

## Recording and managing the national heritage

N. A. R. Lang

*(Royal Commission on the Historical Monuments of England, Swindon, UK)*

### 11.1 Introduction

This paper has three principal aims:

1. To examine the relationship between local and national heritage databases and their functions
2. To examine the use of data for strategic planning
3. To explore the functions of a national archaeological record

The development of both the local and national systems of sites and monuments records has been thoroughly documented at CAA, and other conferences. It does not need re-iteration here. What has been less fully explored is the relationship between the users and providers of heritage information at a local and national level, and whether there is still a justification for maintaining and developing current arrangements. In a climate of considerable change, ranging from the establishment of a "lead role" for RCHME in respect of local SMRs, and the impending local government reorganisation, it is particularly important to ensure continuity of levels of service on the one hand and avoidance of duplication and waste on the other. Until 1991, it was generally accepted that there were four main recognised holders of heritage information in England. These were English Heritage, the Royal Commission, the Department of the Environment and the County Sites and Monuments Records.

The recent change in the government sponsor department for both the Commission and English Heritage, and the current examination of a "National Heritage Database", requires that a fifth should now be added, the Department of National Heritage (Clubb and Startin, this volume). This is an important new development, and appears, amongst other effects, to have finally provided the stimulus to proceed with computerisation of the lists of historic buildings.

Significant structural and organisational changes are currently under way that may have an impact on the delivery of heritage information. On the one hand, a substantial re-organisation of the provision of local government services is being undertaken. While archaeology is likely to be a low priority within that agenda, it seems most unlikely that the present curatorial system, based on records developed for the political unit of the County, will remain unchanged. On the other, the organisation of "heritage information" for central government is evolving further. The Royal Commission's responsibilities, as the national body of survey and record, have recently been revised under the terms of its new Royal Warrant, issued in 1992. A "lead role" has been identified for the Commission concerning the network of SMRs in England. Additionally, it has also been charged with the compilation of a maritime record of sites, extending to the twelve mile limit around

the coastline of England. The clarification of responsibilities implicit in this has effectively concluded direct English Heritage financial support for SMRs. However, only limited additional resources have been given to the Commission to support the new responsibilities and these are insufficient to provide the levels of support enjoyed during the "pump-priming" era of the eighties.

What is less commonly recognised is that the RCHME is also charged with a responsibility for specifying those sites and monuments most worthy of preservation, by providing advice and information relevant to the preservation and conservation of such buildings, sites and ancient monuments of archaeological, architectural and historical interest. Involvement in the identification of threats has also been long established (e.g. RCHM (England), 1960). At a basic level, the process of identifying sites for these purposes requires an ability to provide consistent quantification, as well as the analytical expertise to assess importance for specific classes of monument or areas, and it is to this we must now turn.

### 11.2 Quantifying the national archaeological resource

Since 1983, the archaeological responsibilities of the Ordnance Survey have been transferred to the Royal Commission, and the process of computerising its records is now complete. Although there are differences between the way archaeological sites have been defined by the OS (and subsequently, by the Commission) and Sites and Monuments Records, it is generally acknowledged that, taken together, these form the most comprehensive database for archaeology in England. However, the apparent discrepancy between sites entered in the national record (at the time of writing, c. 180,000) and those believed to be held by SMRs (c. 638,000 in 1992) is likely to have been exaggerated (RCHME 1993a, pp. 34-45).

The setting up of County Sites and Monuments records was initially a local government initiative, but it is commonly recognised that an important stimulus was provided by the decision first by the Department of the Environment and subsequently by English Heritage to take a pro-active role in assisting their development. This process had started well before the Monuments Protection Programme (or Scheduling Enhancement Programme, as it was then known) began (Darvill, Startin and Saunders, 1987). Nonetheless, MPP provided a context through which a structured programme of support for the development of SMRs could be channelled.

In 1984, a very influential paper was produced by the Inspectorate of Ancient Monuments providing a quantifi-

cation of England's Archaeological Resource (Department of the Environment, 1984). The paper has been widely circulated and is well known, although it has not been formally published. It is important for three principal reasons:

1. It was the first cohesive attempt to quantify the archaeological resource in England.
2. It recommended that County SMRs were the most "consistent, complete and retrievable" database in England and should be chosen as the primary data source for the Monuments Protection Programme.
3. It produced the oft quoted figure that there are 630,000 records of archaeological sites in England.

The decision to base the enhancement programme largely on the county sites and monuments records proved to be controversial. The decision was reported in the RCHME Annual Review (RCHM (England) 1985 p. 5) as having "denigrated the national record" and as having led to "confusion among data collectors and users and dangerously opened up a potential for expensive and wasteful duplication". Insofar as it has taken over five years to establish measures to reduce such duplication, measures that are still, to some extent, in their infancy, this view was perceptive. However, of equal concern to the duplication of recording effort is the fact that the resources applied to SMRs have not produced a consistent national database capable of being quantified to a satisfactory level.

The gross total quantification of records provided in England's Archaeological Resource has frequently been equated with actual archaeological sites and monuments. This misconception occurs despite the care taken to distinguish between the nature of records in these systems (which include totally destroyed sites, single find spots, and in some systems, the location of negative evidence) and extant "monumental" archaeology. The suggested numbers of sites eligible for scheduling are given as 37,500 Medieval and earlier monuments and 15,000 Post-Medieval and uncertain ("other") monuments. These are cited, respectively, as being 15% and 10% of the presumed extant populations (250,000 and 150,000 — a total population of c. 400,000).

In the light of subsequent work, these figures seem likely to have inflated the global number of schedulable extant "sites" given the recording interests and contents of SMRs prevalent at that time. The ACAO survey for example (Lang 1990) indicates that, in a sample of 188,376 records (derived from SMRs in Great Britain), over 86,000 (approaching half of the sample) were either find spots or listed buildings. Most listed buildings are not eligible for scheduling (and one of the aims of MPP has been to remove the anomalies of dual designation) while artefact scatters ("find spots") unsupported by other evidence are not generally considered eligible to be afforded protection under the scheduling legislation. Given the other uncertainties introduced by recording multi-phase sites as multiple physical records, the "guestimates" produced by some SMRs of the numbers of records in their databases (a situation still pertaining in 1992) and those in estimating the numbers of records awaiting input, the actual number of identified sites likely to have been schedulable under the terms of the 1979 Act might have been as low as 200,000 in 1984.

Does this all matter very much? England's Archaeological Resource concluded that there should be an increase in the number of monuments protected by statute increasing the proportion from c. 12,600 sites in 1984 to 52,500 by the completion of the programme. One could argue that the actual percentage of sites protected is less important than achieving thresholds of quality, above which a site should merit formal designation. Indeed, the author concludes his review by saying that "all monuments which are of equivalent importance to those already protected, taking into account the accepted scheduling criteria, should be added to the schedule" (Department of the Environment, 1984, p. 48).

With the expansion of the programme to take on board Post Medieval remains and urban deposits, this might seem ambitious. Were this to be rigorously applied to these two periods, the figure of 52,500 protected monuments would seem to be extremely conservative! In reality, a programme such as the MPP must be concerned with sampling procedures and sampling procedures for such an exercise require some knowledge of the population from which the sample is drawn. And so we return to the quantification question!

### 11.3 Records of archaeology and archaeological reality

The definition of the relationship between records and "real" archaeology has been avoided by many, because of the methodological and philosophical problems involved. The ability to establish a consistent meaningful relationship between a record and an archaeological entity is, however, crucial to the process of affording statutory protection to archaeological remains. The principal difficulties in establishing this relationship may be summarised as follows:

1. The extent (and quality) of archaeological survival is often uncertain (especially in urban contexts) which means the boundaries of sites tend to be "fuzzy".
2. Complex archaeological landscapes are difficult to break down into component records and are rarely dealt with consistently.
3. Few record systems have a rigorous definition of the compass of their recording interests. Thus, data collection for certain site types and periods has not been systematic, or consistent.
4. The concept of "clustering" is inadequately explored.
5. The definition of an archaeological site as a "record" in a database has never been nationally agreed.

For these reasons, national quantification has proved notoriously difficult to achieve. A quantification exercise taking into account record structure does not yet seem to have been attempted. However, there have been various attempts to analyse the contents of SMRs since England's Archaeological Resource. The three most significant surveys are:

- English Heritage, between 1987 and 1988. The contents of this survey remain confidential but a summary has been published in the CAA proceedings for 1989 (Chadburn, 1989).
- A survey undertaken by this author for ACAO, in 1990 (Lang, 1990)

- The Royal Commission's survey of SMRs, the results of which were published in *Recording England's Past.*, (RCHM (England) 1993a)

Each survey has, in its own way, focused on different aspects of the SMRs, but in areas of communal enquiry, they have identified a remarkably consistent pattern, despite being conducted quite independently.

The ACAO survey, which requested information from all local sites and monuments in Britain is of particular interest, because it attempted to look, in some detail, at the content of SMRs broken-down by site type. Although the survey is far from complete in terms of the counties and regional organisations that responded, the results are believed to be an authoritative reflection of the state of SMRs at that time. The development of curatorial archaeology culminating in Planning Policy Guidance Note 16 (Department of the Environment 1990) has tended to result in the fossilisation of SMRs, since their officers have largely been diverted to development control matters, rather than SMR management. The data from the survey is not, therefore, believed to have become significantly outdated. The principal points to be made from this quantification are:

1. Many of the sites in SMRs are buildings (over a quarter of records — 57,000 standing structures — were reported in the sample).
2. There are a very large number of find spots in SMRs (again, over a quarter of the sample — over 56,000 records — though some may be rationalised into "sites").
3. There are areas of SMRs which are drastically under-represented, notably industrial archaeology, coverage for urban areas and historical ecology (industrial remains accounted for only 8,400 records, and urban archaeology 5,100 records). Place-name evidence has also been under-utilised, a point which has emerged from the Commission's review.

Several trends may be observed from all three surveys. There appear to be significant limitations in the ability to retrieve data from SMRs, including an inability to provide quantification by site type. In a few cases, this appears to extend to the provision of totals for the entire database. This observation may be uncharitable. However, the returned questionnaires for both the ACAO and RCHME surveys either did not provide the information or presented an approximate figure. What does seem certain is that, even if such quantification is feasible within all SMRs, a surprisingly high number of sites find these are not easy statistics to calculate. It is worth noting in relation to the quantifications in England's Archaeological Resource that many of the Counties also provided estimates (or guesstimates) of the number of records *awaiting* data entry. Perhaps not unnaturally, these appear in some cases to have over-estimated the number of records awaiting entry to the SMR.

It might seem remarkable that a basic quantification of the archaeological resource cannot yet be provided, despite the programme of SMR development during the 1980s. However, the methodological problems of achieving this should not be underestimated. Even if all the separate SMR database systems were recast to a common data standard, to be able to retrieve quantifiable information one would

still need to take account of the vagaries in record definition. A possible approach here might be to use a series of meta data sets holding information on the structure of records, though even if this is a feasible solution, the capacity to undertake such an analysis is likely to be some way in the future.

Although the national record has achieved greater consistency than the network of SMRs, it was not systematically revised following alterations to the Ordnance Survey recording instructions (and of course while it was being compiled by the OS, some of the functions we would now wish to see a national record perform were not within the scope of the section). Thus there is still further work to be done on the indexing of information within the present record, as well as its enhancement from new data internally or externally generated.

Of course, there are some site types that have long been more susceptible to the playing of "numbers games" than others. These are typically upstanding discrete monuments, and those which form a diagnostic crop mark when plough levelled and are thus recognisable either above or below ground. Examples would include most barrows, moats and henge monuments. For each of these, we have a fairly accurate idea of the number of surviving examples, since these are relatively easy to recognise, tend to be attractive subjects for thematic survey, and are among the better classified monuments in record systems.

For the more complex site types, it might be argued that an analytical database for MPP could have been achieved sooner had this been compiled at a national level. An example of the benefits of this approach is the National Mapping Programme, an initiative of the Commission's Air Photographic Unit, which is producing a morphological database of archaeological sites for the country and allows comparison on the basis of size, shape and association of monuments.

More generally, had an equal investment been made in the national database as has been made in SMRs, to explicit recording instructions and indexing rules, then the objectives of producing a "*complete, consistent and retrievable*" database might have been better achieved. This should not, however, be taken to denigrate the very real achievements made in fostering archaeology in local government, and the provisions for development control which have been established. These have been, undeniably, a major achievement of policy by English Heritage in the 1980s. However, this achievement must be balanced against the legacy left by the substantial financial support for SMRs throughout this period, largely unfettered by constraints of standardisation.

Furthermore, the framework of Policy Planning Guidance Note 16 (Department of the Environment, 1990) has greatly increased both the volume of data being generated (much of which has come from evaluation and assessment work) and the administrative burden on the archaeological staff of county councils. While it is generally agreed that the present level of integration of archaeology in the planning process is desirable, it is tending to divert effort from the maintenance of the record systems which are (or should be) central to the development control process.

Not only is the maintenance of SMR records tending to stagnate, the strategic framework for archaeological planning is also under-developed. Because of the increased burden on the resources of local government archaeology, decision making tends to be reactive rather than proactive. There is a danger that, just as rescue archaeology in the 1970s fostered a philosophy of "dig it because its there", the limitations of developer funded archaeology have and will continue to create large quantities of data outside of any cohesive research framework. In many cases there is an ineffective flow line back to the database and in the worst examples, the information is not being incorporated to permit its effective use in development control decision making. The purpose of such data collection, and the issue of getting resources to where they are most needed may become increasingly open to scrutiny.

Thus, SMRs have, in general, not yet developed effective strategic analysis of their county's archaeology. While planning policy frameworks have become well developed in many counties through input to strategic and local plans, the decision making involved in implementing these is generally taken without the benefit of regional analysis of the archaeological resource. Very few SMRs go beyond their own political boundary in assessing questions of importance, and all too few have drawn up regional strategies and priorities for research and preservation (though there are some laudable exceptions). Strategic planning for archaeology should involve assessment at the regional (i.e. supra-county) level, and policy documents should act as a guide to the investment of resources (whether from within local government or without) and inform preservation policy. It would seem to be generally agreed that this is a desirable objective, though one which is rarely prioritised.

Partly because the recording function at local and national levels has tended to be viewed as less than exciting, it has been consistently under-resourced. It is only comparatively recently that IT investment in English Heritage and the Commission has been given greater prominence, while it still remains a low priority for all too many SMRs. There should therefore be widespread agreement on the need to use resources effectively in compiling and analysing record systems wherever these are held. While the principal holders of heritage data will require the information to fulfil essentially different functions, clearly there will be communal information sets required, the compilation of which should be a shared responsibility.

In England, the concept of the extended national archaeological record (ENAR) is being developed to harmonise the national and local archaeological records and to ensure the most cost-effective compilation of the database in a partnership. The benefits of standardisation, data exchange and collaborative approaches to software development should all be achievable through this initiative. Nonetheless, it is recognised that although there is a degree of communality in the data required by national and local organisations, it is needed for distinct, complementary purposes. The national database should act as an index to SMRs, to serve requirements for local expertise and a local presence, whose functions lie primarily in the plan-

ning sphere, but increasingly in education, community liaison and research.

An important addition to the "heritage data set" are the series of urban archaeological databases which are being developed by English Heritage in conjunction with the Commission (English Heritage, 1992). These will facilitate more detailed recording and management of the urban archaeological resource, initially in the major historic towns. There is likely to be a requirement to define recording standards for smaller urban centres where the detailed specification developed for the urban archaeological databases would be inappropriate.

## 11.4 The functions of a national record

While the present and potential functions of the County SMR have been explored in considerable detail by various authors (e.g. Chadburn 1989, Lang and Stead 1992,) the functions of the national record have received less detailed attention. The technical environment of the national archaeological record has been described up to the late 1980s (Hart and Leech 1989) and more recently, the historical development of the national archaeological record, and the background and principles to the development of the new MONARCH record have been described in detail (Aberg and Leech 1992). Following on from these, the final section of this paper suggests some of the domains which are most efficiently handled through a national record. These, in conjunction with the well documented planning functions of SMRs in local government highlight the advantages of the extended national record being created.

### 11.4.1 Consistency and the national overview

Notwithstanding the potential for greater co-ordination of recording standards amongst SMRs, (RCHM (England) 1993a, 1993b), the provision of a consistent national overview of heritage data is a primary function of the national record. The ability to provide summary information at a national level is a service desired by almost all recording bodies. This is, of course, also a basic requirement of strategic reviews such as the Monuments Protection Programme, which has been discussed above.

Ideally, all inputs to the national record would adhere to a common standard. However, regardless of the format in which information is received, this can be compiled (or re-compiled) to a consistent format and standard and be provided as a "one stop" enquiry service. For enquirers needing more detailed information on cross-county projects (for example, that held by County SMRs), this could also provide an index to locally held information.

### 11.4.2 Maintaining standards

The role for the Commission of setting and monitoring standards for records systems has been established, and it has recently published, in conjunction with the Association of County Archaeological Officers a data standard for the extended national archaeological record (RCHM (England) 1993b). Standardisation is by no means universally accepted as a desirable goal (e.g. the "Meta Data school"), though it is an achievable objective, providing sufficient

co-operation. is forthcoming. The alternative approach — providing information sets on the structure and content of databases to achieve translation from one to another (meta-databases) — seems to offer less potential. The development of standards will encourage more careful thought and investment in database design, even though total compliance may not be achieved, while meta databases seem more likely to encourage a *laissez-faire* attitude. However, the meta database approach still requires sufficient communality of content to relate databases to one another, and in England, this is unlikely to happen without some degree of centralised management. Adherence to standards offers the means to establish core compatibility in both the structure *and* scope of recording.

#### 11.4.3 Condition monitoring

One of the most significant functions which almost all organisations have failed to encompass systematically is the monitoring of rates of attrition and condition of the archaeological resource through time. An ability to determine how many and what types of site are lost, damaged or vulnerable and what the main sources of threat are should be an important component in strategic planning at both local and national levels. The data collection to achieve this can be gathered in part through the local government development control process, and the reports of the English Heritage field monument wardens and inspectors but a system of regular monitoring at a local level, similar to the role of the English Heritage field monument wardens for scheduled ancient monuments would be a considerable asset. On a voluntary basis, this is already being operated by some Counties, providing an economical means to regularly update information. If fed into the national database, this could provide the basis for monitoring medium to long term trends, and should assist policy development in both the local and national spheres.

#### 11.4.4 Information on statutory protected sites

One of the areas which has spurred considerable IT investment is the servicing of statutory functions. This has been particularly true of English Heritage and the record of scheduled monuments (RSM), and the provision of support systems for the casework handled by the inspectors and their staff. However, access to core information by the public is not currently facilitated, partly because of the constraints of the building in which the Headquarters of English Heritage is based. With the Commission's move to its new Swindon Headquarters, and dedicated facilities for public access, this would afford an opportunity to create a central location for public access to a complete set of statutory designations — scheduled monuments and other monuments of national importance, listed buildings and historic wreck sites (in addition to its other extensive holdings of information and archives).

#### 11.4.5 Thematic recording

There is the capacity within a national record to develop the database as a record of breadth (or where required, depth) along particular thematic lines. This has the attraction of

being able to focus resources to satisfy particular needs, and to be responsive to these at relatively short notice. An example would be a project under current consideration by the NAR to enhance its records of Roman and Anglo-Saxon burials. This would be of immense use as a comparative source of information for planning and research purposes, whether compiled as a definitive or illustrative record reflecting the state of knowledge at a point in time.

#### 11.4.6 National and regional research priorities

The recording cycle for the heritage data set must incorporate a phase of analysis, synthesis and understanding if the activity is to be raised far above the level of "stamp collecting". The potential for the academic use of data has frequently been alluded to and yet despite the advances made in the quality of available information, it is still under-utilised by external academic organisations. While there is considerable potential in co-operative efforts between the SMRs, the NAR and universities, this has yet to be realised. Until this can be moved forward, this is a responsibility which must also be actively pursued by the participants within the ENAR.

Beyond individual research, the use of the resource to guide and define national research priorities is clearly an area of importance. Integrating these within the framework of developer funded archaeology will not be easy, and will require considerable re-thinking of the purpose and scale of fieldwork, and probably also of the framework within which most field archaeology is conducted. A national record should also be well placed to identify priorities for regional research, which, as we have seen above, is often given a low priority within local government. An area worth exploring to produce regional strategy documents would be to combine the skills and resources of local authorities, the NAR and the Universities. This could, potentially, be co-ordinated through the Commission.

#### 11.4.7 Archaeology and national mapping

Since 1983 the RCHME has taken over responsibility for advising the Ordnance Survey on the depiction of antiquities on maps. Despite the increased commercial environment under which the Ordnance Survey is operating, the market for such information appears to be extensive. In addition to its responsibilities to the OS, the Commission is currently reassessing its requirements for handling spatial information, and will be exploring the possibility of digital mapping and Geographical Information Systems as part of this process.

There is currently considerable interest in the possibilities of using GIS in SMRs as well, and assuming the costs of the technology and data supply follow the general trends in the IT industry over the last decade, there will come a time in the next ten years when few of the existing text database users can *not* afford to move to a spatial interface. While it would be premature to consider the extent of technical assistance the Commission may be able to offer to other bodies in this area, the relatively high costs of capturing specialist data sets (such as heritage data) make it particularly desirable that standards and information exchange

should be adhered to wherever possible. In view of its close relationship with the Ordnance Survey, and experience of handling digital information (including that captured from its survey teams) a co-ordinating role for the Commission would seem appropriate.

## 11.5 Conclusion

RCHME and the SMRs have a common concern with the collection, verification, ordering and storage of information relating to the broad archaeological domain (including standing buildings). While the English model of an extended national database integrating record systems held nationally and locally is unusual in a European context, this model offers many positive benefits. However, the strengths of this approach have not yet been harnessed to best effect, partly because they have not long been in place, and partly because the objectives — and hence the recording interests — of the national and local records have not always been articulated with sufficient clarity. This paper offers certain pointers as to where the respective functions of these bodies lie, but their further definition will necessarily require an evolutionary process. This partnership will also need to accommodate the changes being brought about in both central and local government now and in the future.

That it is desirable to see national and local records serving well-defined, complementary functions within a robust infrastructure is commonly agreed. The development of more explicit objectives, policies and priorities for information collection and information dissemination must receive greater prominence if we are to provide coherent information support for managing and understanding the nation's archaeology. As part of this process, it will be particularly important to achieve more effective integration of research priorities, particularly within the context of archaeological development control. This would appear to be not merely a concern in England, but one echoed across Europe (e.g. Hansen 1993).

There is a role for the national record in facilitating local records, which has been agreed with the Association of County Archaeological Officers. Such a role should be, essentially, a co-operative partnership, and it seems likely the need for this arrangement will continue. The support for local SMRs in fulfilment of the national "lead role" is now being developed through a number of initiatives by the Commission, including data exchange, support for SMR/NAR enhancement projects, training in various aspects of survey and recording work and the production of a dedicated software application for SMRs. This may be thought of as heralding a "third phase" of SMR development. The first saw the largely independent initiatives in local government, to create SMRs starting with the Oxfordshire SMR in the 1960s, the second the race to computerise and the era of curatorial archaeology, supported by the Department of the Environment in the late 1970s and English Heritage, during the 1980s. This third phase should see the development of relational databases in most SMRs, the development of more consistent standards and the development of spatial data handling, and the possibilities offered by the integrated manipulation of disparate data sets. Perhaps this

is the logical progression from the previous initiatives, which, given good will and co-operation on all sides, should see the limited resources available for the recording work used to best effect.

This discussion has explored the rationale for the present arrangements to collect and manage the national heritage information set. While there are important objectives defined during the 1980s which have yet to be achieved, the present model of the Extended National Archaeological Record is a sound platform from which to build, and a model which should prove sufficiently flexible to incorporate change. It has become a cliché to suggest change provides an opportunity rather than a threat. Nonetheless, if the prize for effectively harnessing these changes is nothing more than the re-vitalisation of the role of archaeological research, then it is one which should receive our full co-operation and support.

## Bibliography

- ABERG, F. A. & R. H. LEECH 1992. "The national archaeological record for England. Past, present and future" in Larsen, C. U. (ed.) *Sites and monuments. National archaeological records*, pp. 157–169. Copenhagen.
- CLUBB, N. D. & W. D. STARTIN 1993. This volume.
- CHADBURN, A. 1989. "Computerised county sites and monuments records in England", in Rahtz, S. & J. Richards (eds) *Computer applications and quantitative methods in archaeology 1989*, pp. 9–17. British Archaeological Reports International Series 548, Oxford.
- DARVILL, T., W. D. STARTIN & A. SAUNDERS 1987. "A question of national importance: approaches to the evaluation of ancient monuments for the monuments protection programme in England." *Antiquity* 61: 393–408.
- DEPARTMENT OF THE ENVIRONMENT 1984. *England's archaeological resource*. HMSO, London.
- ENGLISH HERITAGE 1992. *Managing the urban archaeological resource*. English Heritage, London.
- HANSEN, J. H. 1993. "European archaeological databases: problems and prospects", in Andresen, J., T. Madsen & I. Scollar (eds) *Computing the past, Computer applications and quantitative methods in archaeology 1992*, pp. 229–237. Aarhus University Press, Aarhus.
- HART, J. & R. LEECH 1989. "The national archaeological record", in Rahtz, S. & J. Richards (eds) *Computer applications and quantitative methods in archaeology 1989*, pp. 57–67. British Archaeological Reports International Series 548, Oxford.
- LANG, N. A. R. 1990. "Sites and monuments records: some current issues", in Hughes, M. (ed.) *Sites and monuments records: some current issues*. Association of County Archaeological Officers, Hampshire (unpaginated).
- LANG, N. A. R. & S. STEAD 1992. "Sites and monuments records in England — theory and practice", in Lock, G. & J. Moffett (eds) 1992 *Computer applications and quantitative methods in archaeology 1991*, pp. 69–76. BAR International Series S577, Tempus Reparatum, Oxford.
- RCHM (ENGLAND) 1960. *A matter of time*. HMSO, London.
- RCHM (ENGLAND) 1985. *Royal Commission on the Historical Monuments of England Annual Review 1984–85*. HMSO, London.

RCHM (ENGLAND) 1993a. *Recording England's past: A review of national and local sites and monuments records in England.* HMSO, London.

RCHM (ENGLAND) 1993b. *Recording England's Past: A data standard for the extended national archaeological record.* HMSO, London.

N. A. R. Lang,  
Royal Commission on the Historical Monuments of Eng-  
land,  
National Monuments Record Centre  
Kemble Drive  
Swindon GB-SN2 2GZ