the present lane (Ucko *et al.* 184–6, pl. 58). That this has a medieval origin must be considered highly likely, and it proves that such routeways (in this case invisible on available aerial photographs) can be clearly detected, as has also been the case at Yatesbury and elsewhere. Traces of a track have also been detected in the NE Quadrant of the henge. Continued geophysical survey, with excavated sections, would thus seem to have a definite potential for the further determination of local communication routes.

Settlements

An obvious and recurring problem with the geophysical survey of many medieval settlement sites is that they lie amongst or adjacent to existing settlement – as is certain to be the case to the west of the henge at Avebury (Reynolds 2001). Land available for survey in such conditions is often altered by later activities and is usually divided into inconveniently shaped and sized parcels, making survey impractical and hindering a coherent interpretation. These problems beset the survey undertaken in the Glebe Field car park (David 1984). Furthermore, relevant features may be complex and result in only weak and discontinuous anomalies, if at all; these will be even less detectable under alluvium (as in the Winterbourne valley).

Despite such pessimism, there is clearly a need for a thorough assessment on the ground of the available open areas to the west of Avebury (see RCHME plan and phasing by A Reynolds, Section 2.8, above) to determine what might be achieved, and in what order of priority. At present it is sensible to suggest that magnetic and resistivity survey would be most appropriately targeted at the larger peripheral areas, in the hope that patterns of anomalies may be detectable and can then be 'followed' into the more awkward survey areas nearer the core (where it may well then be more appropriate to resort to excavation in any case). The fields north of the A4361, between the main car park and the henge, would very suitable for such initial survey. Magnetometer survey, in particular, might pick up evidence for sunken featured buildings should they extend into this area (and not be obscured by reactions to landscaping, modern services, etc). Resistivity survey will respond to foundations and ditched features, as has been shown to be the case recently in the NW Quadrant (Bewley *et al.* 1996) where previously unrecorded linear anomalies could be medieval or earlier in origin.

The scope for using more novel geophysical methods may be a little limited for this period at Avebury. GPR might help clarify the nature of the 'new' feature in the NW Quadrant and, with resistivity profiling, might assist in the characterisation of other particular features, such as the postulated burh boundary. GPR could perhaps be used to explore for features within the church fabric, or below its floors; however, without additional corroborative information to help interpret the radar reflections this approach can confuse rather than clarify.

Stone foundations
Resistivity is the best approach in this instance, should there be reason to suppose that a building, such as a priory, may exist in a particular area. Again, however, it is necessary to stress that results are rarely very positive where surveys areas are small and interrupted. Unfortunately the graves in the Avebury churchyard would severely hinder exploration here.

Burials
Burials, of whatever period, are notoriously difficult to locate geophysically. Magnetometer survey is usually the best approach for surveying pagan Anglo-Saxon cemeteries where these are uncontaminated by more recent ground disturbance (as at Blackpatch, Vale of Pewsey; Clark 1996, fig. 78).

Most of the above comments, although specific to Avebury itself, would be applicable to geophysical survey considerations elsewhere with the WHS.

Conclusions

Geophysical survey on the Wiltshire chalkland has often proved highly effective, particularly for the location and characterisation of Iron Age and Romano-British sites. Within the Avebury WHS most fieldwork has naturally been concentrated on the Neolithic and Bronze Age monuments. Although such efforts have indeed met with considerable success, the problems of locating geophysically subtle features and distinguishing these from natural ones, will remain a difficulty for future research to overcome. Here there is scope for the more selective use of methods such as GPR and resistivity profiling which can focus on particular components of the area. The WHS offers opportunities for experimentation with these and other methods – for example the detailed 3D delineation of buried sarsens. Such methods should also be applicable to the exploration of structures and earthworks. Indeed, it is now not too fanciful, *inter alia*, to see the fusion of geophysical data with other physical and historical records, helping to re-create the evolving appearance of the monument through time (Pollard and Gillings 1998).

Although efforts must continue to be directed toward the monuments themselves, where excavation itself cannot easily be contemplated, there is no less of a need to explore the intervening spaces between. Despite an interest in the use of more 'novel' geophysical methods it must nevertheless be restated that routine magnetometry and resistivity are likely to remain the most effective at the general level of prospection. The speed and quality of geophysical data capture and manipulation will improve even further in the future, and these ground-based methods ought to be used over much larger tracts of landscape than is at present practicable. One can hope also that high sensitivity magnetometry will be used with increasing determination in the search for weakly magnetised and more deeply buried features. Targeted excavation, preceded by geophysical survey, offers the ideal approach in these circumstances.

Ever since probing was first recorded as a method of exploration at Avebury over a hundred years ago the use of minimally invasive techniques has contributed to a growing understanding of the monuments there, and must continue to do so. Together with aerial photography, geophysics has contributed to the revelation of major new components of the archaeology of the WHS over the last decade. Both ground-based and aerial remote sensing methods must clearly play a substantive role in any future research agenda for the area.

5.2 Environmental Archaeology
Michael J. Allen

Investigations of buried soils, where opportunities occur, through archaeological excavation, or via specific research programmes, should include a programme of soil micromorphology accompanied by other basic techniques to characterise the soils, and land snail and pollen analysis. Suitable samples should be taken to secure the recovery of charred remains and consideration given to radiocarbon dating providing that there is material representing an event, rather than just datable material that can be submitted.

The examination of glacial and periglacial deposits should be undertaken with some informed view to record and map their occurrence.

The excavation and recording of the Avebury ditch sequence accompanied by a full sampling for land snails, soils, pollen and charred remains to provide a key, long palaeo-environmental and chronological sequence for this monument.

The creation of a DEM with *land use* envelopes draped over the terrain model for each period.

5.3 Earthwork Survey
Mark Bowden

Earthwork survey is the primary means of recording and analysing upstanding features, sites and landscapes. It gives information on the form, condition, and relative chronology of features. It can also give information about function but rarely about absolute chronology. The most recent text on earthwork survey is Bowden (1999); other useful references are Bettess (1984) and Brown (1987, chaps 3 and 4).

Most monuments within the current WHS boundary have been subject to large-scale survey by the RCHME within recent years and a number of sites in the region immediately surrounding the WHS have also

been surveyed. More could and should be done within and around the WHS, particularly in tandem with other survey methods. It is intended, for instance, that air photographic mapping of the WHS at 1:10,000 will be followed up by field checking. Extensive field systems to the south of the A4, previously unrecorded because of their poor condition and low visibility, pose a particular problem. Large-scale survey of field systems and associated features, paying particular attention to the distribution of sarsen stones, in the Fyfield and Overton Downs area, should be accorded a high priority.

Standards for undertaking earthwork survey in England have been set by the RCHME (1999b). As with any other archaeological activity, provision must be made for archiving the results of earthwork survey in a suitable repository. Publication should be considered whenever survey leads to significant new insights.

5.4 Surface Artefact Collection (Fieldwalking)

Andrew J. Lawson

In the past, durable objects such as pottery, coins, stone implements, etc, were frequently lost or discarded. These normally became incorporated into the soil where they may have remained until the present day. Similarly, abandoned buildings may have become buried by the accumulation of soil over them. However, subsequent ploughing may cut into previously undisturbed soil layers and bring to the surface the artefacts and building materials contained within them. The systematic recording or collection of these materials (often referred to as fieldwalking) and the analysis of their distributions can be used to indicate the position, date and type of activity originally responsible for them. Thus, the location of past activity can sometimes be recognised from the surface of the ground without recourse to further disturbance of the site, for example through excavation.

As recognised in this Research Agenda, surface artefact collection is a valuable technique for extending our knowledge on activities of all periods of the past. Suitable land management regimes for the conservation of archaeological remains can only be made from an informed position and hence, where suitable conditions exist, surface artefact collection can contribute both to our knowledge of the past and appropriate management strategies.

Surface artefact collection normally relies on the visibility of archaeological material. It is most effectively carried out when the land is in optimal condition, for example when the broken surface has weathered and been washed by rain. If such exercises are to benefit the broader study of the WHS, collection should not discriminate between different classes of material. Thus, a programme devised to answer questions on lithic scatters, for example, may encounter pottery of different periods which should be collected and recorded in the appropriate fashion. Discriminatory programmes which might seek only metal objects, for example, should be discouraged.

The collection of archaeological material brings with it certain moral obligations. By removing materials from their place of discovery we may be taking away vital clues to the understanding of the site and may diminish the evidence available to future researchers. We should, therefore, not collect material unless there is a valid reason for doing so but where it is justified, an accurate record of all discoveries must be made.

No artefact should be removed from the WHS unless its position has been accurately recorded. Landowners should insist that any archaeological discovery made on their land is reported to the County Archaeologist or, in the case of Treasure, the Coroner. When systematic searches are planned they must comply, as a minimum, with the standard defined by Wiltshire County Council (1995). There may be occasions when it is appropriate to vary this standard: for example, more intense study may require collection from the total area under investigation, or timed collection may be relevant. The standard does not apply solely to professional archaeologists. Anyone using a metal detector should not only abide by the *Treasure Act 1996 Code of Practice* but should also comply with the County standard.

Lower and Middle Palaeolithic

Controlled surface collection may locate Lower and Middle Palaeolithic artefacts. Detailed recordings must be made of the find-spot, the artefacts themselves and any disturbance to the top soil for subsequent inclusion in the PADMAC *Gazetteer* (Scott-Jackson 1999, ongoing) and English Heritage's *Southern Rivers Palaeolithic Project* (Wessex Archaeology 1993–99). Randon auguring, coring, digging or stripping of the topsoil is strongly discouraged.

Upper Palaeolithic, Late Glacial and Early Post-glacial

The identification of surface lithic scatters (through fieldwalking) will help to enhance our knowledge of the density of the population and their use of the land at this time. Coring and test-pitting, linked to biostratigraphic analysis, may be valuable in locating sediments which could contain Upper Palaeolithic and Mesolithic remains. A programme of prospection is required to assess the apparent gaps in distribution, especially in areas where land management schemes favour reversion to grassland or woodland.

Neolithic and Bronze Age

Some surface collection will be necessary if there are opportunities for taking further arable out of cultivation within the WHS to protect archaeological features and deposits. Careful sampling strategies would have to be designed to avoid the amassing of large surface collections (see Section 4.3).

Iron Age

The site at All Cannings Cross would be an ideal example to re-evaluate to provide evidence for the Early Iron Age. This could include fieldwalking. This would be a useful technique to try and date undated or presumed Iron Age enclosures in the WHS.

Romano-British and Post-Roman

Fieldwalking should be a major component of any study in areas where aerial photography is less predictable, notably the lower chalk and the Vale of Pewsey.

Late Saxon and Medieval

Field walking should be undertaken on a systematic basis to locate outlying settlement sites. The survey should encompass all artefact types.

5.5 Evaluation Excavation
Andrew J. Lawson

Excavation is commonly used by archaeologists to investigate ancient remains and monuments. However, the technique is both intrusive and destructive of the remains themselves and hence should only be used where justifiable in answering important archaeological questions and in the absence of less intrusive methods. It is a legal offence to carry out any work on a Scheduled Monument without the written consent of the Secretary of State. For the avoidance of doubt, anyone planning an excavation (archaeological or otherwise) within the WHS is advised to ascertain the status of the site from English Heritage.

Although there is a presumption nationally that important archaeological remains should be preserved *in situ*, and the international designation of the WHS intensifies our duty of care for such remains, there will be occasions when excavation is necessary to further our knowledge of the remains. No excavation should be conducted unless it has been planned in line with the advice of English Heritage (contained in *The Management of Archaeological Projects* (1991) and complies with the Institute of Field Archaeologists standard. Both of these documents stress that the aims and objectives of the proposed work should be clearly stated and the programme of work carefully designed both to meet them and to avoid unnecessary erosion of the archaeological resource. The full range of appropriate scientific techniques for archaeological and environmental analysis should be employed whenever excavation is undertaken in the WHS so as to maximise the retrieval of information.

This Research Agenda has highlighted the gaps in existing knowledge and indicates the most important priorities for future research. It does not exclude the possibility that other priorities will emerge as enquiry continues. In the meantime, it can be used as a basis for planning excavation strategies which will constructively contribute to the our understanding of the WHS and our obligations to its proper management.

From time to time, it is necessary to establish the presence or absence, nature, extent, condition and quality of archaeological remains through limited sample excavation. This is particularly the case where the remains are poorly understood yet decisions concerning their future management must be made. For example, new development may threaten archaeological remains whose importance cannot be gauged from existing information or from un-intrusive techniques. Limited evaluation excavation may be necessary to enable the local authorities to comply with government guidance (*PPG* 15, *PPG* 16) and adopted planning policies. Indeed, it is suggested that, because of the unpredictable nature of certain archaeological remains and their potential importance in the context of the WHS, any proposed building development or significant land use change (such as forestry) should be preceded by appropriate assessments and field evaluation.

In all cases of evaluation excavation, the work should proceed with the same care as any archaeological excavation (below) and should seek to remove only the minimum amount of archaeological deposits necessary to meet the requirements of the exercise. All work should comply with the definitions of ACAO (1993) and the minimum standards defined by Wiltshire County Council (1995) and the Institute of Field Archaeologists.

5.6 Full Excavation
Rosamund M.J. Cleal

It is clear that there are some questions which are impossible to answer other than by excavation, but excavation should not be undertaken lightly by archaeologists, and nowhere should this be more true than within the WHS. This document stresses the need for full assessments of existing material from past excavations – such as material with potential for

radiocarbon dating or for shedding light on medieval Avebury – but as well as identifying useful material for analysis it is likely that such exercises will emphasise the huge gaps in knowledge about the WHS which have already been identified by this Research Agenda. Some of the questions this document has raised could undoubtedly be answered fully or in part by excavation and the great challenge for the future is to establish a framework in which excavation is acknowledged as an invaluable and irreplaceable tool, but in which it takes place within consensual restraints aimed at ensuring that such excavation does not perpetuate some of the failings of past research excavation.

In all the themes identified in this volume – Settlement, Environment, Chronology, Ceremony and Ritual, etc, – non-intrusive techniques offer valuable but limited scope for answering the questions raised. Excavation, on the other hand, in many cases offers the best chance, and in some cases simply the only chance of answering those questions, or of even approaching them. It should also be stressed that with modern techniques, targeted excavation could in many cases have a reasonable chance of achieving its goals through intrusion in only a tiny proportion of the site being investigated. Some of these benefits may be easily identified and summarised.

Dating: Non-intrusive methods generally have a low potential for dating, usually relying on morphology, which can give ambiguous or even misleading results (For example the newly identified feature in the north-west quadrant of the henge has been tentatively identified as Neolithic, Bronze Age, Romano-British, Saxon and medieval, on the basis of its form). Excavation, on the other hand, can provide both relative and absolute dating, through stratigraphy, finds and material for absolute dating.

Environment: It is difficult to envisage circumstances in which totally non-invasive techniques can provide material which will shed light on past environments (although very minimally invasive techniques, particularly augering, can do so). Small scale excavation within the Avebury area has been particularly successful in producing evidence of past environments (Evans *et al.* 1993).

Economic and social: Evidence for plants, animals and people is generally only recovered through invasive techniques, and most successfully through excavation.

Artefacts: It is difficult to envisage non-invasive techniques which would recover artefacts, as the removal of artefacts itself could be categorised as invasive (apart perhaps from analysis of surface scatters in which material is replaced within surface collection areas). Artefacts are recovered most successfully from excavation, in which their context is best established.

Structural detail: Although non-invasive methods can recover structural detail, mainly in the form of plans, the Avebury area has not always provided good results. For fine detail and for fuller understanding of plans, particularly the elucidation of structural relationships, excavation is irreplaceable as a technique.

Some of the above may be achieved through other means, such as watching briefs during service trenching, but these are not ideal conditions and may be ones in which material is lost. It was possible for the professional archaeologists involved to state, following the Kennet Valley Foul Sewer project, that, in regard to the apparent absence of Neolithic activity along the pipeline 'Nevertheless, it must be admitted, that the nature of the fieldwork, as imposed by the method of pipeline replacement, was never conducive to the recovery of ephemeral features or small stray finds' (Powell *et al.* 1996, 82). Excavation, on the other hand, is conducive to exactly that.

Many of the sites have statutory protection, although this does not exclude excavation as a technique. For non-Scheduled areas (ie, for the majority of the WHS) it has not on the whole been archaeology which has caused the most intrusion but rather the provision of services. It has not been considered reasonable in social terms to alter the location of services to preserve small areas of archaeological deposit (eg, the work in Butler's Field 1997; see also Management Plan, English Heritage 1998, appendix L, guidelines on services), nor should it be considered reasonable to sacrifice the needs of research to the preservation of small areas of archaeological deposit if such an investigation is undertaken to the highest standards of the time and has a reasonable chance of answering clearly defined questions.

It is impossible to define all the research questions likely to arise, even within a limited timeframe (as demonstrated by the almost yearly identification of new sites by the former RCHME), but a document such as this can go some way to defining many of the existing problems, and some of the most obvious are outlined below.It is not the place of a document such as this to prescribe measures but voluntary adherence to a set of guiding principles is perhaps a goal which it is reasonable to suggest as achievable among archaeologists working in the area. Adherence to this could then be taken as an indication of good intention in the case of research proposals made on land not covered by other protective measures and so aid landowners in evaluating such proposals (ideally also with the guidance of archaeological professionals, such as from within the existing County structure, and bodies such as AAHRG). Guidelines do already exist for

specific purposes, such as *the Managemement of Archaeological Projects* (English Heritage 1991) and Institute of Field Archaeology guidelines, and these do offer a framework of recognised good practice. It is, however, also worth reiterating here features of excavation which should reasonably be given particular attention. Such a code could include at least the following:

- that the aims and outline of excavation should be clear and made widely available (to aid evaluation of how reasonable they are within the context of present knowledge of the WHS and the extent of archaeological deposits);
- that excavation projects should be able to demonstrate access to an appropriate range of specialists both during and after excavation;
- that arrangement for the deposition of finds should be agreed with the landowner before excavation and discussed with the relevant museum, and that landowners should be encouraged to deposit all finds in the appropriate museum (the Alexander Keiller Museum Acquisitions & Disposal Policy specifies material from the civil parish and from sites crossing the parish boundary which relate to the Avebury complex of monuments; the Wiltshire Heritage Museum, Devizes collects material from elsewhere in the WHS);
- that interim reports should be made available as soon as practicably possible, and made as widely available as possible – including deposition in the Alexander Keiller Museum, where public access is encouraged, and, that the full publication of all results should be achieved within a reasonable time. This should apply equally to results which are tangential to the main objectives of the research as to those which fulfill specific objectives (eg, an unsuspected Roman burial in a barrow ditch being dug for prehistoric research). 'Reasonable' is of course open to interpretation, but a decade is probably too long, even for a major excavation, and decades certainly too long. Nor does it any longer seem reasonable to withhold from public access the interim results of research, pending full publication.

If excavation is to be considered a reasonable undertaking within the WHS the results, even interim results, should be fed back to the archaeological community and the wider public as soon as possible. In an age where there are many outlets for information, and in an area where there is scope for presenting on-going research to the public (through the on-site museum and other outlets), it is not unreasonable to expect those choosing to work within the WHS to use every opportunity to render their work widely accessible.

Difficulties of physical access, the concerns of landowners and the protection of the WHS from over-promotion may in some cases restrict what it is possible to offer the public in terms of access during excavation, but there are fewer constraints on post-excavation analysis and interpretation. It is increasingly apparent that it is the process of 'finding out' which excites public interest and if archaeology is to remain of interest to society it is important that the excitement of research is conveyed, a process in which the WHS can play a part.

Irrespective of whether the archives are deposited at the Alexander Keiller Museum, any publications should also be deposited there, where public access to archaeological work on the WHS can be ensured close to the sites investigated.

5.7 Aerial Survey
Robert Bewley and Fiona Small

The numerous prehistoric and later monuments within the area now defined by the WHS have been the focus of varying degrees of investigation since as far back as the latter half of the 17th century. To the present day some 470 individual investigations within the area of the Avebury World Heritage Site Mapping Project (AWHSMP) have been recorded by the National Monuments Record (NMR) and undoubtedly there are many more which have not been recorded. The earliest were excavations carried out by Dr R. Toope on West Kennet Long Barrow and a burial near the Sanctuary between 1678 and 1685 to collect human bone for his patent medicines (Piggott 1962). Many of the excavations were undertaken in the 19th century simply to open and remove any remains of interest or value from the numerous Bronze Age round barrows which dotted the landscape.

As with many other areas, despite this apparent saturation of archaeological investigation concentrated in one particular area new discoveries are continually being made (Bewley *et al.* 1996). The results of the RCHME's AWHSMP (see below) have illustrated the number of previously unrecorded sites which have been discovered through systematic analysis of existing photographs and more recent reconnaissance in varying conditions throughout the seasons (Small 1999). A continued programme of aerial reconnaissance is of the utmost importance in the ongoing assessment and monitoring of the WHS.

There should also be greater emphasis on following up and investigating sites discovered through aerial photography, perhaps through geophysical and ground survey or even excavation where it is felt likely to be beneficial.

A new use for aerial photography has recently been developed (Scott-Jackson 2000) for the identification of hidden geological features associated with, or indicative of, *in situ* Lower and Middle Palaeolithic sites, prior to a geological survey and subsequent excavation.

Existing Transcription Work

There has been a number of detailed archaeological surveys carried out within the area of the Avebury World Heritage Site in recent years. The two main types are detailed ground-based field survey of upstanding earthwork sites and aerial photographic survey of sites surviving as cropmarks and earthworks. The majority of these surveys has been carried out by the former RCHME, and are detailed below. RCHME Aerial Survey Special Projects (carried out at various scales, recording features visible as earthworks and cropmarks):

1. RCHME: West Kennett Farm Project (1990) carried out at 1:2500 scale covering an area of 2.8 km square close to West Kennett Farm in the Kennet Valley. (NMR Event UID 932656)
2. RCHME: Kennet Valley foul sewer improvement (1992) carried out at 1:2500 scale covering four sections of the proposed sewer improvement with a total area of 85 ha. (NMR Event UID 965816)
3. RCHME: West Kennett - East Kennett Project (1992) carried out at 1:2500 scale, covering an area of 3.2 km square, 2 km south-east of Avebury. (NMR Event UID 936869)
4. RCHME: Fyfield Down and Overton Down Mapping Project (1996) carried out at 1:10,000 scale, covering an area of 25 km square. (NMR Event UID 1075247)
5. RCHME: Avebury Air Photographic Survey (1996). A 1:1000 scale survey of the features visible as parchmarks within the henge monument at Avebury, combined with the plan of the earthwork remains of the henge recorded during the field survey of Avebury and Avebury Trusloe (Bewley *et al.* 1996). (NMR Event UID 1059067)
6. RCHME: Avebury World Heritage Site NMP (Small 1999) carried out at 1:10,000 scale, covering an area of 225 km squares. (NMR Event UID: 1088916)

RCHME Field Survey Projects

RCHME Field Survey section have carried out a number of detailed surveys of specific sites and small landscape areas surviving as earthworks within the area over a number of years including:

1. Windmill Hill (1989) 1:1000 scale.
2. Avebury and Avebury Trusloe Survey (1991) 1:1000.
3. West Kennet Long Barrow (1992) 1:500 scale.
4. Knap Hill Neolithic Enclosure (1996) 1:1000 scale.
5. Easton Farm DMV (1996) 1:1000 scale.
6. Shaw Village DMV (OS Antiquity Model) 1:2500 scale.
7. Rybury Neolithic Camp 1:1000 scale.
8. Calstone Wellington DMV (OS Antiquity Model) 1:2500 scale.

Other Surveys

1. Richardson DMV (OS Antiquity Model, 1973) 1:2500 scale
2. West Overton Field Survey 1:1000 scale.

Table 6. Monarch (NMR) Record Summaries: records created and updated for each quarter sheet

Quarter Sheet	*Old Total of Records*	*Records Amended*	*New Records*	*New Total of Records*	*Percentage of new records*
SU06NW	94	64	71	165	43.0
SU06NE	199	124	38	237	16.0
SU06SW	169	30	59	228	25.9
SU06SE	79	40	52	131	39.7
SU07SW	44	14	32	76	42.0
SU07SE	67	34	30	95	31.6
SU16NW	205	100	24	219	11.0
SU16SW	97	49	60	165	36.0
SU17SW	158	97	20	178	11.2
TOTAL	1112	561	380	1492	25.0

Table 7. New sites identified in the AWHSMP

Period	*06NW*	*06NE*	*06SW*	*06SE*	*07SW*	*07SE*	*16NW*	*16SW*	*17SW*	*Total*
Prehistoric	3	10	-	3	-	1	2	16	-	35
Neolithic	-	-	-	-	-	-	2	-	-	2
Bronze Age	2	4	9	4	-	8	13	1	3	44
Iron Age	-	-	-	-	-	-	-	-	-	-
Roman	1	1	-	-	-	-	-	-	-	2
Medieval	51	7	22	22	20	13	4	35	10	184
P. Medieval	13	4	12	13	3	2	-	7	-	47
Modern	1	1	1	7	-	-	-	2	-	12
Unknown date	5	12	22	6	12	8	13	4	7	89

Project Results and Analysis

As noted above, the project area of the RCHME's Avebury World Heritage Site Mapping Project has been the subject of many different types of survey over a long period of time. The results of some of these earlier surveys have been collated to form parts of both the Wiltshire SMR and the NMR. Both these records were consulted during the course of the AWHSMP with the aim to update both with any new information and amend any existing records, where necessary. For the purpose of this report, a NEW site is one which has no previous NMR record.

During the course of the survey approximately 3960 individual photographs held by the National Monuments Record Centre were consulted. These included 2798 specialist obliques and 1162 vertical photographs. In addition to these the photographic collections of the Cambridge University Committee for Aerial photography (CUCAP) and Wiltshire County Council SMR were also consulted.

Monarch (NMR) record summaries

As a result of the project, the following numbers of new NMR records were created and updated for each quarter sheet (Table 6).

Prior to the survey 1112 individual NMR records had been recorded within the MONARCH database. Resulting from the survey, with the addition of the 380 new NMR sites discovered from aerial photographs, there are a total of 1492 sites recorded for the entire survey area. This final number of records includes the 551 documented archaeological sites, find spots, buildings and excavation sites. This represented a total average increase in the number of NMR records of 25% for the whole survey area.

The majority of the new sites were represented by five main types of site, mostly medieval in date, or where the date was unknown. These included ridge-and-furrow; lynchets; enclosures; water meadows; and field systems. These are discussed in more detail below.

For the project a total of 561 NMR records were amended in some way. This figure includes the sites which were not included in the transcriptions because these could not be identified on the available photographs. Also, two of these sites were excluded because they were not considered to be of archaeological significance on the basis of the aerial photographs, and 551 sites were not included because they referred to find spots, excavations and buildings.

The results of the survey represent an average increase of approximately 1.7 new sites per square km for the entire survey area.

SMR record summary

Wiltshire SMR holds a comprehensive record of archaeological sites, finds and buildings for the entire survey area. The SMR contains information from surveys and excavations from as early as 1678-85 when the West Kennet Long Barrow was first excavated. Prior to the AWHSMP survey there were 1939 individual SMR records for the survey area. The survey was able to add a further 325 new records, not previously recorded by the SMR (or NMR), bringing the total number of SMR records to 2264. This represents an overall increase of 14.3% in the number of SMR sites, equating to approximately 1.4 new sites per km^2.

Period summaries

In addition to those existing new Monarch records there were several occasions where new individual sites were added to an existing Monarch record such as barrows added to known barrow cemeteries, and the Period Summary below uses this definition of a new site (Table 7).

The area around Avebury has been of particular archaeological interest for a long period of time, noted for the intensity of Prehistoric sites surviving as earthworks. Because of this long history of investigation there were comparatively few new prehistoric sites discovered by this latest survey.

There were 44 Bronze Age sites, all of which were round barrows. Only three of these were seen as earthworks. There were 35 sites which were classified as prehistoric because no specific prehistoric period could be assigned or the site was considered to have its origins in two or more prehistoric periods. Table 7 shows the breakdown of those new sites transcribed and recorded in MONARCH according to their assigned period.

A large proportion of the new sites recorded during the AWHSMP was medieval or post-medieval in date. These accounted for 50.5% of all sites for the whole survey area and were primarily associated with agricultural activity.

The major groups were represented by medieval lynchets (64 sites), ridge-and-furrow (70 sites), medieval and post-medieval water meadows (21 sites) and 21 field system records, of which, six were of medieval date. The high number of medieval, post-medieval and modern sites being recorded is mainly due to the fact that these types of sites were not considered worthy of recording until recently. Consequently, few records for ridge-and-furrow, water meadows, post-medieval dewponds or World War II sites such as pillboxes and decoys existed in the records. There were also 89 sites with no known period classification; the largest group represented by the site type 'enclosure', numbered 38 in total.

Recommendations for Future Research

Resulting from the most recent work in the WHS the following four recommendations for future research have been made:

- A continued programme of aerial reconnaissance is of the utmost importance in the ongoing assessment and monitoring of the WHS. Combined with this should be a programme of maintaining the NMP data (maps and records) as up-to-date as possible and an integrated approach to future field investigations, based on the NMP mapping.
- All the sites for which a date has not been confirmed require further investigation, and it is strongly recommended that a programme of fieldwalking of all sites visible as cropmarks and soilmarks be carried out within the WHS on a systematic basis over the next five years.
- As a result of field investigation of some of the NMP transcriptions it is recommended that all remaining extant Prehistoric and Romano-British settlements and field systems on Overton and Fyfield Downs require ground surveys at 1:1,000 or 1:2,500 scale.
- Investigations (through documentary research, non-intrusive survey, geophysical and geochemical surveys, fieldwalking and small-scale excavations) are required at a number of sites, but especially:

  1. the sub-rectangular enclosure discovered in 1995 within the henge at Avebury (Bewley *et al.* 1997). (Fig. 20);
  2. possible enclosure around the barrow cemetery on Waden Hill (Cleal pers. comm.);
  3. possible building within the Iron Age enclosure on Overton Down (Small 1999, 27);
  4. possible palisade enclosure (*ibid.*, 26) additional to the complex of Neolithic palisade enclosures (Whittle 1997) investigated at West Kennett.

In addition, research is needed to explore if agricultultural erosion is responsible for the recent appearance of certain sites on aerial photographs which have not been seen in previous decades.

5.8 Geographical Information Systems (GIS)

Nick Burton

A Geographical Information System (GIS) consists of a set of hardware and software for the collection, storage, manipulation, analysis and output of spatially referenced data. It allows the storage of many different 'layers' of data, all of which share a common coordinate system, and so can be viewed as maps and analysed in combination with one another. These layers can represent anything from land use, recorded archaeology, geology and soils, to degree of slope, probability of worked flint densities or land visible from a point within the landscape. They may also include georeferenced aerial or satellite imagery, other remotely sensed data or ground-based geophysical survey.

Having said this, most GIS software can now also store and access a range of non-geographically referenced material such as scanned documents and drawings, excavation records, historic photographs, video clips, sound, and virtual reality reconstructions. These do not fit in with the traditional Cartesian view of discrete map layers, which can be overlain one on top of another, but nevertheless are an increasingly important part of these systems. What is more, many of these datasets can also be accessed spatially. For example all the photographs of specific monuments or finds within a site or a landscape can be represented by points on a map which, when selected, displays the photograph or even a 360° panorama (Goodrick 1999) on screen.

The development of Internet technology is currently influencing the use of GIS as it is becoming increasingly easier to access and integrate information

held by different organisations in different locations. It is now possible to not only create links from locally held data to any number of websites or HTML documents, but it is also possible to interrogate remote Geographical Information Systems and serve your own GIS on the web for others to use.

The Avebury WHS GIS

As discussed in the Avebury World Heritage Site Management Plan (English Heritage 1998), a GIS for the WHS has been developed side by side with the creation of the document. The initial development has been undertaken in order to contribute to the formulation of the plan. It will now continue to be used for both the implementation, and to aid future research programmes within the area (Burton 2000).

The system[4], currently managed by English Heritage Centre for Archaeology, covers a rectangular area of 13 x 12 km (SU 0263 to SU 1575) which includes the entire WHS.

Current information held by the GIS

The following information is currently held, or has been commissioned.

Archaeology: enhanced Wiltshire County Council SMR. This contains around 1600 records with graphical representation using points, lines and areas for different monument classes. An attempt has been made to minimise the degree of simplification of the wealth and complexity of archaeological information available. For example, settlements are stored both as areas delineating their limits, as well as lines representing as much of the internal detail as possible. Round barrows and ring ditches are not just held as points, but also as areas, based upon their dimensions held within the database. This means that the GIS is not confined to just working on research at the landscape scale, but can claim to operate at a number of different resolutions.

Basemap: Ordnance Survey 1:10000 raster

Current land use: five classifications. These are: arable, permanent pasture, temporary pasture, built up areas, and trees.

Topography: Ordnance Survey Land-Form PROFILE contour data and an English Heritage 1:500 contour survey of the Avebury henge and part of the village.

Survey coverage: four layers showing areas of geophysical survey, fieldwalking, auguring and test-pitting.

Flint density distributions: results collated from field-walking programmes.

Listed buildings: from the English Heritage database.

Land ownership: areas owned by the National Trust.

Various boundaries: WHS, SSSI, scheduled monument extents.

As is clear from the above list, the emphasis has been on the collection of information for supporting the Management Plan. Although the range of data sets is currently limited, it is hoped that this document, coupled with the current implementation of the Management Plan, will create a substantial improvement in the quality and amount of information which can be included and subsequently called upon for future studies.

The use and potential of GIS

The advantages of such systems over previous methods of data storage, integration and manipulation are not discussed here. The adoption of GIS by archaeology has been fairly rapid and well documented (eg. Allen *et al.* 1990; Lock and Stancic 1995), and a trend towards the use of this methodology as a mainstream approach is continuing, especially within the domain of sites and monuments records, as well as a growth in its use within archaeological units. The landscapes and archaeology of the Avebury and Stonehenge WHS have been the focus of a number of GIS-related studies, the results of which help to illustrate both the type of work which can be and is being carried out using this type of approach, and the potential that an integrated system could have for contributing to a research programme.

Perhaps the most prolific type of GIS-based research within archaeology has been predictive modelling. This is a statistical methodology which calculates how much of the variation in the distribution of some part of the archaeological record can be explained by the variation in a number of chosen factors. For example, the distribution of Palaeolithic and Mesolithic sites could be attempted to be explained by factors such as elevation, soil-type, distance to water, slope and aspect. GIS lends itself very well to representing and analysing these discrete, measurable, and mappable environmental variables, and they have been used in an attempt to explain spatial patterning and preference (Kuna and Adelsbergerova 1995), and predict both optimum site location (Kvamme 1990), and site probability distribution within a landscape (Brandt *et al.* 1992).

Within the Stonehenge landscape Wheatley (1996) has investigated the distribution of lithic debitage using this technique. The study used the results of the

Stonehenge Environs Project (Richards 1990) in order to both predict lithic densities elsewhere within the landscape, as well as assess the effectiveness of predictive modelling as an alternative to spatial interpolation. One important aspect of this work is the attempt to involve not only environmental factors, but also variables which reflect cultural activities and influences. It is argued that the location of burial monuments may have had some subsequent influence upon human activity within those areas, and so factors including density of round barrows and distance to long barrows were used.

Another area of study for which GIS is used heavily is digital elevation modelling and visibility analysis. By obtaining elevation values at known locations, a model of an area can be interpolated, for which all heights across the surface are then known. See Burrough (1986) for a more comprehensive explanation.

A model can be shaded, exaggerated, and viewed in perspective in order to visualise and emphasise topographic detail. Other layers of data, such as recorded archaeology, aerial photography or geophysical survey imagery, can also be draped over the terrain, providing a powerful tool for both interpreting or monitoring the use of the environment over time. Although this technique has been used to model buried surfaces (Ove Arup 1991; Burton and Shell 2000), it is mainly carried out for the present landscape and then used to calculate both areas visible from sites (viewsheds), and intervisibility between them. For example, the visual relationship between long barrows in the Avebury and Stonehenge area has been investigated using Cumulative Viewshed Analysis, a well received development of the basic technique by the archaeologist involved (Wheatley 1995). The use of viewsheds at the intra-site level is less common although it is currently being explored at Avebury (Pollard and Gillings 1998). This tailoring of standard techniques and adaptation of off-the-shelf software in order to help address archaeological questions is increasing, especially within visibility studies (Fisher 1992; Lake *et al.* 1998).

Also on the increase is the integration of GIS with other technology, namely *VRML* (Virtual Reality Modelling Language) and the use of the Internet. The web version of 'Virtual Stonehenge' [5] (Burton *et al.* 1999), is one such development which goes some way to allowing the user to move away from the more traditional planimetric view of the landscapes and 'explore' the environment, and confront the archaeology using different methods. Yorston and Gaffney have also used technology based on the web to begin to look at the spatial relationship of barrow placement in the Stonehenge area as part of a wider study.[6] The use of VRML and its relationship with GIS-based studies is explicitly addressed by Gillings and Goodrick (1996), who provide many arguments and examples of the advantages which this integration can bring in allowing a move towards a set of tools and approaches which can better investigate the 'temporal, spatial, and social dynamics that characterise past landscapes' (1996, part 11.html).

At Avebury the use of Virtual Reality and GIS is currently being used as part of a series of studies, the *Negotiating Avebury* project (Pollard and Gillings 1998), in order to investigate 'past and present encounters' with the monument complex. This innovative work not only investigates the visual aspects of approach and movement, but also engages with the concepts of time and space, as perceived by those within a variety of alternative models. This project also extends to using similar techniques to look at the invested meaning associated with the shape, position and nature of materials within the monument.

Although not exhaustive, these few examples show the diversity of methods currently being employed. The variety of techniques available, and the increasing use of integrated technology is in part a reflection of the maturity of theory within what was once considered by many to be a neutral, atheoretical tool. Debates on such subjects as the rejection of the neutrality of GIS (Wheatley 1993), the role of determinism (Gaffney and van Leusen 1995; Llobera 1996), and the differences between vision and perception (Gaffney *et al.* 1995, Gillings and Goodrick 1996), now mean that we are much better equipped to investigate a far greater range of archaeological questions.

GIS has many roles to play within a research context and is clearly not simply limited to carrying out analysis for a particular study. The ability to record and organise very large amounts of different types of data means that GIS can clearly be a focal point for synthesising existing research, survey, and excavation information. It can then be used to help highlight gaps in the record, prioritise programmes of data collection, as well as facilitating ideas through easier access to organised spatially referenced information. The increasing use of data standards and metadata should also improve the ability for data to be transferred between different systems.

Specific Recommendations and Further Issues

As far as specific recommendations go it is important that it is archaeological questions, and not a toolkit and methodology, which should be leading research. However, there are a number of issues to be resolved, and also some gaps within the existing data are evident. The following are suggestions for immediate enhancements which would be beneficial to more than one area of research, or whose establishment now would benefit studies in the medium to long term:

- The collection and inclusion of better dates and phasing for the recorded archaeology database, along with details of the evidence and references.
- Improved topographic survey information. Current Ordnance Survey 1:10000 contours only allow studies at a landscape level; much better detail is required to allow effective research at the local or intra-site scale.
- Establishing a database for recording major sub-surface horizon depths from coring or test-pitting undertaken within the river valleys. This will allow future modelling of buried landscape features for studying potential site location within the valleys. A first step would be the definition of soil erosional and depositional zones in the WHS landscape.

Much of the above has been written with the existing WHS GIS in mind, considering its future development in order to create a critical mass of useful information. Holding data in this way would mean a single point of call for those wishing to carry out research, rather like the current role of the county Sites and Monuments Record. The logistics of its location(s), maintenance, copyright and sensitivity are all issues which require further consideration.

However, a central mass of information is not the only option. The increasing use of data standards, the Internet, metadata, and good practice guidelines, developed and promoted partly by organisations such as the Archaeology Data Service (Gillings and Wise 1998), now provide alternative ways forward.

One approach is to document the GIS layers in a national or large-scale metadata database which then directs an interested party towards what is appropriate, available and where it is held. Data can then be requested or downloaded from the originator or, if it has been deposited, a data archive.

Internet developments mean that another, perhaps ideal, approach may soon be practical. Those responsible for creating or maintaining information, such as national bodies, local governments, commercial archaeological units and academic departments, could maintain their own data within spatial databases which are made available to others over the Internet. Users will then be able to view and query any of these layers simultaneously regardless of where the data sits on this distributed database. Although there are current problems in the speed of data transfer, spatial data standards, the sensitivity of some data, and the sometimes bizarre attitudes towards copyright, the advantages of accessing a wide variety of consistent and up-to-date information from those people who maintain it may mean that this approach to creating and using Geographical Information Systems is increasingly sought after.

5.9 Metal Detecting at Avebury WHS: Guidance for Detectorists and Curators and the Potential of the Technique

Amanda Chadburn

Past Metal Detecting Activity in the WHS

Metal detectorists have in the past made a number of important finds in the Avebury WHS. Whilst these have made a notable contribution to archaeology in general, in particular our understanding of small finds (for example, the Late Bronze Age *fibula* published in Hull and Hawkes (1987, 12)), they cannot be said to have made any significant contribution to our understanding of the Avebury complex of monuments (although the recent discovery of a group of three Bronze Age artefacts at Bishops Cannings a very short distance outside the southern boundary of the WHS may well do so).

In contrast, it must be regretted that there are known important individual archaeological finds which have not furthered our knowledge as much as they could have done. These include discoveries which have gone unreported (for example an early Saxon applied disk brooch). Other finds are unconfirmed and of questionable authority, or are so loosely provenanced that a great part of their archaeological value is effectively lost (for example the 10th century German sterling said to have been found 'near Silbury Hill', and the two Iron Age coins found 'near Silbury Hill', now in Devizes Museum; Fig. 11). Some objects have a reported findspot which is now believed to be completely false (for example a purported Bronze Age metalwork hoard said to have been found near the West Kennet Long Barrow which is now believed to have been uncovered in south Wiltshire).

In short it is difficult to assess how great a contribution metal detecting as a technique has made towards our understanding of the WHS. It is not a technique which has yet been widely used by archaeologists working in the area, and its use has therefore been by metal detectorists rather than professional archaeologists. However, it has the potential to be a useful tool in aiding our understanding of the area.

The Potential of the Technique

Metal detecting has the potential to retrieve small metal items which are often difficult to find by other methods. Such finds may be of critical importance in furthering our knowledge of the WHS in a particular period. One obvious category of find is coinage. In the Iron Age, for

example, the boundaries of the various Iron Age peoples before the Roman Conquest are almost exclusively drawn from the distribution of coin types (see Section 3.5, above), and a better understanding of the distribution of their coinages would lead to a better understanding of these 'kingdoms'. A similar case can be made for an improved understanding of Anglo-Saxon coinages, but the find of almost any metal object will improve the knowledge of its particular type, typology, distribution and rarity, which will be of benefit to our understanding of all metal-using periods in the Avebury WHS. (There is even an antiquarian record of a Romano-British coin hoard found in the east of the WHS in an unrecorded location, which was apparently left *in situ* – still to be recovered!). Geophysical surveys (as well as formal archaeological excavation) can usefully provide information about the context of a metal-detected find.

The Current Legislation and Initiatives

Metal detectors can be used on any land in England with the permission of the landowner, although many public bodies who own land ban their use. Any finds recovered belong to the landowner, except if they are found to be 'Treasure' – formerly known as 'Treasure Trove'. (These are artefacts made of precious metal and other artefacts found in association; a fuller definition of 'Treasure' can be found in the leaflet *The Treasure Act. Information for Finders of Treasure (England and Wales)* published by the DCMS in July 1997. *However*, it is also against the law to use a metal detector on a Scheduled Monument or an Area of Archaeological Importance (designated under the 1979 *Ancient Monuments and Archaeological Areas Act*) without the permission of English Heritage (users must apply for a Section 42 licence).

Irresponsible or unrecorded metal detecting is still a major problem for archaeologists and others, and it was to partly address the problems of illicit or unrecorded metal detecting, that recent changes have been made both to the law relating to 'Treasure' and to funding for museums to improve recording. In fairness, these criticisms can equally apply today to objects found by people other than metal detectorists and certainly may be widely applied to finds made in the more distant past in the WHS. The *Treasure Act* of 1996 (DNH 1997) came into force in September 1997 and has widened the definition of 'Treasure', leading to a sevenfold increase in the number of archaeological items so defined by January 1999 (DCMS 1999, 3). Alongside the new *Act*, the government introduced an initiative to try and record the majority of newly discovered archaeological items which fall outside the definition of 'Treasure'. Pilot schemes were introduced in various parts of the country to encourage the voluntary responsible recording and reporting of archaeological finds, with a view to extending this *Portable Antiquities Scheme* over the whole of England. At the time of writing in 2000, however, there has not yet been a notable response by the general public in Wiltshire to this initiative, but this is probably largely due to the fact that Wiltshire has not yet been chosen as a county to receive extra funding in the pilot recording scheme.

There are still serious weaknesses within the current laws; any archaeological sites which are not legally protected by scheduling can still be metal detected if the landowner grants permission for this. There are many unscheduled archaeological sites within the WHS, some of which may relate to the Neolithic and Bronze Age complex of monuments at Avebury. The designation of a monument or area as a WHS now imposes obligations on the UK government to ensure its good management and protection, and this relates not only to scheduled monuments but to other archaeological sites within the WHS.

Recommendations and Guidance

Given all the above, we strongly urge that metal detectors are only used within the WHS in a controlled fashion, such as on an archaeological excavation run by competent archaeologists, or as part of an archaeological survey, which has an appropriate finds policy within its project design. We would not recommend the use of metal detectors on known archaeological sites, unless in the context of an archaeological project such as described above. Neither would we recommend the use of metal detectors on archaeologically 'blank' areas within the WHS unless again in the context of an approved archaeological survey.

This should not be seen as an attack on the rights of the individual but an acknowledgement of the overriding importance of the WHS and the fragility of the archaeology within it, which of course, once destroyed or damaged by unrecorded and unreported metal detecting, is lost and cannot be replaced. Landowners and detectorists should seek further advice from the Avebury WHS Implementation Officer or the County Archaeological Service if they are unsure on how to proceed. Guidelines on metal detecting are also available from the Council for British Archaeology, English Heritage and Wiltshire Archaeological and Natural History Society amongst others.

A metal detector is simply a tool which can be used or abused, depending on the purpose and skill of the user. We would not wish to impose a blanket ban on the use of metal detectors within the WHS. There may still be opportunities for amateur metal detectorists (who are often extremely skilled at finding metal objects) to

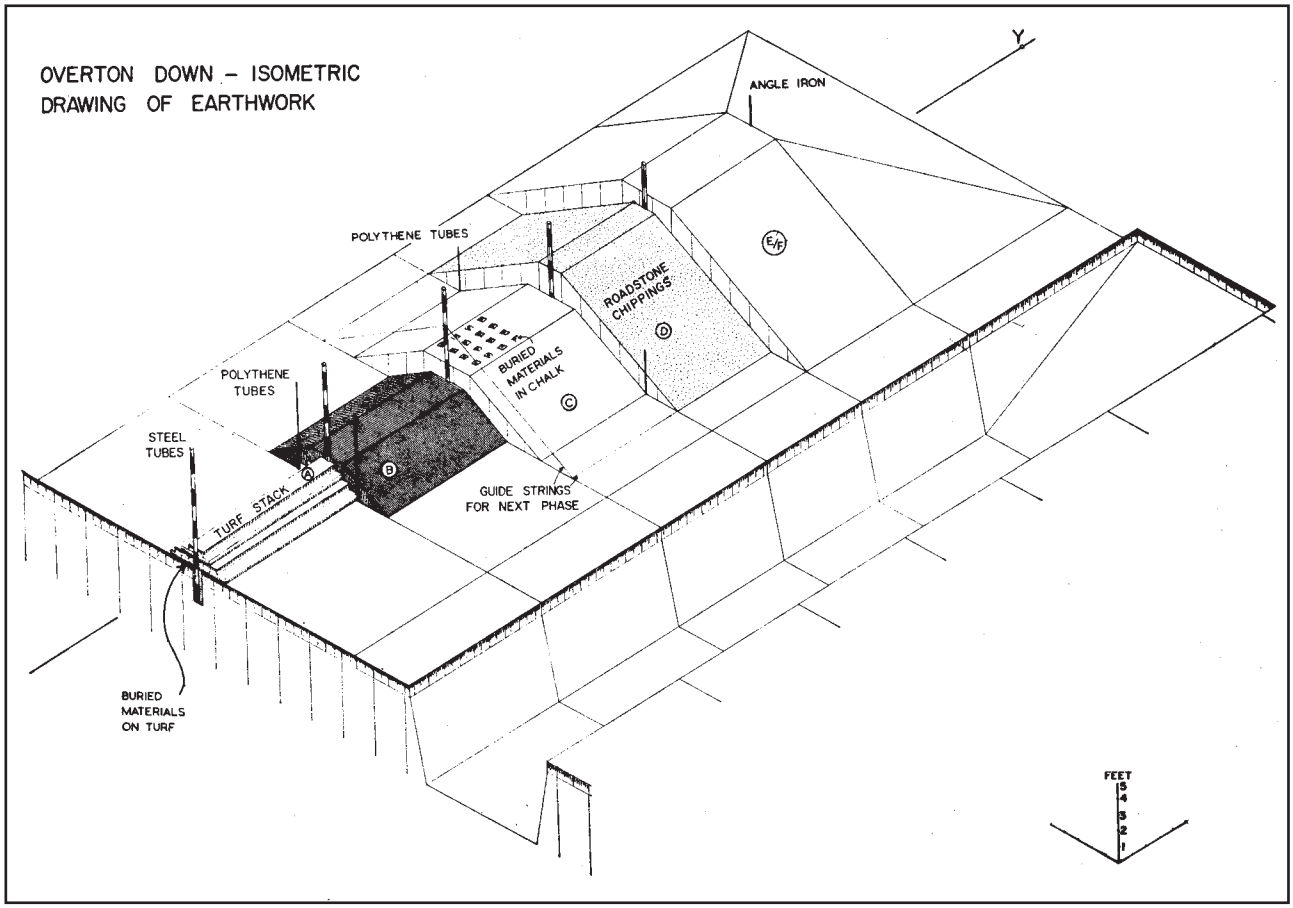

Fig. 21 Isometric drawing of the Overton Down Experimental Earthwork

work within the WHS, if they were prepared to become a part of an archaeological project team. This approach is working well in other parts of the country (for example in Norfolk, where metal detectorists work alongside professional archaeologists on road schemes).

We would recommend that a metal detector survey is undertaken in advance of any large-scale earth-stripping within the WHS, such as constructing a pipeline, and that the spoil heaps are also detected. All archaeologists should consider doing such metal detecting work as part of their excavations within the WHS, and if they choose not to, this should be justified. Metal detector surveys could either be done by archaeologists or by skilled metal detectorists working as part of an archaeological project team.

In summary, the use of *responsible and controlled* metal detecting within the WHS, as set out in our guidelines above, is to be encouraged as another useful archaeological technique.

5.10 Experimental Archaeology
Gill Swanton

The long tradition of experimental archaeology and its interdisciplinary approach brings a unique aspect and much potential to research in the Avebury area. Experiments into processes affecting archaeological sites and buried materials have been carried out since 1960. Three main projects have been undertaken (part-related through the tradition of archaeological work in the area and the individuals involved).

The longest running programme is that of the Experimental Earthworks Committee. Set up in 1958 by the British Association for the Advancement of Science (Jewell 1963; Bell *et al.* 1996) the Committee runs one site on Overton Down (Fig. 21) and a sister site on sand near Wareham in Dorset. For the first time field archaeologists and natural scientists were cooperating on a long term project which would outlive its originators and many who will have worked on its various aspects during its lifetime. The Overton Down site lies within the Fyfield Down National Nature Reserve.

The experiment was designed to study the denudation and silting of earthworks and the deterioration of materials buried within and under constructed features. The aim was to provide data produced under recorded conditions which could be compared to observations on archaeological sites.

The shape chosen was a linear bank with a single ditch, not to imitate any particular archaeological

monument but as the most practical design for sampling a long-term experimental site. The bank and ditch were built to precise specifications so that alterations to their shape could be accurately monitored. Markers were placed below and within the bank and on the berm so that movement and compression could be assessed. Combinations of buried materials mirroring items which are found in archaeological conditions were set in repeated patterns along the length of the bank, in two environments (turf and chalk) and located where the planned sections would take place at 1, 2, 4, 8, 16, 32, 64 and 128 years.

During the ongoing monitoring and the planned interventions some observations of the soil formation processes taking place have particular relevance for archaeology. During the early erosion processes turf from the edges of the ditch frequently fell in root-down, enabling the ditch to be stable and vegetated in 24 years. The indications are that unless dramatic changes take place the ditch will retain its shape without further large-scale silting. A similar profile with an established turf-line was noted at Millbarrow (Whittle 1994) but in this case below a deep consistent fill. The comparison between the two raises the possibility that in the past ditches may have been deliberately backfilled.

Another feature noted during monitoring was the presence of Roman pottery in the early erosion products at the base of the ditch. The site sits in an area of known Romano-British fields and the sherd had been brought down in a fallen turf. The presence of an object on the base of a ditch known to be 2000 years younger calls into question the dating of ditches by their contents.

An extremely important aspect of the experiment has been ongoing vegetation survey. The process of making available raw chalk to plants favouring an alkaline environment resulted in an increase in the variety of flora inside the Earthwork enclosure compared with that outside, with important implications for the management of chalk downland.

The care with which the experiment was designed has made it possible to add new aspects to it without affecting the original aims. Detailed analyses of processes affecting the buried materials in their micro-environments, soil chemistry, micro-morphology, micro-biology, DNA work and seed bank survival have been added to the repertoire of studies. The interdisciplinary nature of the project and the development of a team approach have been important and although there are problems associated with conducting a programme of this nature, particularly funding and continuity, the project has assisted in establishing experiment as an accepted part of archaeological practice.

Another set of experimental earthworks, run by the Buster Ancient Farm in conjunction with the Experimental Earthworks Committee has one of its sites in the grounds of the Science Museum at Wroughton. It is octagonal in shape, each 'arm' having combinations of turfed/unturfed bank and berm/no berm. Careful measuring of the silting of the ditch and vegetation of both the ditch and its internal bank are combined with daily weather recording. The octagonal shape allows for as many aspects of weather variables as possible and the project complement the Experimental Earthwork Committee's sites by providing data from a simulated domestic or farmstead situation.

The most recent experiment to be set up is one examination of survival of dairy products on pottery (lipid analysis). Two sites are involved, one in the valley of the River Kennet, the other on the edge of the chalk downland. The buried pot sherds are recovered at set intervals and the degradation of the dairy products examined (Heron and Evershed 1992).

Endnotes

[1]Outside the WHS, on Golden Ball Hill near Alton Barnes, conventional magnetometer survey has located an anomaly which was later found to be associated with apparently Mesolithic features (Dennis and Hamilton 1997).

[2]Caesium magnetometry was undertaken here in 1997 by Dr Jörg Fassbinder, working with the Ancient Monuments Laboratory, using Scintrex CS2 sensors and MEP720 magnetometer processors with a sensitivity of +0.001nT. No magnetic anomalies corresponding with the very tentative resistivity patterning could be discerned. This work is part of a wider project comparing the performances of caesium and fluxgate magnetometers on a range of archaeological sites in England.

[3]A seismic survey of the ditch and corings was undertaken by the Dept of Geology, University College of South Wales and Monmouthshire, under the direction of Dr R Blundell, during the Atkinson campaign of excavations 1968–70 (Whittle 1997, xi).

[4]See http://www.english-heritage.gov.uk/knowledge/archaeology/whs.asp for further details.

[5]The model is currently unavailable but will eventually be held at either www.intel.com, www.english-heritage.org.uk, or www.stonehengemasterplan.co.uk

[6]See http://www.bufau.bham.ac.uk/newsite/Projects/SB/barhtml.htm for a description of this work. To see some of the accompanying animations produced by the project visit http://intgat.tigress.co.uk/rmy/index.html

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Note: This is not an exhaustive index. It concentrates on sites and individuals of importance to the Avebury WHS. The principal topics and periods covered in the report are not indexed in detail precisely because they form individual sections of the chapters and are listed in the table of contents. General references to 'Avebury', 'the henge', 'the stone circles' and passing references to other monuments are similarly not cited in the index. Individual monuments comprising the Avebury complex are indexed separately.

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