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Computerised county sites and monuments records in England—an overview of their structure, development and progress

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3.1 Introduction

During 1987 and 1988, the Records Office of English Heritage undertook a survey of the 46 county-based Sites and Monuments Records (SMRs) in England as part of the preparation for the Monuments Protection Programme. Visits were carried out by the author, Ben Booth, Nigel Clubb, and Bill Startin. Whilst details of the survey are confidential, some overall trends have emerged, and these are discussed in general terms.

It should be noted that these visits took place between September 1987 and the summer of 1988, and that most SMRs will have progressed since then. It is hoped, however, that as an overview it will be useful for showing trends and developments within SMRs.

3.2 The history of SMRs

SMRs are generally the most comprehensive record of archaeological sites within a county. They usually consist of records of individual archaeological sites or finds, which contain standard pieces of locational, administrative, and descriptive information, including details of the site-type and period of the archaeological item involved. Some SMRs also include a section for management recommendations on archaeological sites. Each text-based record has a unique reference, sometimes called the Primary Reference Number (PRN). Text-based records are accompanied by a set of location maps which show the positions of sites or findspots, referenced to the text records by the PRN.

SMRs in England are often based in County Council Planning Departments where they act as an aid to the planning process. The first was started in Oxfordshire in the late 1960s, and many followed in the early 1970s, most being originally set up as paper-based record systems (often card-based systems). SMR cover in Wales and Scotland is structured slightly differently: Wales has four archaeological trusts, and five SMRs, whereas the cover in Scotland is much more patchy. This paper will only discuss the SMRs in England.

SMRs have developed successfully and very rapidly over the last few years. In the early 1970s only a few counties had any cover; by the late 1970s, most counties had an SMR, although many were in the early stages of data compilation. Today, all the counties in England have SMRs, which are either computerised, or in the process of computerisation. This is a significant achievement for the archaeological profession, as it allows informed decisions to be made about our cultural heritage, and provides a tool for a range of activities such as education, research, and planning.

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English Heritage, and the DoE before it, have been funding SMRs in advance of the Monuments Protection Programme. This programme is reviewing all known archaeological sites in England, and aims to greatly increase the number of scheduled or statutorily protected archaeological sites. In order to do this, full and retrievable records of all known archaeology in England, which can provide the data for such a review, are needed. The SMRs were chosen as the records most able to provide this data. English Heritage has been grant-aiding SMRs for a number of reasons, but partly so that a relatively common standard of content and retrievability is available for the whole country.

Inevitably, there is some variation in the breadth of cover, state of compilation, and computing capability of SMRs, and these variations are discussed below.

3.3 The scope and content of SMRs

Variations in the width or scope of an SMR do occur, although it has been recommended that ideally 'there should be no policy decision to exclude records on account of their date or their type' (Historic Buildings and Monuments Commission for England 1985). Most organisations allow the categories of evidence shown in Table 3.1 in the SMR, although the extent to which these have been systematically 'trawled' varies.

Site-types and finds of *any* date range are allowed in most records, although a few SMRs have cut-off dates of the late medieval period, or 1700 A.D. or 1900 A.D. Most SMRs cover their entire area or county without any geographical exclusions, although there are notable absences which include some of England's most important historic towns. Some of these urban areas are covered by separate local SMRs, but in others there does not appear to be any SMR cover at all.

3.3.1 The range of information in SMRs (the depth of the SMR)

There is a basic core of data which most organisations compile for every SMR record, effectively a 'record content standard', comprising the fields of information shown in Table 3.2.

3.3.2 Rarely used fields of information

Only 6 organisations stated that all fields in their SMR records are regularly used and completed for all sites. The majority of computerised SMRs contain fields which are rarely or never used, over 13 fields per record in some cases. These usually include survival and condition, (at least 18 SMRs rarely contain these data) and owner and occupier.

Other fields which are often left blank include area status, site status, management information, soils, geology, assessment of importance, and land classification or use. Such data is often omitted because sites are rarely visited, and data capture cannot take place without a visit. It is also difficult to keep such information up to date (a requirement of the Data Protection Act) without a regular programme of visits, and this, unfortunately, is beyond the resources of most SMRs.

3.4 Data structure

There are major differences in the conceptual structure of SMRs, relating to the way an individual SMR record is defined, and what it actually consists of. There are three main approaches taken. An individual record can relate to:

1. a single archaeological item;

Listed buildings
 Non-listed buildings
 Findspots
 Placenames (including fieldnames)
 Museum or private collections of artefacts
 Archaeological sites, both upstanding and buried remains.
 AP Evidence

Table 3.1: Categories of evidence allowed in most SMRs

County
 Local authority
 Parish
 NGR
 Name
 Description
 Site-type
 Form
 Period—general
 Period—specific
 Survival
 Condition
 Land class on site
 Land class around site
 Site status
 Area status
 Owner
 Occupier
 Management
 Assessment of importance
 Archaeological History

Table 3.2: Data categories within a typical, individual SMR Record

2. a single land parcel containing an archaeological item(s);
3. a single piece of recorded or received information about an archaeological item(s).

Individual records in most SMRs are (primarily) those of archaeological items. However, sometimes a combination of approaches is used e.g. many SMRs do hold 'land parcel' records *and* 'archaeological item' records, to avoid the problems inherent in recording such sites as cropmarks, extensive or dense remains, and urban areas by archaeological integrity or item.

Only one SMR uses the 'land parcel approach' exclusively, i.e. all archaeological sites falling within a specified area will be documented in a single record. There are further SMRs who have stated that they would like to make more use of the 'land parcel approach' in future.

No SMR contains records of 'received information' alone, but sometimes this approach is used in conjunction with 'land parcel' or 'archaeological item' records. One SMR uniquely uses a hierarchical system where *primary* records relate to an archaeological item, and *component* records relate to received information/event, e.g. a primary record for a Deserted Medieval Village, will have component records of every visit, survey, excavation and so on, for that site. 27 SMRs use component records, although these vary greatly in structure and content.

3.4.1 Controlled vocabulary; its use and origin

The subject of vocabulary control has been discussed by the author elsewhere in depth (Chadburn 1988). Most SMRs use some form of vocabulary control, at least for site-type and period, although many others also use controlled vocabulary for land classification, local authorities, site status, area status, form, etc. Some SMRs have either developed their site-type vocabulary in-house, or use wordlists based on vocabulary in use at English Heritage, the Council for British Archaeology, or the Royal Commission on the Historical Monuments of England (or use a mixture of all of them).

Occasionally, SMRs do not use controlled vocabulary for site-type, simply entering any appropriate terms into the record, and then producing wordlists of site-type terms used. Searches are carried out using selected terms from the resulting wordlist, which has the disadvantage that a search for a particular object or site-type may have to be carried out a number of times.

3.4.2 Manuals for staff and the documentation of the SMR

Generally speaking, most of the SMRs visited have some sort of accompanying manual, although the majority of manuals relate only to the compilation of the computerised record, rather than documenting any strategic framework. Most have been written specifically for the compilers rather than for users of the SMR. There are some exceptions to this, and several SMRs have wide-ranging and carefully documented manuals. However, most manuals are limited in their scope and therefore, usefulness.

3.5 Back-up material

3.5.1 Associated map systems

Most SMRs hold two basic sets of map cover for the county: the base maps, and constraint maps. Sites and findspots are plotted onto base maps (either directly onto the maps or on film overlays) and are referenced by the PRN to the text records.

Constraint maps show archaeologically sensitive areas, and a set of these maps is often held District/Borough Planning Departments to aid their decision-making processes. Base maps are usually at 1:10,000 or 6' scale, although sometimes additional maps at a large scale (at 1:2500, 1:1250 or 25') are held for urban areas, or areas which have a high density of sites. Constraint maps are usually held at the same scale as the base maps.

Occasionally, a much fuller set of maps is held with an SMR. These include maps of a variety of scales and dates e.g. the O.S series first edition maps, copies of tithe maps, copies of sale maps and numerous overlays to the base maps, which might show features such as medieval field systems or field names. However, this level of associated mapped information is rare in SMRs.

3.5.2 Associated record systems and back-up information

Most SMRs hold some documentation in addition to their card systems, or computerised files. Not unnaturally, long established SMRs, such as Bedfordshire, Oxfordshire and Buckinghamshire, are usually the fullest and contain the most associated information. However, many SMRs hold only a few examples of the following items:

- Journals
- Offprints
- OS Cards
- AP Collections
- Unpublished research
- Rescue and/or assessment surveys

Some of the long established SMRs have a thorough coverage of the complete county for most or all of the above items, although the newer SMRs tend to hold little associated information. In addition to the above items, many SMRs also hold parish and/or site files, which contain newspaper cuttings, correspondence, sketch plans etc. relating to archaeological sites or to the archaeology of an area.

3.5.3 Relationship to listed building records

Few SMRs actually contain a complete computerised record of listed buildings for the county. Some organisations hold non-computerised records, or copies of the 'greenbacks' as associated information to the SMR. Generally, most SMRs do not contain any records of listed buildings, apart from those which were (exceptionally) recorded by the Ordnance Survey on the OS cards, or which are also Scheduled Ancient Monuments. Some organisations have a long term aim to include listed buildings in their SMRs, but have not yet started to add them systematically. Lastly, some SMRs are held within a planning department, which holds listed building records elsewhere in the department.

3.6 Computerisation

3.6.1 Hardware

Of the 46 SMRs in England, 33 are microcomputer based, and 13 are on mini-computers or mainframes (Fig. 3.1). Amongst the microcomputer based systems 25 use the Superfile package (2 are yet to upgrade from EH 'Version 1'), 6 use dBase III, 1 uses MDBS and 1 uses Rescue (Fig. 3.2). Of the mainframe systems 4 use the North

Yorkshire System, 2 use Mapper, and there are 7 other systems in use (Fig. 3.3). Most SMRs are generally satisfied with their hardware, although some complained of a lack of speed, and there are one or two machines which are not effective for the software.

3.6.2 Software

The hardware and software in use in both micro-based and mainframe based SMRs at the time of the survey are given in Table 3.3 below.

Characteristics of the four main packages in are shown in Table 3.4 below. Most SMRs are generally satisfied with their software, although some limitations were reported, e.g. in Superfile, the lack of speed, the size of the record allowed, and the poor documentation from the suppliers. Some users noted that the lack of repeating fields in dBaselll was a problem, and the users of Mapper felt that the short records required and the lack of facilities for free text were also limiting.

3.6.3 Operating systems

With the exception of Bedford (using CP/M) all PC systems use MS-DOS. The main-frame/mini systems use operating systems proprietary to their hardware. There are currently no SMR systems using Unix.

3.6.4 Networking

Only four SMRs are networked at present, 3 are micro-based and one is main-frame based. Those using microcomputer-based networks have experienced performance problems in the past.

3.6.5 Data input, validation, back-up and archiving

14 organisations enter their SMR data in batch mode; 20 enter data on-line and 12 use a combination of the two. 15 SMRs do not have any automatic data validation facilities, although with the exception of two SMRs, (who do not check their input data by any method) data is manually checked after entry.

The back-up and archiving of SMR data is generally satisfactory. In the case of main-frame systems, this is done centrally, but most of the micro-based SMRs are careful to have a number of back-up copies of their data, usually with at least one copy off-site.

3.6.6 Output and retrievability

Only a few computerised SMRs cannot yet retrieve anything, due to operating difficulties or non-operational computer systems. However, there are others who have not fully recast their paper records onto computer, and who thus cannot retrieve on all known sites automatically. The SMRs which are still in the process of data compilation or computerisation, are mostly in receipt of grants from English Heritage to aid the continued recasting and computerisation of data.

A few SMRs still rely heavily on Optical Co-Incidence Cards for retrieval, and they can only undertake limited searches of their records. Additionally, there is the problem that any output from the Co-incidence Cards cannot be automatically produced, and neither can it be automatically transferred to another database should this be required. Most SMRs routinely produce print-outs ordered by parish, grid-reference, site-type and sometimes period.

3.6.7. Data transfer

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3.7. Completion

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3.8. Conclusions

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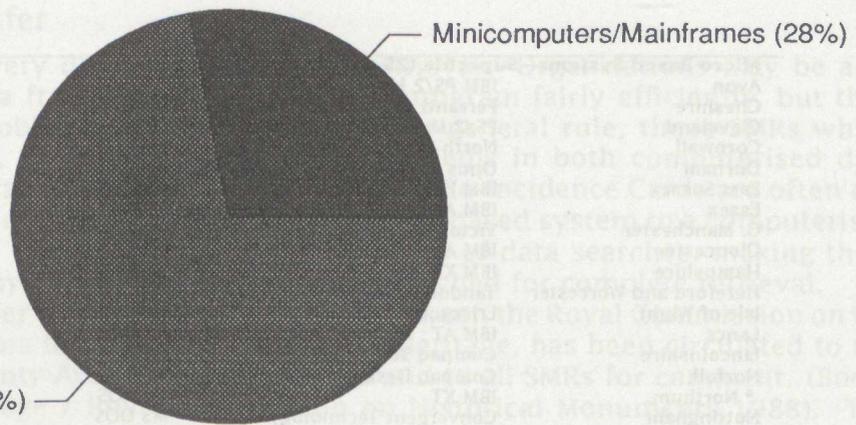


Figure 3.1: Hardware in use in SMRs, 1987-8

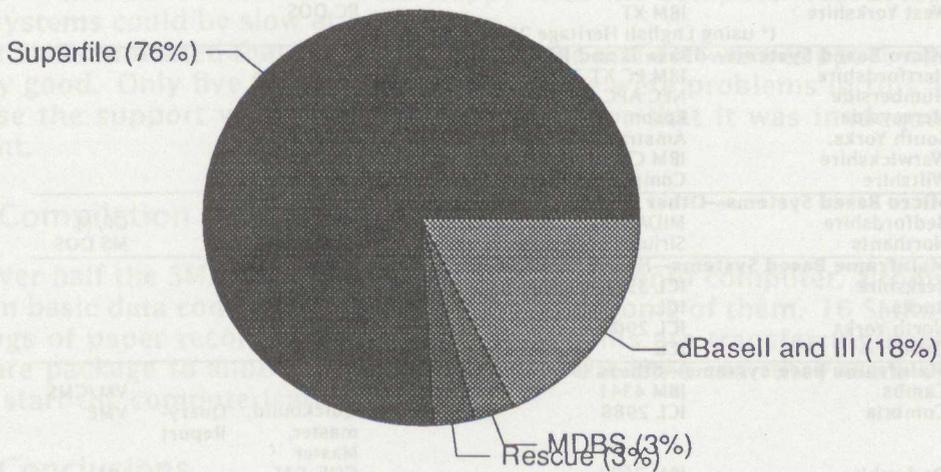


Figure 3.2: Software in use in micro-based SMRs, 1987-8

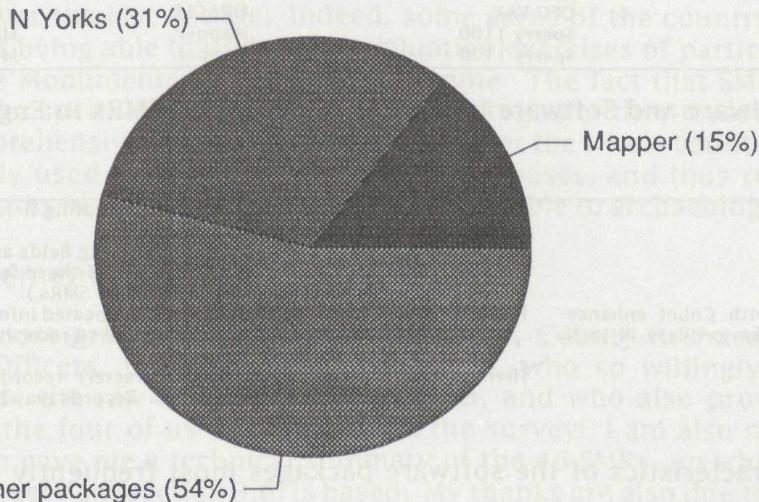


Figure 3.3: Software in use in mainframe-based SMRs, 1987-8

Micro Based Systems—Superfile (25 users)			
Avon	IBM PS/2 Model 60	MS DOS	
Cheshire	Ferranti	MS DOS	
Cleveland	PS/2 Model 60	MS DOS	
Cornwall	North Star Dimension	MS DOS	
Durham	Opus	MS DOS	
East Sussex	IBM PS/2 Model 60	MS DOS	
Essex	IBM AT	PC DOS	
G. Manchester	Victor 286c	MS DOS	
Gloucester	IBM AT	MS NET Novell	
Hampshire	IBM XT	PC DOS	
Hereford and Worcester	Tandon PCA	MS DOS	
Isle of Wight	Ericsson	MS DOS	
Lancs	IBM AT	PC DOS	
Lincolnshire	Compaq 386	MS DOS	
Norfolk	Compaq Deskpro 386	PC DOS	
* Northum.	IBM XT	PC DOS	
Nottingham	Convergent Technology N GEN	MS DOS	
* Shropshire	IBM XT	PC DOS	
Somerset	Olivetti M28	MS DOS	
Staffordshire	Compaq Deskpro 386	MS DOS	
Suffolk	Apricot 386	MS DOS	
Tyne and Wear	ICL PWS	MS DOS	
West Midlands	IBM XT	PC DOS	
West Sussex	IBM AT	PC DOS	
West Yorkshire	IBM XT	PC DOS	
(* using English Heritage 'Version 1' Software)			
Micro Based Systems—dBase II and III (6 users)			
Hertfordshire	IBM PC XT 286	PC DOS	
Humberside	NEC APC	MS DOS	
Merseyside	Epson	MS DOS	
South Yorks.	Amstrad PC 1512	MS DOS	
Warwickshire	IBM Clone	MS DOS	
Wiltshire	Compaq 386	MS DOS	
Micro Based Systems—Other (2 users)			
Bedfordshire	MIDAS III	MDBS	CP/M
Northants	Sirius	Rescue	MS DOS
Mainframe Based Systems—North Yorks (4 users)			
Berkshire	ICL 3980	VME/B	
Bucks	ICL	VME	
North Yorks	ICL 2900	VME/B	
Oxon	ICL	VME	
Mainframe base systems—others (9 users)			
Cambs	IBM 4341	Stairs	VM/CMS
Cumbria	ICL 2988	Quickbuild, Query-master, Master Report	VME
Derbyshire	IBM 3031	GOS, SAS	VM
Devon	Prime 9650	Prime Information	Primos
Dorset	ICL	SPSS, Deke	VME
G. London	IBM	ADABAS, NATUR	AL
Kent	DEC VAX	ORACLE	VMS
Leics	Sperry 1100	Mapper	MU
Surrey	Sperry 1100	Mapper	MU

Table 3.3: Hardware and Software in use in County-based SMRs in England, 1987–8

<i>Software</i>	<i>Type</i>	<i>Characteristics</i>
Superfile	Flat file	Variable length records, repeating fields and groups of fields
dBase III	Relational	Fixed length records, repeating fields are kept in separate files. (But NB these features are not usually used by SMRs.)
N. Yorks (Filetab with Cobol enhancements; also has links to dBase III in N. Yorks CC)	Hierarchical	Fixed length records, with repeated information being handled by linked records.
Mapper	Hierarchical	Fixed length (132 character) records, without repeated fields. Records may be linked

Table 3.4: Characteristics of the software packages most frequently used by SMRs 1987–8

3.6.7 Data transfer

Data transfer is a very different problem to retrieval. Organisations may be able to retrieve SMR data from a bespoke computer program fairly efficiently, but they can have severe problems in exchanging it. As a general rule, those SMRs which computerised early, seem to have the most problems in both computerised data retrieval and data transfer. In addition, the Optical Co-Incidence Cards are often not kept up to date, once a recasting exercise of a paper-based system to a computerised system has begun. This can limit the effectiveness of data searches, making them awkward and lengthy, as two systems must be searched for complete retrieval.

A draft data transfer standard, jointly agreed between the Royal Commission on the Historical Monuments for England, and English Heritage, has been circulated to the Association for County Archaeological Officers and to all SMRs for comment. (Booth 1988, English Heritage / Royal Commission on Historical Monuments 1988). The purpose of this standard is to provide a facility so that archaeological data may be readily exchanged between organisations, as it will all be formatted to an agreed structure. This cuts down on a costly and unnecessary formatting between separate organisations, and the case is argued in further detail by Booth (1988).

Most of the main-frame users are happy with the computer resources, although their systems could be slow at peak times.

Most SMRs indicated that the level of hardware and software support was adequate to very good. Only five SMRs reported that there were problems in this area, either because the support was distanced from them, or that it was inadequate or non-existent.

3.7 Compilation to date

Well over half the SMRs have now been fully recast onto computer, although further work in basic data compilation is still required in some of them. 16 SMRs have large backlogs of paper records to computerise, 13 SMRs are transferring data from one software package to another, and two SMRs at the time that they were visited, had yet to start the computerisation process.

3.8 Conclusions

In conclusion, there has been a significant development in the quality and quantity of SMR data over the last decade. Indeed, some areas of the country are already in the position of being able to undertake evaluation exercises of particular monument classes for the Monuments Protection Programme. The fact that SMRs are now in a position to offer such services, means that taken together they undoubtedly provide the most comprehensive archaeological coverage for the whole country. Despite this, they are mainly used exclusively for planning purposes, and thus represent one of the most under-used academic tools currently available to archaeologists in England.

Acknowledgements

Firstly, I am most grateful to all the SMR Officers, County Archaeologists and Archaeological Officers, too numerous to mention, who so willingly gave up their time to provide the raw material for this paper, and who also provided generous hospitality to the four of us who undertook the survey! I am also most grateful to Ben Booth who gave me a technical summary of the 46 SMRs, on which information the computing section (section 3.6) is based. My thanks are also due to Ben Booth and

Nigel Clubb who commented on drafts of this paper. Any errors, however, remain my responsibility alone.

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