



ENGLISH HERITAGE

# Stonehenge World Heritage Site Mapping Project

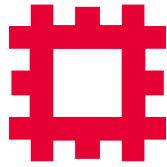
Management Report

Simon Crutchley

## SURVEY REPORT

Aerial Survey Report Series AER/14/2002





# ENGLISH HERITAGE



## STONEHENGE WORLD HERITAGE SITE MAPPING PROJECT

### Management report

Surveyed March – July 2001

Aerial Photographic Transcription and Interpretation by

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## BACKGROUND TO THE PROJECT

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### Description of the area surveyed

#### Territorial extent

The project area was centred on the Stonehenge World Heritage Site, which itself was centred on the megalithic monument of Stonehenge in Wiltshire.



Fig1. Map showing location of Project Area

The project area covered nine OS 1:10,000 quarters sheets; 125 square kilometres in total. The core area, transcribed at 1:2500 scale, comprised 36 square kilometres.

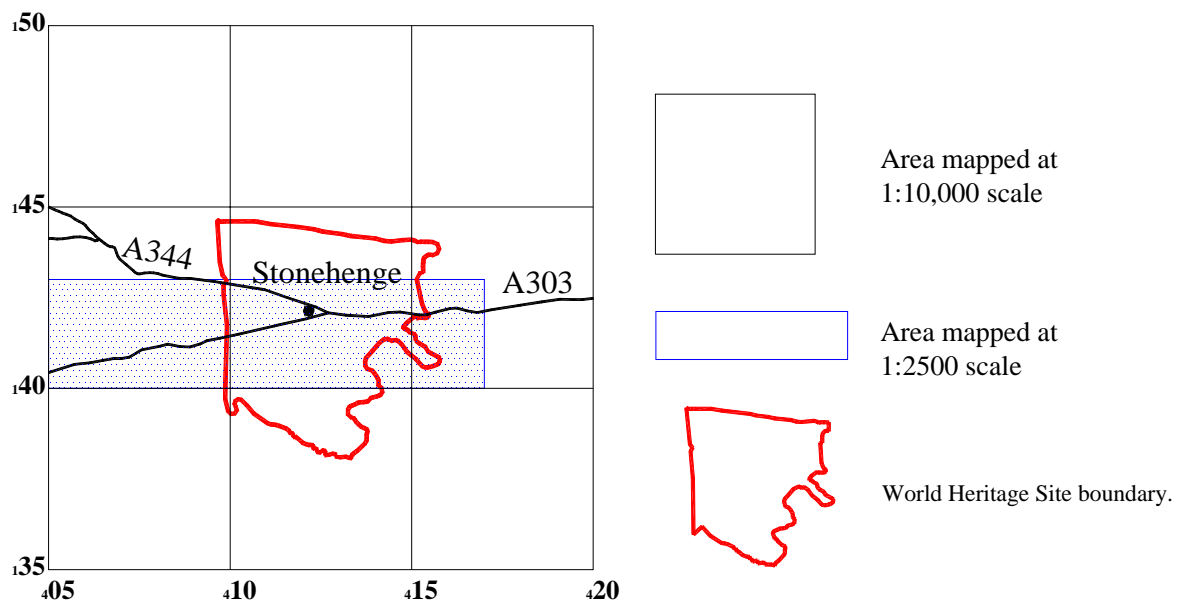


Fig 2. Survey area



## **Topography**

A detailed landscape assessment has been carried out of the World Heritage Site and its immediate environs and the results are illustrated in the Stonehenge WHS Management Plan: Summary (CBA 2000a, part 2, figures 2-3). Therefore it is not appropriate to attempt to describe the landscape of the project area in great detail here. What follows is a very general overview of the topography, geology soils and landuse.

The main landscape types covered by the Stonehenge WHS Mapping Project are the unimproved downland, which mainly occurs within the Salisbury Plain Training Area (SPTA) in the northern parts of the survey area and the agricultural downland, interspersed with downland ridges and dry valleys, on the middle chalk which predominates in the rest of the project area. The majority of the survey area is over 100m above OD rising in a few places to hills at least 130m or 150m above OD. The downland is cut through by three river valleys, the Till, Avon and Bourne. The landscape in the river valleys is characterised by valley slopes and the lower river valley with flood plain and water meadows. The river valleys are generally between 70m and 100m above OD. The three significant built-up areas within the survey area are at Amesbury, Durrington, Bulford and Larkhill Camp.

## **Geology and Soils**

The project area lies predominantly on the upper chalk, with gravel and alluvium in the river valleys. A few isolated pockets of clay with flints are situated in the southern part of the survey area.

The soils are predominantly shallow well drained calcareous soils over the chalk (Soil Survey of England and Wales (SSEW) soil classification map symbol and sub groups 341, 342a, 343h, 343i) with well drained flinty fine soils in the valley bottoms (SSEW soil classification map symbol and sub group 571m) and shallow calcareous soils and non-calcareous loamy soils over the gravels in the river valleys (SSEW soil classification map symbol and sub group 812a).

## **Vegetation and land use**

The assessment of the current land use illustrated in the Stonehenge World Heritage Site Management Plan shows that, within the boundaries of the WHS, apart from the area of permanent pasture in the immediate vicinity of Stonehenge, the majority of the WHS is under arable cultivation.

## **Reasons for and background to the project**

The Stonehenge World Heritage Site Mapping Project (SWHSMP) came about as part of a wider project to examine the area of the Stonehenge World Heritage Site to assist with future site management, in respect of both alternative schemes for the roads currently in the vicinity and the replacement of current visitor facilities. It formed part of the 2001 programme of the Aerial Survey section of English Heritage, the overall aim of which is:

*To improve English Heritage's effectiveness, through Aerial Survey, in understanding, conserving, and promoting access to the historic environment.*

One of the ways of achieving this is through a National Mapping Programme (Bewley 1998 and 2000), the aim of which is to enhance our understanding about past human settlement, by providing primary information and syntheses for all archaeological sites and landscapes (visible on aerial photographs) from

the Neolithic period to the twentieth century. This broad aim is achieved through the mapping, documentation and classification, at a common scale and to a common standard, of all archaeological sites and landscapes recorded in England on aerial photographs

The specific aim of the Stonehenge World Heritage Site Mapping Project was to map all archaeological features visible on aerial photographs within the environs of Stonehenge. This was planned to provide the most up-to-date aerial survey for the area and was intended to inform the Environmental Impact Assessment taking place in advance of proposed changes in the area as a result of the Stonehenge Master Plan (CBA 2000a). A "core" area was mapped at 1:2500 scale around the present route of the A303 to provide accurate information for conservation or investigation of archaeological sites in advance of alterations to the road. An extended area was mapped at 1:10,000 scale to form an archaeological context for the core area and the World Heritage Site. All the mapped data was incorporated into the Stonehenge World Heritage Site Geographical Information System (GIS).

## **Products and archive deposition**

All items relating to the project are deposited in the English Heritage archive at the NMRC, Swindon.

The primary graphical record consists of the digital files created in AutoCAD. In addition to the digital files a copy of each 1:10,000 sheet and each 1:2500 sheet has been produced in black on film for the archive. The primary written record is the entry in AMIE (the NMR database formerly known as NewHIS) plus records in the Interim Morphological Recording Module created for those sites for which morphological recording was appropriate. In addition to the database records made there were also a number of paper records created, which have been archived with the project file according to EH guidelines.

All transcriptions, digital files and accompanying records (paper and digital) are © English Heritage.

## **Previous transcription work**

Due to the importance of the Stonehenge World Heritage Site many detailed archaeological surveys have been carried out within the area over the years. AMIE lists 885 different events including 687 excavations, 66 watching briefs, 59 evaluations and 45 geophysical surveys. It is not appropriate here to list in detail all examples of archaeological investigation carried out in the area. These have been detailed elsewhere (Cleal et al 1995). Instead I shall concentrate on those investigations that were most relevant to the NMP project, namely aerial survey of sites surviving as cropmarks and earthworks and detailed ground-based field survey of upstanding earthwork sites. The majority of these surveys were carried out by the former RCHME, and are detailed below together with other key sources of mapped information for the Stonehenge World Heritage Site Project area:

### **RCHME Aerial Survey Special Projects**

Parts of the project area had already been mapped at a variety of scales and this dictated the methodology and sources used for the mapping of various different areas (see below).

Thirteen square kilometres of the core area had already been mapped at 1:2500 scale (RCHME 1991, Batchelor 1997, 66). In addition parts of the A303 corridor had been mapped at 1:10,000 scale (RCHME 1992, Wessex Archaeology 1993 Fig 3, RCHME 1994a, 1994b), but this was superseded by the Salisbury Plain Training Area (SPTA) Mapping Project (English Heritage 2000b, McOmish et al 2002), which

covered all six quarter sheets in the northern part of project area.

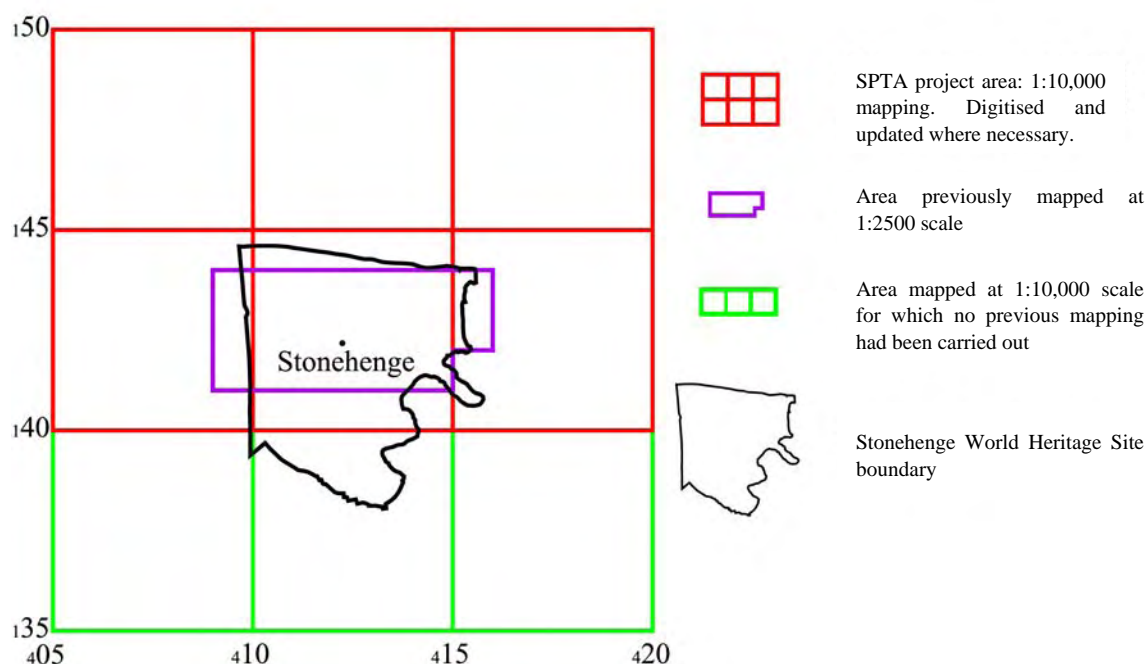


Fig 3. Previous Aerial Survey work in the area

### 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:

South Wiltshire	1970s-1990s	A long running project investigating various earthwork remains in south Wiltshire ranging from the Neolithic to Post Medieval in date and encompassing features including funerary monuments, field systems and settlement remains.
Salisbury Plain	1991-1993	A series of investigations undertaken as part of a research project to detail the archaeology of Salisbury Plain and assist in its conservation and management. The study area comprised 186 square kilometres. More intensive study was concentrated on land bordering the Avon Valley and land within the Bourne Valley. Specific sites included: a Roman building at Beeches Barn; an area of earthworks at Everleigh; Tidworth lynchets; enclosures at Warren Hill, Widdington Farm, Chisenbury Field Barn and Everleigh; and areas of earthworks on Coombe Down.
Robin Hood's Ball	1995	An archaeological survey of an area of land to the east of Robin Hood's Ball was undertaken due to ground disturbance by tracked vehicle testing.
Netheravon Down	1998	Earthwork survey of a field system on Netheravon Down.

## **Wiltshire SMR**

Wiltshire SMR holds 1:10,000 map coverage for the whole of Wiltshire, on which all known features and find spots are plotted. These refer to a computerised record giving details of date, location, interpretation etc. This source is in a state of constant update, utilising the results of new surveys as they arise.



## **METHODOLOGY AND STRATEGY OF RECORDING**

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### **Sources**

#### **Oblique Aerial Photographs**

The nature of the archaeological landscape in the Stonehenge World Heritage Site, with its concentration of extant earthwork monuments centred on the world famous megalithic monuments of Stonehenge meant that there were a great number of specialist aerial photographs for the area. However, because much of the area had previously been mapped, it was not initially thought necessary to examine all the photographs. The original plan was to consult only those photographs accessioned after 1993 for those areas already mapped as part of SPTA. The project was not planned as a total re-mapping exercise and it was assumed that all photographs prior to that date would have been consulted and the features visible thereon mapped.

Only when potential new features were identified would all other photographs of the relevant area be consulted if it was felt they could clarify the information on newly discovered features. This proved to be a mistaken idea and the need to concord all previously recorded sites within AMIE meant that all photographs had to be consulted. All available photographs in the collection were always to be consulted for the three southern 1:10,000 sheets in the survey area, as this had not been subject to previous mapping.

The presence of military airfields in the area, noted below, provided a small bias in oblique coverage in that several parts of the area of the WHS come under the Military Air Traffic Zones (MATZ) for Boscombe Down and other airfields currently operating in the area. The main source of oblique photographs was the National Monuments Record (NMR), the English Heritage archive. The NMR lists 3425 records for oblique photographs for the survey area derived from a variety of sources, including EH (formerly RCHME) reconnaissance, Cambridge University Unit for Landscape Modelling (ULM) (formerly the Cambridge University Committee for Air Photography (CUCAP)), the Crawford and Keiller Collection and the Army Air Corps. The photographs range in date from the mid 1920s to the present day. The second largest source for oblique photographs was the ULM. As with the NMR collections, the ULM collection had already been consulted for the majority of the survey area, as part of the SPTA Mapping Project and it was therefore planned to consult only those photographs that covered quarter sheets SU 03 NE, SU 13 NW and SU 13 NE. In the event some ULM cover was re-examined for the other areas (especially the core) to help with concordance. The initial three maps comprised 142 prints, which were mostly taken for archaeological purposes from the 1940s until the early 1980s.

#### **Vertical aerial photographs**

There were a number of airfields in and around Salisbury Plain and as a result of its use as a military training area, the region covered by the survey was flown regularly for training purposes and is therefore crisscrossed by numerous sorties from many dates. The RAF were particularly active in the latter stages of and immediately after WWII, as were the USAAF. Photographs from these dates record a number of features still extant as earthworks for which the only evidence now is cropmarks, as a result of army activity such as the building of camps, or increased agricultural encroachment. The RAF continued to fly the Plain and surrounding areas in the 1950s and 1960s. The Ordnance Survey flew the area from 1963 and their photography up to 1975 was examined. Various commercial survey companies such as Meridian and ULM have flown the area since the 1970s either for general county census work or for specific utilities. As with the specialist oblique cover, the initial plan was to consult only photographs accessioned after 1993 for those areas already mapped as part of SPTA. In fact all available photographs in the collection were consulted.

Again the main source of photographs was the NMR, which lists 69 sorties comprising 2291 vertical photographs for the project area, primarily from the RAF and the OS, but with a small number from other sources e.g. Fairey Surveys and United States Army Air Force. The earliest photographs date from 1941 but most of the collection post-dates World War II. The secondary source was again ULM. As with the specialist oblique cover the initial plan was to consult only photographs that covered the southern three OS quarter sheets but, in the end, a wider range were consulted. The initial search comprised 120 prints. Although the Wiltshire SMR collection contains vertical photographs not held elsewhere these had already been consulted for the majority of the survey area as part of the SPTA Mapping Project, and so only those photographs which covered OS 1:10,000 scale quarter sheets SU 03 NE, SU 13 NW and SU 13 NE were used for the project.

## **Documentary sources**

### **National Monuments Record (NMR)**

The NMR textual records relating to both the relevant Monuments and Events (including Excavation Index) were consulted and used as an aid to mapping and interpretation. Copies of the most up-to-date NMR record maps were borrowed from the map library and consulted during transcription and recording.

### **Local Sites and Monuments Record**

The SMR records for Wiltshire were consulted for the whole of the project area.

### **Historic Ordnance Survey maps**

The OS 6" first edition maps are a useful aid to mapping as they provide information about removed buildings, field boundaries and industrial remains. The majority of the maps are already held at the NMRC but those not held can be viewed on the Internet at [www.old-maps.co.uk](http://www.old-maps.co.uk). Larger scale maps were ordered where necessary. The 1955/6 edition OS Archaeology Division 1:10,560 field sheets (the precursors to the current NMR record maps) were also consulted.

## **Archaeological scope of the project**

The objective of the National Mapping Programme is to identify and transcribe all probable and possible archaeological features showing as cropmarks or soilmarks and earthworks on aerial photographs.

Although some mapping was carried out at a larger scale than normal for NMP, the Stonehenge World Heritage Site Mapping Project was part of NMP and followed the standard NMP specification in most respects. It recorded all archaeological monuments seen on aerial photographs, both plough-levelled and upstanding remains, dating from the earliest times to 1945, including industrial and military features. For the specific definitions see the project design (Winton 2000).

## **Mapping**

The transcription was based on the detailed examination and interpretation of all photographs practicably available in the collections identified by the quantification assessment reports (above) and the data provided by previous surveys (above). Thirteen square kilometres of the core area had already been mapped at 1:2500 scale (RCHME 1991, Batchelor 1997, 66). The plans produced as a result of these projects have been scanned and were digitised and updated. The six quarter sheets in the northern part of the project area that had already been mapped at 1:10,000 scale as part of the SPTA project were scanned, digitised and updated. Where new information was added, transformations of photographs, and/or the

features visible on the photographs, were produced with the aid of AERIAL5, a computer rectification program developed by the Department of Mathematics at Bradford University. Control information taken from card or digital copies of OS Landline digital data at 1:10,000 scale were within a level of accuracy of 5-15m. Control information taken from paper or digital copies of OS 1:2500 scale maps had an accuracy of under 2.5m. Where necessary, in particular for the 1:2500 scale transformations, the digital terrain model function in AERIAL5 was used to compensate for steep or undulating terrain. The archaeological features on the rectified images were then digitised in AutoCAD.

The depiction of archaeological features followed the standard table of conventions and line widths and layers used in AutoCAD for 1:10,000 scale or 1:2500 scale mapping (For the details see the project design (Winton 2000)).

## **Database Recording**

### **AutoCAD**

An Object Data table was incorporated into each 1:10,000 AutoCAD drawing to facilitate concordance with HSIS (the English Heritage corporate GIS) and analysis of the drawings. The table, called 'MONARCH', consists of a single field, called 'NewHIS UID', for the unique NMR database identifier. This number was attached to groups of objects in the drawings that correspond to the relevant AMIE record.

### **AMIE**

An Event and a skeleton Collection record were produced for the project (English Heritage: Stonehenge WHS Mapping Project *Event UID: 1337505; Collection UID: 1337512*). Skeleton collection records, linked to the parent collection record, were created for each 1:10,000 scale map sheet and for the composite 1:2500 scale drawing.

Monument records, each linked to the appropriate 1:10,000 and/or 1:2500 collection record, were created for each site mapped.

### **Aerial Survey Records**

Morphological records were created for appropriate sites using the Interim Morphological Recording Module.

The Maps Database was updated with relevant progress and statistical records pertaining to those maps not mapped already as part of SPTA i.e. SU 03 NE, SU 13 NW and SU 13 NE.

## **PROJECT MANAGEMENT**

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### **Project Management**

Dr Robert Bewley, head of Aerial Survey, English Heritage, is the co-ordinator of all projects that form part of NMP and will oversee the external liaison for this project. The Stonehenge WHS Mapping Project was managed by Simon Crutchley, Senior Investigator, Aerial Survey, Swindon. Three investigators, Fiona Small, Cathy Stoertz and Helen Winton, carried out the interpretation, recording and mapping.

### **Timetable and Order of Mapping**

The project began in March 2001 with the digitisation of those 1:10,000 scale maps previously covered by SPTA. Mapping proper began with the 1:2500 scale area in April 2001 with emphasis on the western part. The 1:10,000 mapping also began on the previously unmapped sheets in the south. The rest of the maps then followed and all mapping was completed to schedule in July 2001 and data were passed to Wiltshire County Council for concordance with the SMR data prior to incorporation into the English Heritage Stonehenge WHS GIS. The issues of concording the newly recorded data with those records that had previously been created both directly in AMIE and from SPTA via Wiltshire SMR proved much more complex than had originally been envisaged. Much of the recording was completed in 2001 and all monument recording for the outer areas was completed by August 2002, but recording for the core area around Stonehenge continued until September 2002.



## PROJECT RESULTS AND ANALYSIS

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### Management results

The key findings from the perspective of planning and managing future projects relate to the use of sources and issues of concordance. Because a large part of the survey area had already been mapped from aerial photographs (in some cases at least twice), it was decided at the start of the project that it was unnecessary to look at all the photographs. Rather, only those photographs that were unlikely to have been previously examined were to be looked at, unless features appearing on a new photograph needed clarification from other earlier images. In the event this was a serious miscalculation and a lot of time was spent trying to trace which photographs had or had not been examined. It is clearly more efficient to consult all the photographs again right from the start.

The use of two scales of mapping also proved more complicated than had been envisaged. Photographs do not stop conveniently at grid lines on the ground and this causes problems. It is inefficient to map the same set of features from a photograph twice at two different scales, but where parts of a feature such as a field system are mapped from one photograph using one level of control and from another using a different level there are bound to be inconsistencies. This occurred in a number of cases where features crossed over from the area mapped with 1:2500 control to those mapped at 1:10,000. Each case was treated individually and the less accurate mapping was fitted to the more accurate. It is important that in such a composite drawing there is a means of knowing the level of accuracy of the plotted features.

### Archaeological results

The project area of the SWHSMP 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 (Sites and Monuments Record) and the NMR (National Monuments Record). Both these records have been consulted during the course of the SWHSMP 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 that has no previous NMR record existing.

### AMIE (NMR) Record Summaries

Prior to the survey 2062 individual NMR records had been recorded within the AMIE database. Resulting from the survey, with the addition of the 539 new NMR sites discovered from aerial photographs, there were a total of 2601 sites recorded for the entire survey area. This final number of records includes some 602 documented archaeological sites, find spots, buildings and excavation sites. This represented a total average increase in the number of NMR records of c 21 % for the whole survey area.

Of the 1999 sites recorded (not including buildings and small finds etc) a total of 1034 sites were recorded as cropmarks, 860 as earthworks with the other 105 being recorded in various other forms including “Levelled Earthwork” and “Destroyed Monument”. Of the newly recorded sites 403 were recorded as cropmarks and 181 as earthworks, which is more than 539 as certain sites were recorded as both.

The precise number of NMR records created and updated for each quarter sheet are shown in the following table:

Quarter Sheet	Old Total of Records	Records Amended	New Records	New Total of Records	Percentage Increase
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SU03NE	60	22	30	90	33.3 %
SU13NW	201	82	49	250	19.6 %
SU13NE	89	30	36	125	28.8 %
SU04NE	57	38	39	96	40.6 %
SU04SE	238	121	61	299	20.4 %
SU14NW	113	73	48	161	29.8 %
SU14NE	277	209	105	374	25.9 %
SU14SW	626	583	77	703	11.0 %
SU14SE	401	34	102	503	20.3 %
<b>TOTAL</b>	<b>2062</b>	<b>1192</b>	<b>539</b>	<b>2601</b>	<b>20.7 %</b>

For the project a total of 1192 NMR records were amended in some way. In some cases this figure includes those sites that were not included in the transcriptions because they could not be identified on the available photographs, as this was noted in the record.

For an area of 225 square km the results of the survey represent an average increase of approximately 2.4 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. Of the 2601 sites now recorded in AMIE 1655 have an SMR record and of these 367 referred to find spots, excavations and buildings.

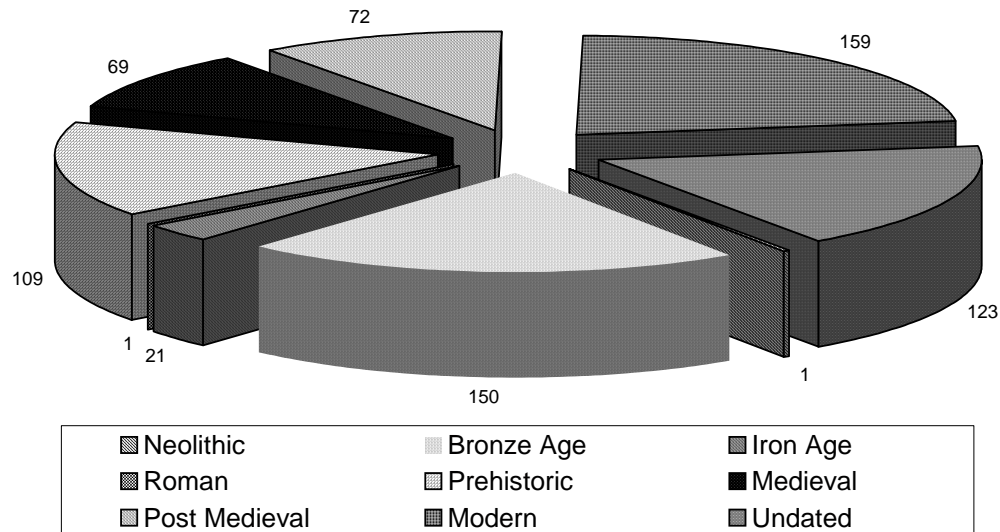
### Period Summaries

By analysing the area by map sheet and recording the number of new sites for any given period a total of 705 sites were recorded. This apparent increase of nearly a third over the previous number given for new sites is due to the fact that a number of sites were given more than one date, due to the uncertainty of their dating.

Period	SU03NE	SU04NE	SU04SE	SU13NW	SU13NE	SU14NW	SU14NE	SU14SW	SU14SE	TOTAL
Prehistoric	14	8	9	2	22	7	19	13	15	<b>109</b>
Neolithic	-	-	-	-	-	-	1	-	-	<b>1</b>
Bronze Age	7	5	31	8	3	10	36	14	36	<b>150</b>
Iron Age	-	-	1	-	-	-	-	3	17	<b>21</b>
Roman	-	-	-	-	1	-	-	-	-	<b>1</b>
Medieval	12	4	3	22	16	1	4	3	4	<b>69</b>
P. Medieval	14	2	1	20	14	5	5	4	7	<b>72</b>
Modern	1	14	-	2	2	24	40	39	37	<b>159</b>
Undated	2	12	16	7	3	9	41	19	14	<b>123</b>
<b>Total</b>	<b>50</b>	<b>45</b>	<b>61</b>	<b>61</b>	<b>61</b>	<b>56</b>	<b>146</b>	<b>95</b>	<b>130</b>	<b>705</b>

The total number of new sites for any given period per map sheet are shown in the table above, but the key findings were as follows. Of the 705 new sites the largest number of sites (159 sites, c23%) were recorded

as being of Modern date. This was due to the fact that prior to this survey military remains from the two World Wars had not been recorded and the proximity of the military bases on SPTA meant that there were a number of remains to record. The second largest period for which new sites were found was the Bronze Age (150 sites, 21%). This high number of sites may be slightly misleading. The bulk of the sites come from the recording of over 30 new barrows for each of three map sheets. In some cases these were barrows originally discovered during the SPTA project (often expanding known cemeteries), that had subsequently been entered onto the Wiltshire SMR, but had not been incorporated into AMIE. In others however they were new individual records breaking down sites that previously had only a record for a barrow cemetery.



The area covered by the SWHSMP has been the subject of archaeological investigation for a long period of time due to the concentration of monuments. Because of this long history of investigation it was expected that this latest survey would find comparatively few prehistoric sites, which had not previously been recorded. This did not turn out to be the case, but this was partly due to the method of calculating new sites as has been described above. If sites are counted by individual monument type the prehistoric era (Neolithic to Roman) actually provided more new sites than the historic! As has been noted above a very high proportion of the prehistoric sites were Bronze Age barrows (169 in total including 143 Round Barrows 21 Ring Ditches and a few more precise examples of barrow types such as Bowl or Bell). Otherwise the bulk of sites were classed as enclosures. There were 7 Iron Age enclosures plus a further 62 of prehistoric date. Although no further interpretation was given for these enclosures they were broken down morphologically; although the majority (29) were simply recorded as enclosures, 14 were described as “Curvilinear”, 11 “Rectilinear” and a small number more precisely as “Square”, “Oval” etc. Detailed morphological analysis of these various features will be carried out to assess whether more precise dating or functional interpretations can be given based on comparison with other known sites. The next most numerous new feature types are field systems of which there are 34 examples and settlements of which there are 14.

Moving into the historic era (Medieval and later) the vast majority of sites (230 sites, 56%) are Modern in date. This is almost entirely due to the change in recording practice for the project, which recorded sites that had not previously been considered worthy of record. Almost all of these sites are military in origin with the most common being Slit Trenches 33; Gun Posts 32; Barrage Balloon Sites 11; Practice Trenches 11; Weapons Pit 11 and Rifle Butts 10. By contrast there are less than a hundred sites each for the Medieval and Post Medieval periods. In each case the bulk of records are related to agricultural activity. In the Medieval period 23 sites are recorded as Strip Lynchets with a further 18 recorded simply as Lynchets.

There are also 12 records of Ridge and Furrow cultivation and 6 for Water Meadows. The pattern in the Post Medieval is similar with 23 examples of Strip Lynchets with a further 7 recorded simply as Lynchets plus 18 examples of Water Meadows and 7 for Ridge and Furrow cultivation.

Of those sites for which no date could be assigned ("Undated in the record") the majority were also given only the most basic interpretation. There were 49 Enclosures (including a number of morphological variants as with those from the prehistoric period), 27 Ditches and 14 Banks (Earthwork). Also included were 9 Ring Ditches where the interpreter was unable to be confident about whether they were prehistoric barrows or of more recent, possibly military, origin and one example of a Building. Although it might seem unlikely to be uncertain about the date of a building this particular example was seen as a lodged crop suggesting foundations, which could be anything from Roman to WWII.

## **Conclusions and recommendations**

All projects of this type, involving a re-assessment of existing maps and interpretations, present particular challenges for all those involved. The major management lesson learned is the need to collect together all existing primary sources (in this case aerial photographs) and not rely on existing mapping alone: a degree of reassessment of the evidence and reinterpretation of past work will almost certainly be required during subsequent surveys. There is also the issue of the written record. This is input to AMIE as the national standard for NMP (and the NMR), but the flow of data from the NMR to SMRs has still to be organised individually with each different recording system. There needs to be a regular update mechanism from the SMR to the NMR and vice versa if research on the national record is to be valid.

Looking at the density and distribution of archaeological sites the major conclusion is that an area as well known and as heavily investigated as Stonehenge still yielded a surprisingly large number of previously unrecorded sites. The accurate mapping of these features means that they can be more easily categorised and the relationships between enclosures, linear boundaries and field systems can be examined. There are a number of research questions that need to be addressed (beyond the scope of this report), for example, "Is this area different to the area of SPTA to the north?" The concentration of funerary monuments certainly seems to be different between the core of the WHS and the area to the south, but how does it compare to the area to the north? Although there has, so far, been little in depth analysis for the entire WHS some detailed work has been carried out on the southern area (Barber et al. 2003). Furthermore now that the features have been accurately mapped, in future there can be more targeted reconnaissance aimed at those areas for which information is currently lacking.



## ACKNOWLEDGEMENTS AND BIBLIOGRAPHY

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### Acknowledgements

RCHME Aerial Survey section is grateful to the staff of NMR Air Photographs for their assistance and for providing the cover-searches and photographs, and Roy Canham and the staff of Wiltshire County Council's Archaeology Section for their assistance in provision of SMR data and access to their air photographs.

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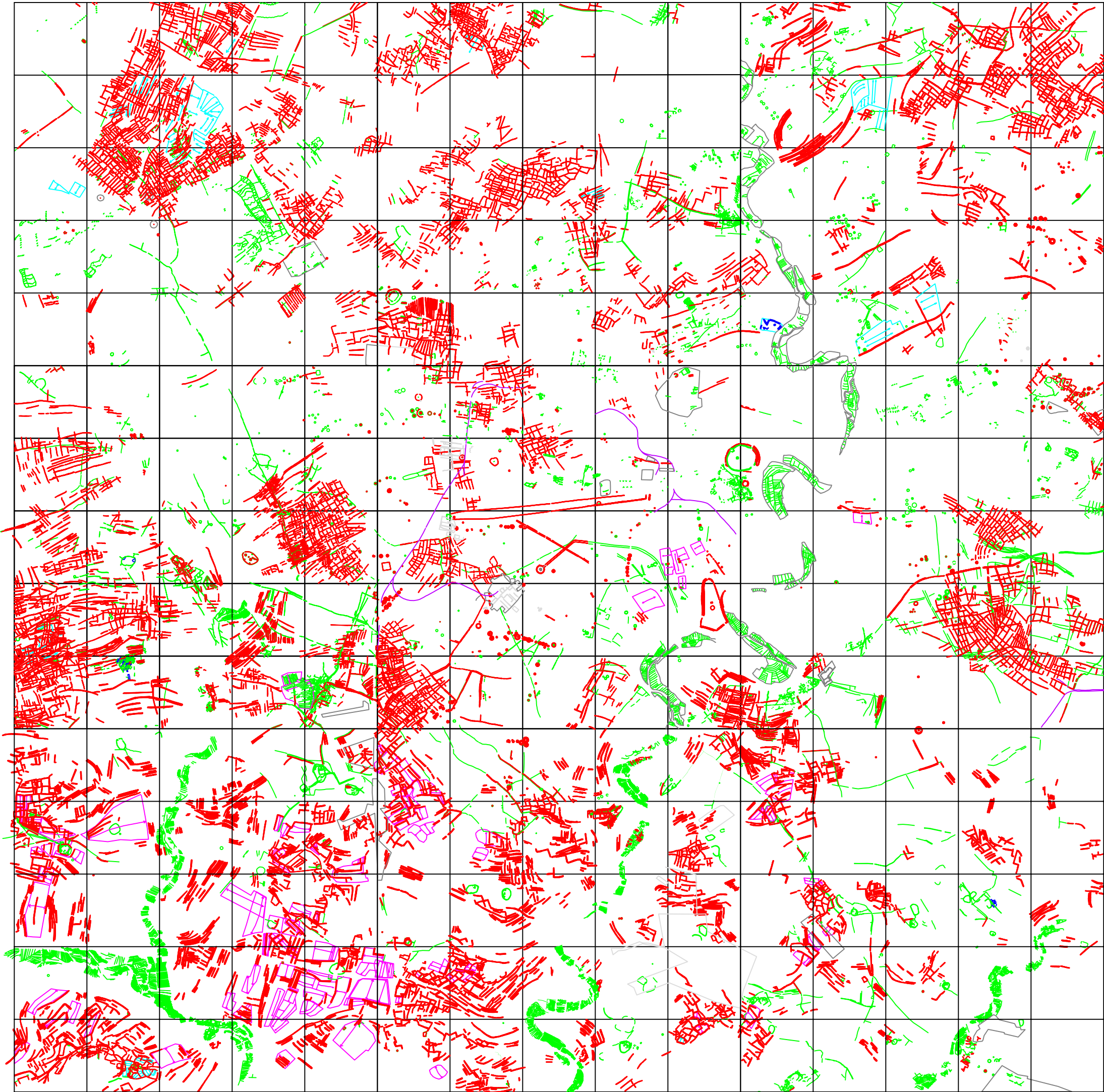
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# Total plot of all features mapped by SWHSMP

## Key to NMP conventions

- |   |   |   |  |
|---|---|---|--|
|  | Ditch   |  | Ridge and furrow visible as an earthwork             |
|  | Bank  |  | Levelled ridge and furrow                            |
|  | Structure, e.g. buildings                     |  | Barrows/earthworks taken from the OS map background. |
|  | Extent of area, e.g. airfield/camp perimeters |  | Tramway/railway                                      |
|  | Large cut feature                             |   |  |



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