# Delivering Efficient Data Management

## Local Authority Archaeological Liaison

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## Abstract

During late 2008 and early 2009, each of Scotland's 16 archaeology services was visited. Prior to, or during the course of the visits, the staff responsible for maintaining either the Sites and Monuments Record (SMR) or Historic Environment Record (HER) completed a questionnaire that covered a range of issues relating to data provision, data exchange and digital data, in addition to more general topics.

The results of the fieldwork are summarised in this document, which reviews the decade since the last survey of this kind, produced in 1999 by David Baker for RCAHMS. Recommendations are made which it is hoped will facilitate better communication and more efficient practices between RCAHMS and the archaeology services.

The study and report were funded by RCAHMS.

## Acknowledgements

This survey was carried out for RCAHMS with guidance and support from the SMR Technical Working Group. Thanks are due to Rebecca Jones, Leanne McCafferty, Peter McKeague and Mike Middleton at RCAHMS and to Bruce Mann and Ian Shepherd of the SMR Technical Working Group and ALGAO: Scotland HER Forum respectively. Sadly, Ian Shepherd passed away in May 2009 and this report is dedicated to him.

Every archaeology service visited displayed great hospitality, despite the imposition that completing the questionnaire and hosting the visit represented.

## Language Used

For consistency and ease of reading, the 'RCAHMS' or 'RCAHMS database' are referred to throughout, instead of the dual use of 'RCAHMS' and 'NMRS'.

ALGAO – Association of Local Government Archaeology Officers

ARIA – Association of Regional and Islands Archaeologists

HBSMR – Historic Buildings, Sites and Monuments Record, 'off the shelf' database software.

HER – Historic Environment Record

SMR – Sites and Monuments Record

SMR TWG – SMR Technical Working Group

## Executive Summary

This report provides an update on the *Assessment of Scotland's Sites and Monuments Records for RCAHMS,* produced in 1999 and known as the 'Baker Report'. It also reviews achievements made during the last decade and assesses where co-operation between RCAHMS and Scotland's Archaeology services can develop. Areas are identified where work can be done to result in more efficient working practices for all.

The varied roles of RCAHMS and the archaeology services are not covered by this report. This document looks at the data in SMRs/HERs and within the RCAHMS database and does not focus on how disseminated data is used. The concern is with an efficient use of resources that will result in local and national datasets that are fit for any purpose, for example to help inform the planning process within the Scottish Government's e-planning portal. This ethos is reflected in Scottish Government publications, such as *One Scotland - One Geography.*

In undertaking research, 16 archaeology services, which together serve each of Scotland's 32 Councils, were visited and staff completed a questionnaire that covered a range of topics. The work was undertaken concurrently with a further set of surveys looking at polygonised historic environment data and an assessment of the IT capabilities of the Scottish SMRs/HERs.

The change in provision of SMRs/HERs since the *Baker Report* was produced demonstrates the changeable nature of this sector. Almost all services visited voiced concerns over budget cuts and increasing demands on their resources.

The survey demonstrates that all local authority archaeology services upgrade their data to improve the information available and to reflect the dynamic nature of archaeological knowledge. As data held by local authorities is used to inform planning decisions, it is important that it is as comprehensive as possible. The majority of databases also contain enhanced information, such as jargon-free summary texts, opening up records to wider audiences.

Records have also been opened up by their provision online and through reporting projects which distribute archaeological literature via the internet. Most records also reach recognised standards and benchmarks for heritage data.

Data exchange between the RCAHMS database and SMRs/HERs currently exists in an informal manner. This report recommends a formalising of some aspects of this work and the development of current practices. It also outlines how valid issues relating to RCAHMS data that were raised during the survey should be addressed.

The advances and increase in provision of digital data are covered briefly by this document. The SMR/HER survey demonstrated that all make efforts to store their data using the best practices possible. Work being undertaken by RCAHMS in digital data should be communicated for the benefit of all.

The recommendations made in the following pages require good working relationships between RCAHMS and local authority services with consistent levels of communication and a desire by all to operate in a manner designed to achieve mutual benefits with maximum efficiency.

## Recommendations

1. A series of Service Level Agreements should be developed between local authority services and RCAHMS. These documents should outline data flow and co-operation between the organisations, building on the *Statement of Co-operation between the Royal Commission on the Ancient and Historical Monuments of Scotland and the Scottish Sites and Monuments Records* (RCAHMS & ARIA 2005).

2. Work is required to address double-handling of data, especially in the recording of bibliographic references. In the short-term, parties should make efforts to inform the relevant local or national records prior to undertaking a bibliographic referencing project.

3. RCAHMS and local authority services should continue to exchange data, or commence an exchange of data when this has not happened (e.g. Local authority data visible within RCAHMS). In the longer term, methods for more efficient means of converging datasets should be explored.

4. When developing project plans for work that have impacts at local and national levels, documentation and requests from RCAHMS should be drafted in an appropriate manner, reflecting the operational frameworks in which local authority services operate. There must be demonstrable benefits for Council and justifiable imperatives to drive forward business cases. In addition, RCAHMS should ensure that initiatives such as INSPIRE and *One Scotland – One Geography* are communicated appropriately throughout the sector.

5. RCAHMS should keep archaeology services informed of progress towards Trusted Digital Repository (TDR) status, especially relating to any implications for the digital data held by archaeology services. RCAHMS should provide advice and guidance on digital data and its storage, while ensuring that its own status as the appropriate archival repository is maintained.

6. RCAHMS should undertake an audit of its database and develop a project plan for data cleaning, upgrade and enhancement.

7. RCAHMS should ensure that developments, such as the thesaurus of monument types, are appropriately communicated and that there is a procedure in place for receiving feedback.

8. Local authority services should work with RCAHMS to develop a Scottish-specific set of benchmarks that reflect current Scottish Government initiatives and drivers.

9. Local authority services should make RCAHMS aware of data upgrades and enhancements taking place within local datasets.

# A Introduction

## 1 The Local Authority Archaeology Liaison Project

In 1998, David Baker carried out an assessment of Scotland's Sites and Monuments Records (Baker 1999). Informally referred to as 'The Baker Report', its publication a decade ago created the impetus for co-operation between the SMRs and RCAHMS (see Background to this Report for more details). Since the Baker Report was published, there have been changes in the provision of SMRs across Scotland. In addition, tremendous advances have been made in the technologies available to local and central government.

This report provides a necessary update on some areas of the Baker Report. It also highlights the outcomes of ten years of joint working and where future opportunities may be exploited. In reviewing areas of co-operation, assessments can be made of where improvements are required and efficiencies achieved for all parties.

This report should place those responsible for maintaining Sites and Monuments Records and Historic Environment Records (SMRs/HERs) and the RCAHMS database in a position to instigate shared working when it is productive and appropriate, especially in the areas of data exchange, data enhancement and digital data.

For a summary of the role and purpose of the RCAHMS and of SMRs/HERs, refer to the *Statement of Co-operation.* This report is not concerned with how data is used by organisations, but rather with ensuring it is fit for any purpose, from e-planning to family history research - thus providing Scotland with accurate heritage information of the best possible quality.

## 2 Background to this Report

RCAHMS commissioned David Baker to assess Scotland's SMRs and to make recommendations for the future. In 2000, the SMR Forum was established to implement the resulting recommendations.

Following the formation of the Forum, a *Report of the Working Group on the Operational Roles of SMRs* was produced in 2001 (Flower *et al 2001* with a summary in 2003) and in October 2005 the *Statement of Co-operation between the Royal Commission on the Ancient and Historical Monuments of Scotland and the Scottish Sites and Monuments Records* was published by RCAHMS and the Association of Regional and Islands Archaeologists (ARIA).

The current study, commissioned by RCAHMS in 2008 and produced in 2009, aims to develop areas of shared working, as defined within the *Statement of Co-operation.* Further studies, carried out concurrently and funded by Historic Scotland, looked at the needs for polygonised data in the Scottish Historic Environment sector and at the IT capabilities of the Scottish SMRs. For further details on this work, see *The Shape of Things to Come: What are the needs for Scottish Polygonised Historic Environment Data,* and *Inspired: An Assessment of the IT capabilities of Scottish SMRs* (Middleton 2009 a and b).

## 3 Format of this report

This report deals primarily with the data held within SMRs/HERs. The varying remits of Scotland's archaeological services have not been dealt with except in passing, when relating to data enhancement for specific purposes.

No attempt has been made to 'score' either individual services or operational roles, unlike Baker 1999, Flower *et al* 2001. Each archaeology service operates within a unique corporate framework which does not allow for the existence of arbitrary measurements taken across a discipline; scoring would not reflect these circumstances. This situation was made clear during survey fieldwork when a number of services stated that their primary responsibilities are to their Councils and local taxpayers.

In a similar vein, recommendations that require significant change across the public sector, e.g. making SMRs/HERs statutory, are not made. In order that practical recommendations can be made, which can result in demonstrable outcomes, this report assumes that a situation similar to the *status quo* will prevail.

This report does not deal with data held by RCAHMS, except where relating to issues of data exchange between RCAHMS and the SMRs/HERs.

## 4 The Current Framework

Visits to each SMR/HER were undertaken between October 2008 and February 2009. During the course of this work, each of Scotland's 32 Councils had access to an SMR or HER maintained by at least one professional archaeologist – the first time this arrangement had existed.

There is a distinction between an 'SMR' and an 'HER'. The terminology is discussed within the *Statement of Co-operation* and in a report by Gillian Chitty for ALGAO and English Heritage (Chitty 2002). In general, an 'SMR' traditionally held archaeological data which was used to inform planning decisions. The term 'HER' reflects a more holistic approach, with the body holding data, for example on the built environment, which is used for a wider range of purposes and is not limited to archaeological information.

Four bodies within Scotland class themselves as HERs, with the remainder operating SMRs. In practice, there is little difference between the records. For example, all records (SMRs and HERs) hold data on the built environment in addition to archaeological data.

The arrangement of Scotland's SMRs/HERs during the course of visits was as follows:

- SMR/HER held by a Council archaeology service working exclusively with its own administrative area: Aberdeen City, City of Edinburgh, Dumfries and Galloway, Falkirk, Fife, Highland, Orkney Islands, Scottish Borders, Western Isles.
- SMR/HER held by a Council archaeology service working within its own administrative area and providing a service to a neighbouring Council: Aberdeenshire (Angus and Moray), East Lothian (Midlothian), Stirling (Clackmannanshire).
- SMR/HER held by a trust that serves one Council: Perth and Kinross, Shetland.
- SMR held by an organisation providing a service to twelve Councils: West of Scotland Archaeology Service.
- SMR/HER held by a commercial archaeological consultant and contractor, providing an archaeology service to Councils: Rathmell Archaeology Ltd (Dundee City, East Dunbartonshire).

See Figure 1 below.

In 1999, when the Baker Report was issued, there were 13 records serving 27 Councils with another three records listed as 'potential' SMRs. The different provision over the last decade demonstrates the changeable nature of these services.

The existence of a commercial consultant offering a service to Councils is a recent development and is the first time this arrangement has occurred in Scotland.

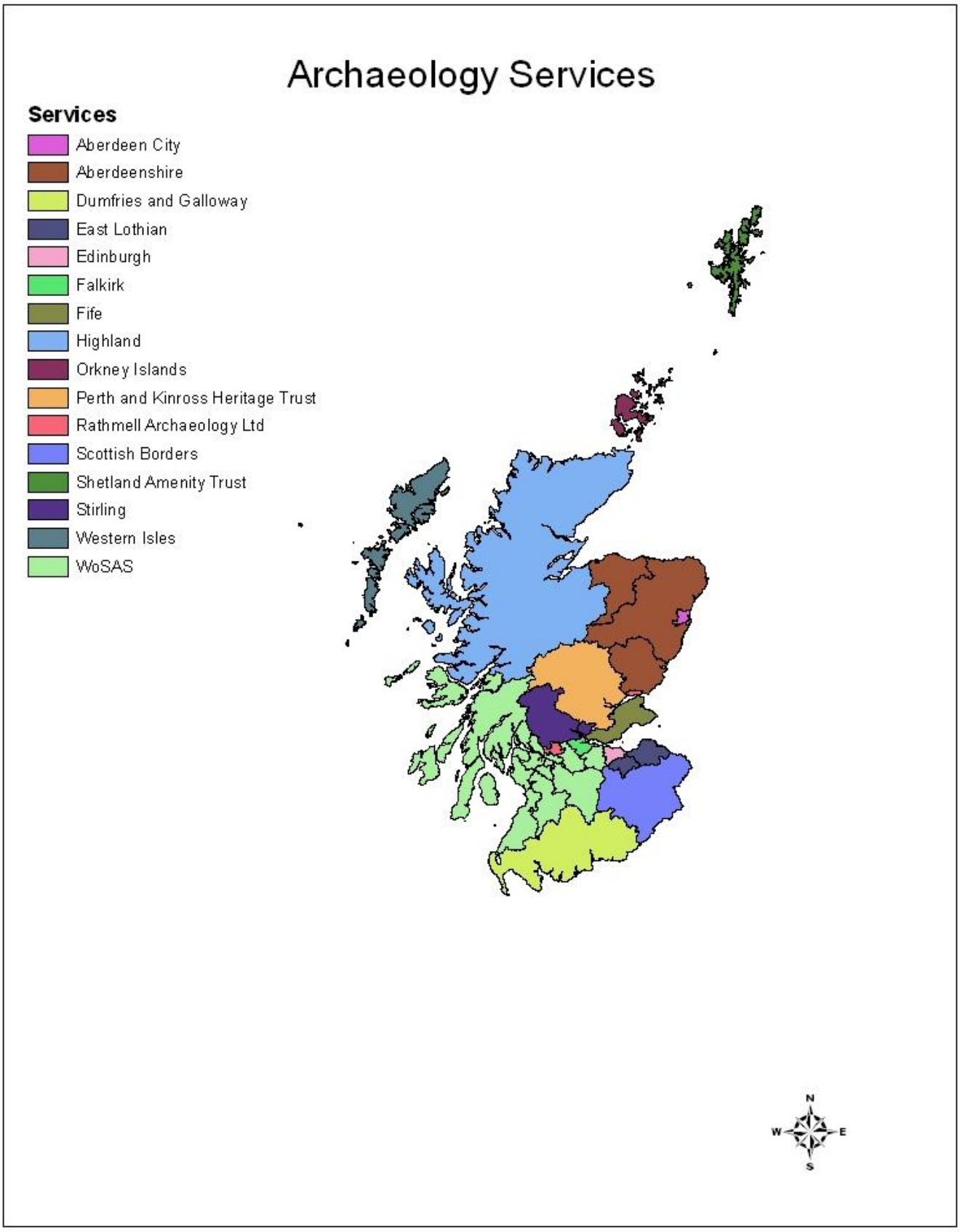


Figure 1: Provision of archaeology services by Council area, at March 2009.

## B Reviewing a Decade of Co-operation in Data Management

This report is an opportunity to recognise the work that has taken place across the sector to improve the provision of data. An awareness of the data upgrades and enhancements that have taken place is also a key factor in identifying any double-handling of data and preventing duplication of effort in future, and ensuring efficient work- and data-flows between RCAHMS and SMRs/HERs.

A distinction has been made between data upgrade and data enhancement. For the purposes of this report, upgrade refers to cleaning and improvement of existing data, e.g. improving and amending grid references. Enhancement refers to significant input of new data, for example through the writing of summary site descriptions for non-specialist audiences or as a result of fieldwork projects.

Within archaeology services, upgrades and enhancements are the result of a number of factors. Most services carry out such work on a rolling, ad-hoc basis as new information is accessed, while some have also received funding from Historic Scotland to carry out specific SMR enhancement projects. Two services also update records on a thematic basis.

## 1) Software Platforms

Each local authority service visited holds its data in one or more databases, most of which are integrated with a Geographic Information System.

Nine services use HBSMR database software, a product developed by ExeGesis Spatial Data Management.

| Service | Database | GIS |
|---|---|---|
| Aberdeen City | Access 2003 & Attribute table in GIS | GGP, ArcGIS to be introduced 2008-9 |
| Aberdeenshire, Angus and Moray | Access 97 – SQL Forthcoming | GGP – Smallworld forthcoming |
| Comhairle nan Eilean Siar | HBSMR v3 | MapInfo 8.5 |
| Dumfries and Galloway | HBSMR v 3.57 | MapInfo 9.5 |
| East Lothian and Midlothian | HBSMR v3.55 | ArcGIS 9.1 |
| City of Edinburgh | HBSMR | ArcGIS 9.0 |
| Falkirk | Vernon CMS | ArcGIS |
| Fife | HBSMR | ArcGIS 9.3 |
| Highland | HBSMR v3.57 | ArcGIS 9.3 |
| Orkney Islands | MySQL | - |
| Perth and Kinross Heritage Trust | HBSMR v3.57 | ArcView 9.2 |
| Rathmell Archaeology Ltd | Dundee City – HBSMR | Dundee City – ArcGIS 9.2 |
| Scottish Borders | Oracle (hosted by RCAHMS) | ArcGIS 9.2 |
| Shetland Amenity Trust | HBSMR | ArcGIS 9 |
| Stirling and Clackmannanshire | MS SQL Server 2000 | None – use a web interface provided by Forth Valley GIS |
| West of Scotland Archaeology Service | MS Access 2000/2003 – 2007 Forthcoming | ArcGIS 9.3 |

## 2 Data Upgrades and Enhancements

Eleven records were developed from an initial download of RCAHMS data. Before computerised data was available, others were developed from OS field record cards and the RCAHMS inventories (both subsequently computerised by RCAHMS), museum records, and field survey.

The updating of an SMR/HER database is a core part of keeping such a record. Questions on data upgrade and enhancement were asked in order to gauge how much of this work had gone on, the areas in which there had been activity and to discover if any conventions had developed.

Fifteen services regularly input new sites into their databases. When information is added depends on the workflows of the services, with answers ranging from 'daily' to 'minimum of once a year'.

**Locational Data**

Thirteen SMRs/HERs contain updated locational data. Upgraded data has come from a number of sources, including mapping and field checking. Nine services will routinely record the source of updated information with one service noting some changes, depending on the nature of the data.

**Naming Conventions and Site Classifications**

Most services do not change the names of sites in their databases. It is more likely that alternative, or additional, names are recorded.

When new sites are added to a database the most common naming convention, used by thirteen services, is the nearest named geographical entity on the map. Two services noted that on occasion a local name, not cited on the OS map, may be used.

It is more common for a site's classification to change, following research or a field visit. This change is always recorded by 13 services. The alteration is recorded in three ways, depending on database systems used; as free text in notes fields; as multiple site 'types'; or in an automatic audit trail or metadata.

**Summary Texts**

Thirteen services have written summary texts - brief descriptions of sites recorded in their database, usually written for online delivery and non-specialist audiences. Some services have no standardised approach to this, carrying out this work on an ad hoc basis, while others have received funding for development of online resources or have absorbed data supplied by local groups.

**Other Enhancements**

Fourteen services regularly (at least annually) record reference information from a range of sources. Nine services record references to *Discovery and Excavation in Scotland*, despite this data being included in the annual download from RCAHMS. Other references commonly recorded include local history publications, relevant articles from the press and the *Proceedings of the Society of Antiquaries of Scotland.*

## 3 Data Standards

For a discussion of RCAHMS data standards refer to Section B5 below.

MIDAS Heritage is a data standard that offers a framework for Historic Environment Records (FISH 2007). The common format it advocates is designed to facilitate the migration and exchange of data and to allow relevant new information systems to develop.

Ten SMR/HER databases meet MIDAS Heritage standards in the recording of sites (monuments). In the recording of Events data, eleven meet MIDAS standards. A further service is working towards MIDAS Heritage compliance. MIDAS compliance also means that the record fits the structure of the CIDOC Conceptual Reference Model (CRM), an international semantic framework for cultural heritage information.

Four services work to, or towards, best practice guidelines set by *Informing the Future of the Past* (Gilman & Newman 2007). Other standards met by SMR/HER databases include Dublin Core and the benchmarks set by English Heritage for HERs.

**Thesauri**

Fifteen services have a thesaurus or word list in place. These have been developed by a range of means; nine services have access to the thesaurus developed by ExeGesis for HBSMR, which is the English Heritage Thesaurus of Monument Types (TMT) with Scottish candidate terms submitted when required.

Six services reported having used the thesaurus developed by ARIA and RCAHMS, based on the English Heritage TMT, and launched in 2007. Of the users, two commented that the RCAHMS thesaurus did not contain a sufficiently broad range of terms. Two services indicated that they would be willing to use the RCAHMS thesaurus, instead of the English Heritage one in current use, if it were made available through HBSMR.

## 4 Sharing and Dissemination

**Online**

The *Statement of Co-operation* identified online resources as an 'Area of Co-operation'. Questions on online delivery of SMR/HER data were asked to gain an understanding of the volume of data currently available via the internet.

The questionnaire asked whether a service offered an online dataset through a method other than PASTMAP. Eight of the sixteen services deliver their data online through searchable databases. Responses to the questionnaire demonstrate that there is general enthusiasm across services for delivery of data online, a reflection of the view that data – especially that held by local authorities – belongs to the public.

The data being delivered online ranges from almost entire datasets – minus commercially sensitive material – to a reduced set of fields delivering summary information only. A number of online

SMRs/HERs also deliver photographs, mapping and links to related documents and websites, such as Canmore. Views on what information should be delivered online vary, reflecting Council policies on data provision and a wish to mediate and interpret data for non-professionals.

**OASIS and ASPIRE**

OASIS is an acronym of 'Online AccesS to the Index of archaeological investigationS'. The OASIS (Scotland) Project was launched online in September 2006. A partnership between the public and private sectors, OASIS was designed to streamline reporting of developer-funded archaeological fieldwork to the Scottish SMRs/HERs and RCAHMS. The scheme is now used for reporting a range of archaeological work. Data captured via OASIS is made available through online resources, for example the Archaeology Data Service's ArchSearch catalogue, SMRs/HERs and PASTMAP. HS, RCAHMS and ALGAO:Scotland are 'strategic partners' in the OASIS project.

Thirteen services insist on its use by contractors and, of the three who do not, all are considering or intending on doing so.

Usability of OASIS was addressed by enquiring about backlogs of records requiring validation by the SMR/HER. Nine services had not encountered backlogs, while six reported a backlog (ranging from 16-49 records). Reasons for this vary, reflecting staffing and workflows within individual services, rather than any specific technical issues, although one service feels strongly that as a reporting mechanism OASIS has not been a success.

Overall, responses to the questionnaire demonstrate a successful implementation of OASIS and this is reflected by 872 records in the system, of which 375 have been 'signed off'. Digital copies of many of these reports have been made available.

The ASPIRE protocol (an acronym of Archaeological Standard Protocol for Integrated Reporting of Events) was designed to standardise data generated through archaeological events, and to facilitate data flow and exchange between the public and private sectors, and towards the public. It was launched in April 2006, with a dedicated website making the ASPIRE database and other tools available for download. The SMR Technical Working Group formed part of the ASPIRE Project team, on which RCAHMS and the private sector were also represented.

ASPIRE has not been implemented as successfully as OASIS: only four services insist on its use by contractors. This may reflect technical problems with the website, but problems have also been encountered with the complexity of the database and the user interface. Despite being perceived as an application-neutral template, ASPIRE is in an MS Access format, rendering it unusable when the software is not available.

**Exchange with RCAHMS**

RCAHMS maintains informal reciprocal arrangements with services regarding the free exchange of data. Downloads from the RCAHMS database are sent out on an annual basis, or when requested. In February 2009, each service was sent a download for their area.

RCAHMS receives data downloads from services, and seven have provided data to RCAHMS. Due to pressure on resources, it has not been possible to integrate these datasets into the RCAHMS database, and although the data are made available though the internal RCAHMS GIS, this has resulted in two services ceasing to supply RCAHMS with their data.

Four services recorded that they inform RCAHMS of what data cleaning or enhancement has taken place within their datasets. This occurs through an ad hoc arrangement or via the provision of downloads.

**Concordance**

Addressing two of the *Statement of Co-operation's* aims on online resources - 'To create links between records' and 'To develop means of searching multiple resources' – the survey enquired whether unique identifiers used within the RCAHMS database were recorded within SMRs/HERs.

There are ten services which have systems with a field for recording the RCAHMS numlink (an auto-generated numerical Unique Identifier (UID)) and 15 that have a field for the recording of the RCAHMS map and site number (1:10,000 map sheet and auto-generated number). In only one case is there no provision within a database for the recording of either numlink or map/site number.

Of the SMRs/HERs that have an online presence, two enable their users to navigate from a site record through to the relevant Canmore page. This makes checking records efficient for the user and benefits RCAHMS by increasing web traffic. At present, users of Canmore cannot navigate directly to an SMR/HER online record, but this will be addressed in the future (for more details see Section D1 below).

The RCAHMS database contains a field for recording an 'SMR Ref'; this field has not been consistently used – at the time of writing around eight per cent of records contained a reference. Many of these links are now obsolete, as six SMRs/HERs have changed their numbering systems at some point. Work to review this linking and improve cross-referencing is underway within RCAHMS, who are implementing a module to house external links in 2009-10 (see Section D1 below).

## 5 Use of RCAHMS data

**Incorporation**

Twelve services incorporate RCAHMS data either wholly or partially into their existing databases. Most report that it is a time-consuming and difficult process, as in some cases data is incorporated on a site-by-site basis.

Five services hold RCAHMS data as a GIS layer.

**RCAHMS and Data Standards**

Four services suggested that MIDAS compliance, or mapping to HBSMR fields, would make downloads from RCAHMS more useful.

The RCAHMS database is largely, but not wholly, MIDAS compliant. RCAHMS is undertaking a programme of database developments to bring it in line with standards such as MIDAS Heritage and

ISAD(G), but progress has been dependent on availability of resources. Therefore, movement towards MIDAS compliance has been a progressive process.

For example, until 2008 there was a lack of division between site records and those which referred to archaeological events within the RCAHMS dataset. Four services break down data from RCAHMS into the relevant event types for recording. RCAHMS now has an events table in place, but addressing the problem of legacy data - that already contained within the database - will take considerable time and resources.

**Thesauri**

The lack of use of the RCAHMS Scottish thesaurus within archaeology services is a general indication that more work is required to publicise developments.

With regard to the RCAHMS thesaurus, implemented by RCAHMS in 2007, some awareness-raising should be carried out and further feedback on it obtained. In particular, all should be made aware that there is the facility to submit candidate terms to the thesaurus, which will be adopted and used in the RCAHMS database where appropriate. There is a need within the thesaurus to acknowledge and manage regionally preferred terms against a national terminology.

**RCAHMS and Data Quality**

Responses to the questionnaire demonstrated that when dealing with RCAHMS downloads, data quality appears to be of more concern than data standards, i.e. the factual information entered into the database, rather than the format or structure of the database itself. The process of incorporating data is made longer by the time then required to identify, clean or extract erroneous data. In the absence of a complete exchange process (see Section B4 above), this work has to be repeated whenever RCAHMS data is incorporated into an SMR/HER.

Four particular issues have been encountered by services:

- Inaccurate grid references and point data – the most significant issue, this was reported by nine services.
- Site records with no additional information.
- A lack of appropriate metadata.
- Duplicate records.

Each of the points listed above reflect in some way the methods by which the RCAHMS database has developed; absorbing information from a number of sources and input by many staff members, often during specific short term projects.

## C Digital Data

During the last decade, the impact of operating in an increasingly digital environment has been felt. Digital data – a subject that required one paragraph in the Baker Report – has introduced issues of storage and management that need to be considered by all.

In the questionnaire a number of general questions were asked to gauge attitudes towards digital data across services, what digital material is held by SMRs/HERs, and to gain an understanding of what policies and systems are in use to maintain this type of material. This information will help inform future developments in joint working (see Section D1 below).

Six services stated that internally and externally generated digital data are held as a tool for reference and record enhancement, or that the SMR/HER is not a final repository, or a suitable recognised place of deposit; this demonstrates that attitudes towards primary digital archive are similar to those regarding paper- or photographic- based collections. As a result, there are no formal digital data archiving standards in use.

Most services hold digital images and copies of reports. There is also some geophysical data and graphic material. A wide range of formats and file types are kept.

Every service has a procedure for backing up their data. A back-up on an external hard drive, held within the same building, can be identified as the minimum standard maintained. There is also some awareness of methods required in maintaining digital data; one service mentioned refreshing digital data onto new storage media, while another commented on the danger of using degradable media to store data.

Procedures for the maintenance of digital data vary across services. The mounting requirement for digital storage can be seen in comments made by two services regarding an increasing shortage or lack of server space.

The general impression gained as a result of the survey is that all services are currently managing their digital data in the most appropriate way, according to their circumstances.

## D Future Opportunities

The following section discusses ways in which curators of SMRs/HERs and the RCAHMS database can develop in the spirit of *The Statement of Co-operation.* This should be done in a pragmatic manner, acknowledging the conditions in which all parties operate.

National initiatives and requests from central organisations will fail at the outset unless there is a justifiable imperative or business case. When project planning – whether for new developments or the introduction of standards – documentation, training and instructions must be clear and concise. Benefits to Councils, which can then be used by local authority staff to justify actions, must be clearly demonstrated.

## 1 RCAHMS and SMRs/HERS

**Communication**

It is essential that communication between RCAHMS and archaeology services, especially regarding their data, should be improved. Efforts must be made to ensure that all parties are aware of what data upgrades and enhancements are taking place: the SMR Technical Working Group, ALGAO: Scotland HER Forum and the SMR Forum are groups for facilitating this.

Those who maintain SMR/HER datasets should have a dedicated contact within RCAHMS who can answer initial queries and direct further requests for information.

**Data Exchange and Provision**

***Concordance***

A project underway at RCAHMS will replace the existing 'SMR Ref' field in the database with external cross references. The replacement will be a field that can hold a variety of references, including web addresses. This will mean RCAHMS staff members – and CANMORE users once linked and when permissions allow – can navigate to external SMR/HER web pages.

This will benefit SMRs/HERs by identifying the records common to both organisations. Linking in this way is faster than the lengthy integration process used at the moment. It will also allow quick checking, by internal and external users, of both relevant datasets for a site record. While the key driver for this is creating an efficient means of checking records, there is also potential for this development to increase web traffic in both directions.

A pilot project linking RCAHMS records to external web addresses will be initiated by the end of 2009. Progress will be reported to the SMR Technical Working Group.

***Digital Data***

There are a number of opportunities for joint working between RCAHMS and archaeology services regarding digital data.

RCAHMS is working towards Trusted Digital Repository (TDR) status. This archival status, recognised world-wide, requires meeting a range of rigorous developing standards in order to ingest, preserve

and disseminate digital data. RCAHMS should endeavour to keep SMRs/HERs informed as to progress towards TDR status and its implications for long term digital data curation.

RCAHMS should also make its experience in dealing with digital data available in the form of advice and guidance on storage of digital material within SMRs/HERs, while ensuring that its own status as the appropriate archival repository and recognised place of deposit is maintained.

***Addressing double-handling***

Double-handling of data needs to be addressed as an immediate concern. Nine SMRs/HERs record references to *Discovery and Excavation in Scotland (DES)* entries; one noted that this dataset is included in the RCAHMS download. Work is needed to discover why this is occurring and to establish the way in which DES entries are recorded and used across the sector. A member of Archaeology Scotland staff, who is also the *DES* editor, is tasked with checking all entries coming into *DES* and inputting these into Canmore.

References to other journals and publications, including annual editions such as the *Proceedings of the Society of Antiquaries of Scotland (PSAS),* are also recorded by both RCAHMS and most services. There is an agreement in place between RCAHMS and The Society of Antiquaries of Scotland to record summary text from *PSAS* in the RCAHMS database, and work is ongoing to look at resources required to continue this.

At present, no mechanism exists to prevent double-handling of data arising from the bibliographic recording of any source other than *DES*. This should be addressed prior to a bibliographic reference recording project being undertaken by any party.

***RCAHMS data quality***

The time taken to incorporate RCAHMS downloads into SMRs/HERs is increased because problematic records need to be filtered. For discussion of this, see Section B5 above.

The download process means that users of SMRs/HERs are some of the heaviest users of data from RCAHMS. They are thus well placed to identify areas in which improvement needs to be made. Data queries encountered within SMRs/HERs will also be met by other users of RCAHMS downloads and Canmore.

As an initial step, RCAHMS needs to raise awareness (with the SMR/HER community and wider) of the development, formation and purposes of its database, and how these factors have combined to create the current dataset.

More work is required to ascertain the degree of data cleaning which may be required. A data audit within RCAHMS is recommended. A model for work of this type currently exists, developed by the Data Standards Unit at English Heritage.

Ingest must also be addressed – see below – to prevent a cyclical flow of problematic data.

***RCAHMS and data ingest***

There is currently no procedure in place for ingest of SMR/HER data into the RCAHMS database (see Section B3 above). Linking online resources via concordance tables (see above) is a step towards addressing this issue but is only of immediate benefit to the eight services who mount their data on the internet. A method for connecting all datasets, at local and national level, could be explored.

The development of an ingest procedure for SMR/HER data would prevent cyclical flow of problematic information and update the RCAHMS dataset with work carried out at a local level. A harmonised dataset would comply with a number of 'areas of co-operation' and current demands for efficiency savings across all levels of Government.

Duplication of effort would also be prevented as updated or enhanced data created at either local or national level would be available to all, demonstrating a movement towards shared working. Scoping methods to ingest SMR/HER data should be carried out by RCAHMS.

At present, data supplied to RCAHMS is made available to its staff by provision on internal GIS. In the short- to medium-term, all services should be advised of this and invited to submit their data for use in a similar way.

**Service Level Agreements**

The development of a series of Service Level Agreements (SLAs) between RCAHMS and archaeology services is recommended. SLAs currently only exist between RCAHMS and contributors to PASTMAP.

Development of SLAs would address a number of issues, outline roles and tackle any perception of duplication of effort in a more formal and precise way than was possible through the terms of the *Statement of Co-operation.* The SLAs could be expanded to provide tangible evidence of shared working practices.

These documents would also set out what services could expect from RCAHMS in terms of data supply and additional facilities, such as access to photographic images, and what RCAHMS can expect from archaeology services. This is an opportune time, as issues of licensing (of digital images for example) are currently being reviewed and renewed within RCAHMS, and informal arrangements currently in existence will require formalising. Data exchange could also be addressed; provisions that currently exist for supply to PASTMAP could be extended to cover use of SMR/HER data internally within RCAHMS and linking via concordance tables.

## 2 SMR Technical Working Group

Some issues that were raised during the course of survey visits fall outwith the immediate remit of RCAHMS. In particular, it is appropriate that the following be dealt with by the SMR Technical Working Group, with input from RCAHMS when required.

***HBSMR***

The development of an import routine for RCAHMS downloads, for the nine services that use HBSMR software, was mentioned in the questionnaire by four services. There is no resource within RCAHMS to do this; however, addressing issues of MIDAS compliance (see Section B5 above) will go

some way. It should be noted that mapping to MIDAS heritage terms would be affected by changes to the RCAHMS data model following any internal developments.

If there is sufficient interest, adopting the Scottish thesaurus for use within HBSMR should be discussed. The development of the English Heritage Knowledge Organisation System (EHKOS), an online ontology comprising monument and historical information and terms, should also be explored.

***OASIS and ASPIRE***

There is a demonstrated interest in continued use and further development of OASIS; six services expressed a desire for some additional training, with two noting that further training for contractors in their areas may be useful. Further training and communication should also aim to ensure that the current, manageable, levels of backlog do not increase.

Ensuring that training is maintained is a vital part of ensuring that momentum for OASIS continues, while developing an area of co-operation that is a proven success in both public and private sectors.

The current low use of ASPIRE is being addressed in part by members of the Technical Working Group, who are looking at integration of the data with their database software. In 2008 funds from Historic Scotland's Archaeology Programme were granted to develop an ASPIRE import/export programme for users of HBSMR.

Views expressed within the SMR/HER community and RCAHMS indicate that a pared down, simplified version of ASPIRE would attract more use. The success of OASIS shows that such products can succeed, and work to rejuvenate ASPIRE should be considered when resources become available.

# 3 PASTMAP

During the course of the questionnaire visits, PASTMAP was discussed with services which did not submit their data to the portal. As a result, agreement was reached with Stirling Council and Comhairle nan Eilean Siar to add data to PASTMAP and work is underway in negotiating data to be displayed for East Lothian and the Scottish Borders. Once databases have been upgraded and work to enhance data finished, Orkney Islands and Aberdeen City also expressed an interest in submitting data.

The increasing input to this portal from local authorities should be considered a successful example of local and national government organisations working together to create successful, useful products and efficiency savings.

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## Method Statement

Between October 2008 and February 2009, each SMR was visited. During the course of each visit, the questionnaires relating to this study and the polygonisation study, as mentioned in the executive summary, were gone through. 'Open' questions in the questionnaire allowed discussion of related matters to the SMR to arise.

The questionnaire was developed by Susan Casey, Rebecca Jones, Peter McKeague and Mike Middleton at RCAHMS and Bruce Mann of the SMR Technical Working Group. The SMR Technical Working Group provided additional guidance.

During the visits, an extract of data, a database screenshot or entity diagram and a copy of a standard brief were requested.

## Appendix 1 Summary of Responses

In most cases in the summary below, the total number of responses will be 16. When one organisation provides a service to more than one Council using different procedures the maximum number is 17. In some cases, more than one response was sought, so the number is also greater than 16.

### Data SECTION 1
### Background Information

| 1. How many site records do you have in your database? | |
|---|---|
| Less than 5000 | 4 |
| Between 5000 and 10000 | 3 |
| Between 10000 and 15000 | 3 |
| Between 15000 and 20000 | 2 |
| More than 20000 | 3 |
| To investigate | 1 |

| 2. Is there a one-to-one relationship between an HER/SMR record and a Scheduled Monument designation? |
|---|
| Yes – 3<br>No – 12<br>Did not answer -1 |

| 3. How do you define a site? (*i.e.* is any place recorded in the database a 'site') |
|---|
| • Any place recorded in the database is a site, including findspots.<br>• Site is only used when it is a 'site of' ie destroyed<br>• Any entity which is not a landscape or a placename.<br>• A place and/or a find site that can be geographically located<br>• Not every place in the database is a 'site'; Edinburgh as a whole is a 'site' as it is a landscape.<br>• No definition. 'Sites' are labelled as such in the database, but can co-exist with buildings and findspots.<br>• Depends – a structure is a building, something that can't be defined is a monument. E.g. a WWII roadblock would be classed as a monument, not a building.<br>• A site is any individual monument record in the database (be it a building, a findspot, etc.). Due to hierarchical recording the site can be defined at several levels.<br>• Any record in the database is a 'site', including find spots.<br>• Physical evidence of past human activity.<br>• Location where there are, or have been, physical remains of past human activity.<br>• No<br>• Site is where there are either visible or recorded remains. A site may comprise many elements or one depending on how they were recorded at the time (ie: a survey will number each element, whereas a scheduled site might include many elements)<br>• A site is a place (including 'site of'). Objects are held separately.<br>• Yes, including findspots. If they are accurate, findspots can be the only indication of a site. Do not typically get repeated findspots in the same area if there is no site. |

- A site to us is a Monument in the Monument, Event, Archive model. A Monument is a physical presence in the landscape, whether visible or not, still extant or not. There is a lot of detritus in the SMR which has come down to us, but we try to get around this problem by coding records as consultation triggers for our Councils – we would only code Yes, if a record implied the possible presence of real archaeology. If it is destroyed, or a photograph, or a stray find etc, it gets No. We also code type of evidence eg documentary, photograph, geophysical, direct observation etc

4. Is buildings data incorporated in your database?

Yes - 16

- If yes - what do you do with it?

- Depends on what has happened to the building (eg photographic surveys); there is no systematic entering of buildings information.
- Listed Buildings overlay, descriptions in text fields where appropriate. Used along with the archaeological data to effectively manage the historic environment.
- Improve, consolidate with listed buildings, use for consultations.
- Used to inform planning conditions and provide other information about the historic environment.
- It has come through from the RCAHMS database.
- Store it.
- Supply information to enquirers.
- It is used in exactly the same way as the archaeological data. In the future it is intended that it will also be used by the Conservation Architect.
- Some – relates to areas of interest. Not consistently built into database, e.g. listed buildings information may or may not be included.
- Projects, outreach and non commercial enquiries to HER. Development management (e.g. prompts SBRs). Conservation Section – Listed Building Consents, Conservation Areas. Index for photographic collections
- It is within the HER, but not our role to do anything with it.
- Examine non-listed buildings for their importance during DC work. Steadings in particular.
- Treat as any other information
- Archaeological sites can be buildings. Generally, if it has a roof, it is dealt with by Conservation Officers. In some cases, it will be dealt with by both the Archaeology Officer and Conservation Officers.
- Development Control. Will ask people to avoid extant buildings that are on the 1st edition map, or at least create a photographic record.
- This requires clarification. Does the question relate to listed building data, or is it concerned with data relating to any built structure? If it is the latter, then the answer would be yes, in that we do hold information relating to buildings as an element of their archaeological significance. We do not routinely hold listed building information and where we have it, we have no responsibility to maintain it – this rests with our member Councils

5. Who looks after buildings information if you don't?

Dedicated Conservations Officers –7
Planning Dept. – 3
Listed Buildings Staff – 1
Other staff within Council – 3

| |
|---|
| n/a, no answer - 2 |

| 6. How do you liaise with conservation officers in relevant local authorities? |
|---|
| Email/Phone as required – 8<br>In same office – 3<br>Formal arrangement of meetings – 1<br>No/few conservation officers - 3<br>No answer, n/a - 1 |

## Incorporation of data

### Initial Download

| 7. Did you receive an initial download of data from RCAHMS (NMRS) when your database was first set up? |
|---|
| Yes - 11<br>No - 5 |

### Annual Downloads

| 8. Are you offered an annual download from RCAHMS? |
|---|
| Yes - 11<br>No – 3<br>Not aware – 1<br>Yes, but has not happened - 1 |

| 9. When was the last download received (if this does not occur on an annual basis)? |
|---|
| 2009 – 1<br>2008 – 6<br>2007 – 1<br>2006 – 1<br>Never - 1<br>n/a - 6 |

| 10. Is this incorporated into an existing database or kept as a separate resource? |
|---|
| Incorporated – 12<br>Kept Separate – 2<br>n/a – 3<br>*nb – this total is 17; one service has separate procedures for the Councils it serves*<br>Both incorporated and kept as a GIS layer - 4 |

| 11. If the download is incorporated into your database, how is this done? |
|---|
| Using an import procedure (HBSMR users) –4<br>Manually on a site-by-site basis – 3<br>By an external consultant –3<br>Combining attribute tables –1<br>NMRS table in database – 1<br>n/a – 5<br>*nb – this total is 17; one service has separate procedures for the Councils it serves* |

| 12. Have you ever provided RCAHMS with a download of your data? |
|---|
| Yes - 8<br>No - 8 |

| • If yes - How frequently? |
|---|
| Annually – 3<br>Have ceased – 2<br>One-off data download - 1<br>Occasionally/ad-hoc basis – 1<br>Every 2-3 years – 1 |

**Future Downloads**

| 13. Is there anything that could make the RCAHMS downloads more useful? |
|---|
| For summary see below, for discussion see B4. Note that similar points have been brought up in answers to other questions.<br>• Improved grid references and points – 2<br>• Separate sites from events - 3<br>• Import routine for HBSMR - 4<br>• Improved metadata - 2<br>• Removal of 'blank' site records - 2<br>• MIDAS compliance – 2<br>• Selective downloads – 1<br>• Removal of duplicate sites – 1 |

## Enhancement of data

**Data Cleaning**

| 14. What data cleaning/enhancement has taken place? |
|---|
| For summary see below, for discussion see B2<br>• All SMRs/HERs contained cleaned/enhanced data<br>• Checked/corrected/more accurate grid references - 8<br>• Creating site relationships/ hierarchies - 1<br>• Addition of descriptive information/free text - 6<br>• Writing of summary texts - 7<br>• Addition of digital images - 3<br>• Linking of documentary material - 3<br>• Addition of bibliographic references - 2<br>• Creation of event records - 4<br>• Addition of period data – 3<br>• Removal of duplicate sites – 2<br>• General data cleaning on a rolling basis – 5 |

| 15. Do you inform RCAHMS of any data cleaning/enhancement? |
|---|
| Yes - 3<br>No – 11<br>Would do – 1<br>n/a - 1 |
| • If yes - how? |
| In course of data exchange – 1<br>Ad-hoc/email - 2 |

**Specific Data Enhancements**

| 16. Grid references – in the case of changes to existing grid references, do you record your sources of updated location data, i.e. map or GPS? |
|---|
| Yes, every time – 9<br>No - 3<br>Grid reference unlikely to be changed – 1<br>Depends on source – 1<br>n/a, no answer - 2 |

| 17. Summary texts; Have you written any? |
|---|
| Yes - 13<br>No – 3 |
| • If yes - How many have been written and how are they being made available? |
| Online – 7<br>Available to public within Council library/museum – 1<br>Did not answer – 5 |

| 18. If you change a site classification, how is this recorded? |
|---|
| In a free text or 'notes' field – 4<br>Recorded as multiple site types/class within the database – 6<br>Automatically within an audit trail or metadata – 3<br>n/a - 3 |

| 19. Do you have a standard on the naming format for sites in your database? |
|---|
| Nearest named entity on map – 13<br>Country – nearest farm, city – street address – 1<br>Retain existing names - 2 |

| 20. How do you record changes to site names in your database? |
|---|
| In free text or 'notes' field – 2<br>Alternative name in title/name added to – 6<br>Automatically within an audit trail or metadata – 2<br>Do not/very rarely change names - 6 |

**Events Data**

| 21. What do you define as Events data? |
|---|
| • DC work, site visits, field work<br>• At the moment; any archaeological/antiquarian project which has had a substantive onsite element, e.g. Site visits are not an event.<br>• Any activity related to a monument, such as an excavation, survey or a research project. The Events table uses the ALGAO events list, but there may be additions to this.<br>• Events records are added when there has been a survey, excavation or intervention. Site visits are also recorded. Currently deciding on strategy for recording aerial photography.<br>• Survey, excavation, geophysics, DBA, boreholes, metal detecting, appraisals. |

Received a list from WoSAS, which has been added to over time.

- As HBSMR
- A variety of field-work activities, by wide range of organisations/individuals (commercial, research, volunteers): for example, evaluations, excavations, monitoring, building recording, geophysics or field-walking.
- Not averse to the idea of recording Events data, although it is not currently recorded. It is not currently regarded as part of the site record, although some information is listed as 'things done' to the site.
- Events data is defined using the Inscription Event Type wordlist as a guide. Thus it includes all archaeological fieldwork, desk-based assessment and (in theory) site visits. Non-archaeological interventions and site management activities are not currently recorded in the HER due to resource limitations although there is no objection
- Any intervention.
- We do not use events data
- Excavation and survey work.
- Activity relating to the historic environment.
- Any type of archaeological or non-archaeological intervention, including all types of fieldwork, landscape survey, etc. Does not include desk based assessments.
- Planning Applications, forestry, evaluations, surveys, excavations, watching-briefs
- Aware of the concept of Events data; have recorded excavations, surveys and evaluations through the SMR.

| 22. How do you record your site visits generated by casework – is this management information? |
|---|
| Do not record this in the database/use a paper record – 9<br>A field within the Database – 5<br>Selective information only added to database - 2 |

| 23. Has data that you have received from RCAHMS been broken down into 'Events'? |
|---|
| Yes – 4<br>No – 9<br>Some – 1<br>n/a - 2 |

| 24. Do you use a standard for the recording of Events? |
|---|
| Yes – 1<br>MIDAS – 11<br>No – 3<br>n/a - 1 |

## Data Upgrade

**Data Inputting**

| 25. How often are new sites entered into the SMR/HER? |
|---|
| Monthly or more regularly – 8<br>Annually or more regularly – 5<br>On an *ad hoc* basis – 2<br>n/a - 1 |

| 26. Is there a set programme of updates? (E.g. Thematic, area-based, lottery-funded or |
|---|

| DM-driven?) |
|---|
| Yes, through external funding – 1<br>Local Groups – 1<br>Thematic – 2<br>Reflecting workflow – 4<br>All of above – 1<br>No - 7 |

| 27. Do you regularly record reference information; from DES, special interest journals, national journals or the press etc? |
|---|
| Yes - 12<br>No - 2 |
| • If yes -Please list. |
| DES – 9<br>PSAS – 3<br>Local Journals and publications – 5<br>National Journals and magazines – 1<br>Journals -<br>Press - 3 |

**Backlog**

| 28. Is there a backlog of new sites and other data to be entered? |
|---|
| Yes - 13<br>No - 3 |
| • If yes - Please expand. |
| Backlog of Events Data – 4<br>Backlog of sites data – 3<br>Backlog classed as 'manageable'/ result of normal working patterns - 5 |

**OASIS and ASPIRE**

| 29. Do you insist that contractors use OASIS? |
|---|
| Yes - 13<br>No – 3 (all considering doing so) |

| 30. Have you found backlogs have been created? |
|---|
| Yes - 6<br>No – 9<br>n/a - 1 |
| • Approximate number of records in backlog? |
| Between 10-20 – 1<br>Between 20-30 – 1<br>Between 40-50 – 2<br>Did not answer/n/a - 12 |

| 31. Would you welcome additional training in OASIS? |
|---|
| Yes -6<br>No – 9<br>Training at time of questionnaire – 1 |

| 32. Do you insist that contractors use ASPIRE? |
|---|
| Yes - 4<br>No – 11<br>It is suggested - 1 |
| • If yes - How do you use the data? |
| Have not received ASPIRE compliant data – 1<br>Asked for as part of ALGAO regulations – 1<br>Don't know/no answer - 2 |

## Digital Data and Standards

**Digital Data**

| 33. What is your policy relating to the deposition of digital data? |
|---|
| No policy – 4<br>Informal/accept some formats – 4<br>Accept any/all formats – 1<br>Digital data kept for reference – 4<br>All to RCAHMS as SMR/HER not final repository - 3 |

| 34. What is your policy relating to accessioning digital images? |
|---|
| No policy – 5<br>Informal – 1<br>Accept any/all formats – 1<br>Kept as reference/working tool – 3<br>Integrated and catalogued – 4<br>Not accessioned – 1<br>n/a - 1 |

| 35. What is your policy relating to accessioning other types of digital material? |
|---|
| No policy – 3<br>Accept any/all formats – 1<br>Kept as 'sources' – 3<br>Kept as reference/working tool – 3<br>No resource to accept data – 1<br>No answer/ n/a - 5 |

| 36. What standards do you use in archiving digital data? |
|---|
| Stored on servers and backed up – 4<br>None, data is kept as a reference tool – 3<br>Provision of standards from RCAHMS would be useful – 1<br>No policy – 5<br>No answer/ n/a - 3 |

**Data Standards**

| 37. Do you use standards or adopt a 'best practice' in dealing with your data? |
|---|
| Yes - 11<br>No – 3<br>Currently Implementing - 2 |
| • If yes, please list. |
| For summary see below, for discussion see section B3<br>MIDAS – 10<br>Informing the Future of the Past – 3<br>Internal database standards – 1 |

| 38. Do you have a thesaurus in place? |
|---|
| Yes – 13<br>Use a word list - 2<br>No – 1 |
| • If yes - How was it developed? |
| In-house – 3<br>Exegesis/HBSMR (based on English heritage Thesaurus) – 9<br>External source (i.e. RCAHMS) developed over time - 3 |

| 39. Have you used the new RCAHMS thesaurus? |
|---|
| Yes - 7<br>No - 9 |
| • If yes - Is it useful? |
| Yes/very – 1<br>Issues of concordance with HBSMR terms – 1<br>Gaps in terminology/too limited - 2<br>Would like to use in future within HBSMR - 2<br>Did not answer - 1 |

## Data Exchange

**Data Concordance**

| 40. Do you record the RCAHMS numlink on your database? |
|---|
| Yes - 10<br>No – 5<br>Did not answer - 1 |

| 41. Do you record the RCAHMS site number (1:10 000 map sheet and number) on your database? |
|---|
| Yes -15<br>No – 1 |

| 42. What unique site identification fields do you use? |
|---|
| All records have a system to generate unique identification fields. |

| 43. Can you explain how this number is generated? |
|---|
| Auto number in database – 13<br>Mapsheet then number – 1<br>Numerical sequence based on paper log - 2 |

| 44. Has there been any change in your SMR identification numbering system over time? |
|---|
| Yes -7<br>No - 9 |

**Sharing**

The following three questions refer to online provision via websites other than PASTMAP.

| 45. Is the SMR/HER available, or soon to be available, online? |
|---|
| Online – 8<br>Not online - 8 |
| If not online - are there any plans or aspirations relating to provision of data online? |
| Aspire to – 6<br>'Soon' - 2 |

| 46. Does the SMR/HER have a policy on online provision and sharing of data? |
|---|
| Yes –4<br>No - 12 |
| • If yes – Please summarise. |
| No policy at the moment – 3<br>It is public domain data – 2<br>Would not put complete SMR online –2<br>Will put all records, except confidential material online - 1<br>Would adhere to Council policy – 1<br>General enthusiasm, IT restrictions – 1<br>There is an aspiration to go online, have been thinking about best practice - 1<br>No further answer - 7 |

| 47. How soon are changes to your database reflected in your online data? |
|---|
| Immediately – 2<br>Short delay, less than 24 hours – 2<br>Between one week and one month – 3<br>Between one and six months - 1<br>n/a - 8 |

## Other Information

**Corporate Governance**

| 48. Are there any strategic priorities (for example, e-government or efficiency drives) within your Council which could provide you with opportunities if time and resources were available? |
|---|
| Yes – 1<br>Not aware – 6<br>E-planning. E-government – 3<br>Corporate GIS – 3 |

| 49. Is there Council policy regarding provision of potentially revenue-generating data online? |
|---|
| Yes – 1<br>Not aware - 9<br>A fee policy exists – 2<br>Did not answer – 1<br>Move towards revenue-generation – 1<br>'There will be' – 1<br>Charging may be considered - 1 |

| 50. Do you manage case work on your SMR database? |
|---|
| Y – 6<br>N – 9<br>Through GIS - 1 |

| 51. What performance indicators do you generate? |
|---|
| • Spreadsheets of applications consulted on and time consults produced.<br>• Track number of weekly lists reviewed.<br>• They are all time related, 14 days for dealing with a weekly list of planning applications, 21 days for everything else including responses to planning applications.<br>• How many monuments are in the database. Also keeps records of response times and planning applications responded to.<br>• Currently – number of records for which summary descriptions have been created<br>• Complete ALGAO questionnaire every year – generating data on how many planning applications assessed, conditions recommended etc. Trust has completed Level 1 of PQASSO (Practical Quality Assurance System for Small Organisations). Considering progressing to Level 2 which includes gathering of specific performance indicators.<br>• Corporate PIs are as follows: Number of planning consultations dealt with within 14 days of receipt; Number of utilities consultations dealt with within 14 days of receipt; Number of HER consultations by the general public dealt with within 14 days; Number of professional/commercial consultations dealt with within 14 days; In addition the following figures are collected: Total number of planning applications by area; Number/percentage called in; Number/percentage of applications called in where condition is requested<br>• Bald statistics referring to number of cases dealt with at the various levels.<br>• ALGAO – case work statistics. Planning applications; planning casework; excavations monitored; forestry.<br>• Manual recording of casework enquiries etc. Can provide information via audit trail.<br>• Attendance numbers at events<br>• No of new sites entered, no of applications dealt with, no of development briefs issued<br>• No formal performance indicators – record how many records have been enhanced or added.<br>None - 3 |

## Infrastructure

The infrastructure section of this questionnaire includes questions that will be used in all three studies. (See Middleton 2009 a and b).

| 52. Is your service hosted on a network? |
|---|
| Yes – 14<br>No - 2 |

| 53. Do you have access to IT support? |
|---|
| Yes – 16<br>No - 0 |
| • If yes - How responsive is it? |
| Good – 7<br>OK – 3<br>Poor – 1<br>Variable – 1<br>Overloaded – 1<br>One officer – 1<br>Did not answer – 1<br>Users of HBSMR also have access to dedicated support, recorded as 'excellent' and 'very responsive'. |

| 54. What network operating system do you use? |
|---|
| MS windows – 7<br>Novell – 5<br>SBS 2003 - 1<br>Don't know/no answer – 3<br>n/a – 1<br>*N.B. – this total is 17; one service has separate procedures for the Councils it serves* |

| 55. What system do you have in place to back up your data? |
|---|
| Server/network backup – 6<br>Tape/cartridge – 2<br>External hard drive – 2<br>Unspecified backup – 5<br>Tivoli Storage Manager – 1 |

56. What software and software versions do you use to run your service?

- SMR Database software – version – no. of licences

- HBSMR 2 licences – 2
- HBSMR v3.5
- HBSMR v 3; Access 2000
- HBSMR and Access 2000
- HBSMR v. 3.55, '3 for 2' licenses
- HBSMR v3.57. 5 concurrent licences. Running with Microsoft Access 2002
- HBSMR V3.57 with maplink 3.5 (soon to be updated to maplink 4) - 3 licences.
- HBSMR – would like to ditch this and move to shape files.
- Access 97 – 5 licences
- Poss. Access 97 (or MySQL)
- MS Access 2000 / 2003, though likely to move to Access 2007 as part of upgrade process in near future
- Hosted on Oracle at the Royal Commission
- Old, data held on GGP layer in the GIS – New, Access 2003 database with data copies out of the GGP layer and updated.
- Vernon CMS

- GIS software – version – no. of licences

- Old, GGP – Coming soon ArcGIS
- GGP 2006 v3.0.2.15 – 5 licences
- MapInfo v8.5 and Oracle 10g client.
- ArcGIS 9.2, ArcView license, 3 licenses
- ArcGIS 9.0
- ArcGIS 9.3
- ArcGIS 9.1 – 4 single use licences. Other licences are floating licences.
- ArcView 9.1 – 3 licences
- ArcGIS 9.2
- ArcGIS 9.2, ArcMap, unknown number of licences
- Arc View 8 – single seat for the whole trust
- Web Interface (none)
- MapInfo 5.5
- ArcView 3.2 (4), also have ArcGIS 8 (4) - likely to move to ArcGIS 9.3 in future

- Other software – version – no. of licences

- Office, Coral Draw and Photoshop
- Adobe Creative Suite CS2 – 1 License, includes Adobe Acrobat 7 professional, Adobe Illustrator CS2, Photoshop, etc. Aerial 5.3 (AP rectification software)
- Office 2003 – used by 2 services
- MS Office 2000
- MS Office – used by 3 services
- Adobe Acrobat 8 Professional – 1 licence. Adobe Acrobat 7 Professional – 1 licence. Adobe Acrobat 6 Standard – 2 licences. Plus normal office software.
- C- PKHT: Global Mapper – 1 copy PKHT: Air Photo – 1 copy
- Office, Adobe etc
- Office, Adobe PDF
- Microsoft Office, AutoCad, Adobe Illustrator and Photoshop.
- Lots of other software, but none directly relevant to digitisation except perhaps Adobe Photoshop, which may be useful in terms of scanning or processing images.

57. Is your SMR database integrated with your GIS software?
    - i.e. can you query and update your database while using your GIS software and vice-versa?

Yes – 13
No - 3

58. Can web services and web map services be implemented on your database/GIS?

| Yes: Both | Yes: Web Map services | Yes: Web services | No | Don't know |
|---|---|---|---|---|
| 4 | 1 | 0 | 5 | 6 |

59. Do you provide your data in an XML format?

Yes –3
No – 6
Could - 3
Don't Know - 4

- If no – In what formats do you provide your data? (i.e. shape files, access database, comma separated values, etc)

Shape Files – 9
Excel – 5
Access – 4
PDF – 4
CSV – 3
Word – 2
Tab - 1

60. Do you currently have a webpage for every SMR record?
    - i.e. are web pages created dynamically or on the fly?

Yes- 8
No – 6
n/a – 2

61. How do you supply data to third parties?
    - i.e. Web service, CD, email, etc.?

Email – used by 13 services
CD – used by 11 services
Paper /hard copy– used by 4 services
Case-by-case – 1 service
Don't – 1 service

62. Have you heard of HEIRNET web service registry?

Yes -13
No - 3

- If yes – Do you have plans to join?

Yes - 3
No – 8
Don't know/don't understand what it is – 2
Did not answer - 3

## Appendix 2 SMR/HER Summary reports

The following summaries cover some of the data obtained during the course of the SMR visit. They do not provide a means of drawing comparisons between the SMRs, and have been developed by the author and are therefore subjective.

These summaries only look at data provision; the term in this case referring to:

- The SMR/HER database and any associated paper records,
- Data that can be accessed by the public online,
- Data exchange between the SMR and RCAHMS
- Digital data.

One of the main barriers encountered by many of the SMRs related to the provision of Information Technology services. This is discussed in a separate report (Middleton 2009b).

## Aberdeen City

The Aberdeen City SMR comprises a GGP GIS system, an Access database and paper records. At present, there is no integration between the Access database and the GIS, because GGP is being replaced by an ArcGIS package in the near future, as part of a Council-wide upgrade. Data held on the GIS is used as an index to the paper records, and the Access database is used for the migration of cleaned and enhanced data which forms the online SMR. The Access database may be used as the primary SMR database, when it has been completed.

### Strengths

- By May 2009, the SMR will be fully available online, with at least one image and an authoritatively-researched summary text available for each record.
- Size of SMR allows projects such as the enhancement of the entire database to be completed in a manageable timeframe.
- Efficient transfer of new data into SMR.

### Successes

- Successful implementation and use of OASIS.
- Management of concordance between Aberdeen City and Aberdeenshire data.

### Opportunities

- Potential for revenue-generation resulting from Archaeological Unit's corporate location within Museums and Galleries.
- Use of new systems to become increasingly standards-compliant.

### Barriers

- Uncertainty arising from financial difficulties of Council.
- Lack of server storage for digital data.

### Joint Working (SMR and RCAHMS)

- Established communication regarding collection management.
- Once data enhancement complete, will work to make data available on PASTMAP.
- Potential to increase traffic between respective databases via concordance/linking, providing a better service to the public by offering as much data as possible with minimal web navigation.
- Potential for RCAHMS to offer further guidance/training on issues of standards and collection management.
- Develop a Service Level Agreement.

## Aberdeenshire, Angus and Moray

Aberdeenshire Council Archaeology Service is hosted by Aberdeenshire Council and also provides a service to Angus Council and Moray Council. The SMR dataset, at the time of visit, was held on an Access '97 database, with an integrated GIS (GGP). Negotiations were underway within the Council to replace and upgrade the database.

### Strengths

- Working towards recognised data standards (IFP2 best practice, MIDAS Heritage)
- Jargon-free summary texts are being written and disseminated via the online database.
- The existence of a 'digital SMR' makes data retrieval extremely efficient.

### Successes

- Online database attracts large number of hits.
- Trouble-free implementation and use of OASIS.

### Opportunities

- The web traffic attracted by the online databases provides a 'bargaining chip' when dealing with IT colleagues
- Good awareness of the opportunities available within the Council structure.
- There are no barriers imposed from the 'top down' preventing data sharing and linking of datasets.
- Implementation of the new database seen as an opportunity to introduce 'Events' recording and achieve MIDAS compliance.

### Barriers

- Current (October 2008) instability of the SMR database.
- Council policy dictates software to be used.

### Joint Working (SMR and RCAHMS)

- Potential to increase traffic between respective databases via data concordance/linking, providing a better service to the public by offering as much data as possible with the least web navigation.
- Provision/guidance from RCAHMS on an XML schema for new SMR database.
- Opportunity to use 'lessons learned' from RCAHMS online developments to guide future SMR strategy.
- Develop a Service Level Agreement.

## City of Edinburgh

The Curator of Archaeology for The City of Edinburgh Council manages the SMR database, which is HBSMR software integrated with ArcGIS 9.0. The SMR is not available online at the moment. The HBSMR database has only recently been populated via a download of RCAHMS data. When resources are available, there is ambition to enhance and clean this data. The SMR comprises the database, GIS and a paper record.

### Strengths

- Use of HBSMR software ensures standards are adhered to.
- Integrated GIS and database.
- Working to standards; MIDAS, ALGAO and IFA.

### Successes

- Successful implementation of OASIS.
- Implementation of HBSMR database.

### Opportunities

- There may be opportunities within the Council, but currently there is limited time available to explore this avenue. The Curator is aware that the Council is implementing aspects of e-government.
- At the time of writing (December 2008), there is a bid in to The City of Edinburgh Council for funding to employ an SMR Officer.
- There are no barriers imposed from the 'top down' preventing data sharing and linking of datasets.

### Barriers

- There are extreme pressures on time and resources. It is a one-person service with responsibilities for a range of roles. SMR enhancement currently cannot be a priority.
- Status within the Council structure under review; department and role may change.

### Joint Working (SMR and RCAHMS)

- Potential to offer assistance regarding OASIS until an SMR Officer is employed.
- Continued development of communication between the HER and RCAHMS.
- Develop a Service Level Agreement.

## Comhairle nan Eilean Siar/ Western Isles

The Western Isles SMR comprises an HBSMR database with integrated MapInfo GIS. It is available to consult online and is also available to consult at a workstation within the Western isles Archaeologist's office. Digital copies of reports are also held for easier access.

### Strengths

- Use of HBSMR software ensures standards are adhered to.
- Integrated GIS and database.
- Database is available online.

### Successes

- Successful implementation and use of OASIS.
- SMR is available to consult online.
- Rolling data cleaning and enhancement programme.

### Opportunities

- There may be opportunities within the Council, but currently there is limited time available to explore this avenue.

### Barriers

- Budget restrictions currently mean finite resources for keeping the SMR online.
- Practical considerations mean the SMR is not held on a network.

### Joint Working (SMR and RCAHMS)

- Work is underway to add SMR data to PASTMAP.
- Potential to increase traffic between respective databases via data concordance/linking, providing a better service to the public by offering as much data as possible with the least web navigation.
- Refresher and additional training in OASIS to be supplied.
- Continued development of communication between the SMR and RCAHMS.
- Opportunities for future technical advice and guidance, when required.
- Development of a specific, targeted, data exchange protocol.
- Develop a Service Level Agreement.

## Dumfries and Galloway

The Dumfries and Galloway SMR comprises an HBSMR database with integrated MapInfo GIS and a paper record. The record is not available online, although in the past project plans have been submitted to the Council to do so. The SMR is also used by the Council's Conservation Officer. GIS layers are available to consult on the Council's internal GIS and training sessions on the archaeological data have been offered internally.

### Strengths

- Use of HBSMR software ensures standards are adhered to.
- Integrated GIS and database.
- Strong links with a range of Council departments.
- Internal standards maintained via user manual and very strong internal documentation, including a complete disaster management plan.

### Successes

- Successful implementation of OASIS.
- A number of specific projects and rolling work programmes have resulted in many data enhancements.
- Writing of mediated summary texts with a view to eventual online delivery.
- Development of procedure to integrate the RCAHMS downloads with HBSMR software.

### Opportunities

- Working with HBSMR users to improve ASPIRE.
- Opportunities through HBSMR User group.

### Barriers

- It is time-consuming and difficult to import datasets into HBSMR.
- There is currently no strong business case within the Council to justify the SMR going online.

### Joint Working (SMR and RCAHMS)

- Development of a HBSMR import routine for RCAHMS data downloads.
- Continued development of communication between the SMR and RCAHMS.
- Continued liaison regarding RCAHMS data.
- Develop a Service Level Agreement.

## East Lothian and Midlothian

The East Lothian Council Archaeology Service manages the Historic Environment Record for East Lothian and Midlothian Councils. The record is held on an HBSMR database with integrated ArcGIS. The database is not currently available online, but discussions are underway to upload the HER onto PASTMAP. The record is available for internal Council consultation within the Archaeology Service and within Midlothian Council.

### Strengths

- Use of HBSMR software ensures standards are adhered to.
- Integrated GIS and database.
- Use of HBSMR audit trail.

### Successes

- Successful implementation and use of OASIS.
- Rolling data cleaning and enhancement programme.
- Breaking down RCAHMS data into relevant Event types.

### Opportunities

- There may be opportunities within the Council, but currently there is limited time available to explore this avenue.
- East Lothian Council is working towards a corporate (and eventually online) GIS.
- There are no barriers imposed from the 'top down' preventing data sharing and linking of datasets.

### Barriers

- Budget restrictions currently mean rolling resources are not available for keeping the HER online, following initial start-up costs.
- HBSMR licensing means not all members of staff can use the database at the same time.

### Joint Working (SMR and RCAHMS)

- Work is underway to add HER data to PASTMAP.
- Potential to increase traffic between respective databases via data concordance/linking, providing a better service to the public by offering as much data as possible with the least web navigation.
- Opportunities for future technical advice and guidance, when required.
- Development of a HBSMR import routine for RCAHMS data downloads.
- Development of way to work with HBSMR and RCAHMS Scottish Thesaurus.
- Continued development of communication between the HER and RCAHMS.
- Develop a Service Level Agreement.

## Falkirk

The Falkirk SMR comprises a Vernon CMS database, used as the Falkirk SMR is part of Falkirk Museums. ArcGIS is also used, although the two systems are not integrated. The SMR tables in the Vernon CMS database are not online, but the public are able to consult it within Falkirk Museums libraries and can also visit the SMR office. The SMR database is seen as an index to the complete SMR, held on paper within the office.

### Strengths

- There is an established volunteer network that contributes significantly to data enhancement and upgrade.

### Successes

- Successful implementation and use of OASIS.
- Thematic studies by local history society.

### Opportunities

- There may be opportunities to apply for funding for data upgrade through the Museums Service.
- Continuing data enhancement through a strong volunteer programme.

### Barriers

- Vernon CMS is not designed for use as SMR software and as such, any developments are extremely difficult. For example, there are no dedicated fields for grid references.
- Archaeology not seen as a priority within the Museums Service.

### Joint Working (SMR and RCAHMS)

- RCAHMS to begin supplying annual data downloads.
- Develop communication, e.g. RCAHMS to inform post-holder when aerial photography and transcription work is being undertaken.
- Develop a Service Level Agreement.

## Fife

The Fife Archaeological Unit provides a sites and monuments service to Fife Council. The SMR comprises an HBSMR database integrated with a GIS and a paper record which holds further information and sources.

### Strengths

- Integrated database and GIS.
- Working to recognised data standards.
- Vigilant in recording metadata and sources.

### Successes

- Trouble-free implementation and use of OASIS.
- Rolling enhancement and upgrade of data.
- Writing of summary texts.

### Opportunities

- Continuing database development through data cleaning and enhancement.
- Upgrade of maritime dataset.

### Barriers

- 'Council as client' policy prevents the Unit's inclusion in wider archaeological initiatives.

### Joint Working (SMR and RCAHMS)

- Investigating of ways to make RCAHMS downloads easier to incorporate.
- Continued exchange of information relating to data enhancements and upgrades.
- Liaison relating to RCAHMS 2009 programme of aerial photography transcriptions.
- Develop a Service Level Agreement.

## Highland

The Highland HER is part of the Highland Council Archaeology Unit. The database comprises an HBSMR database with integrated ArcGIS. The database is available to consult online, along with a comprehensive volume of digital data relating to the historic environment.

### Strengths

- Working to recognised data standards (IFP2 best practice, MIDAS Heritage)
- Summary texts are being written and disseminated via the online database.
- Material relating to sites is available to consult online and is an extremely comprehensive resource.
- Good working relationships within Highland Council.
- Workflow is designed to avoid build up of further backlog.

### Successes

- Implementation of HBSMR and transfer of data from previous SMR database.
- Full use of HBSMR database by all Archaeology staff.
- Use of e-government as driver to put HER online.
- Implementation and use of OASIS.

### Opportunities

- There are no barriers imposed from the 'top down' preventing data sharing and linking of datasets.
- Opportunities may arise from the incorporation of the Conservation Architect post into the Archaeology Unit, to form a Heritage Team.

### Barriers

- Current (January 2009) vacancy exists for post of Principal Archaeologist. The workload on the Archaeology Unit Staff means little time is available for exploring funding opportunities or developing strategic planning.
- Existence of backlog from period of database transfer/data cleaning and migration.

### Joint Working (SMR and RCAHMS)

- Potential to increase traffic between respective databases via data concordance/linking, providing a better service to the public by offering as much data as possible with the least web navigation.
- Explore development of improved download mechanism from RCAHMS to the HER.
- Continued development of communication between RCAHMS and the HER, for example regarding digital data.
- Develop a Service Level Agreement.

## Orkney Islands

The Orkney SMR database is hosted on a University of Highlands and Islands (UHI) remote server. It is available online and edited online by users with password protected privileges. Significant additional data is held on paper records and these two resources together are regarded as the Orkney SMR. There is not an integrated GIS at present, although this is a priority along with a more stable online database.

### Strengths

- The database is available online to registered users (free of charge)
- There are good working relationships established with holders of other local heritage datasets, for example conservation officers.
- The core dataset of the SMR is reliable, with little requirement for data cleaning.

### Successes

- Formalising of role within Orkney Islands Council.

### Opportunities

- Would ideally like to build the SMR into a larger database containing 'HER' information, such as buildings data. Also aware of the possibilities of integrating other data, such as ethnography and folklore.
- There are no barriers imposed from the 'top down' preventing data sharing and linking of datasets.

### Barriers

- Need time to become familiar with Orkney Islands Council and any opportunities that may be available.
- Uncertainty over the future of the SMR database; at present it is a Council resource maintained and hosted by UHI IT staff.

### Joint Working (SMR and RCAHMS)

- Work currently underway to add Orkney Islands data to PASTMAP.
- Potential for partnership on issues of data standards and training.
- Potential to increase traffic between respective databases via data concordance/linking, providing a better service to the public by offering as much data as possible with minimal web navigation.
- Continued development of communication between the SMR and RCAHMS.
- Develop a Service Level Agreement.

## Perth and Kinross Heritage Trust

The Perth and Kinross Historic Environment Record comprises an HBSMR database with integrated ArcView GIS. It is maintained by the Perth and Kinross Heritage Trust. It is available to consult online and the data within includes over five thousand mediated summary texts. An SMR service is also provided to the relevant part of the Loch Lomond and Trossachs National Park.

### Strengths

- Use of HBSMR software ensures standards are adhered to.
- Integrated GIS and database.
- Database is available online.
- Strong links with a range of Council departments.

### Successes

- Successful implementation and use of OASIS.
- A number of specific projects and rolling work programmes have resulted in many data enhancements.
- Writing of mediated summary texts; c.5,100 are available to the public.
- The Perth and Kinross Conservation and Regeneration Section have access to the HER to assist with their work. Data on listed buildings will be enhanced as a result.

### Opportunities

- Working with HBSMR users to improve ASPIRE.
- Opportunities through HBSMR User group.
- Progressing to Level 2 of PQASSO (Practical Quality Assurance System for Small Organisations)
- Trust status of the organisation means many opportunities for funding and volunteer programmes are available.
- Working towards becoming a Registered Archaeological Organisation with the Institute for Archaeologists.

### Barriers

- It can be time-consuming and difficult to import datasets into HBSMR.

### Joint Working (SMR and RCAHMS)

- Potential to increase traffic between respective databases via data concordance/linking, providing a better service to the public by offering as much data as possible with the least web navigation.
- Development of a HBSMR import routine for RCAHMS data downloads.
- Continued development of communication between the HER and RCAHMS.
- Develop a Service Level Agreement.

## Rathmell Archaeology Ltd: Dundee City HER and East Dunbartonshire SMR

Rathmell Archaeology Ltd provides an Archaeology Service to Dundee City Council and East Dunbartonshire Council. The company maintains the Dundee City HER, comprising an Exegesis HBSMR database with integrated ArcGIS 9.2. East Dunbartonshire SMR comprises a series of datasets linked via GIS, used as a referential tool. Neither record is currently online, reflecting current Council policies and the existing service agreements, although both Councils are pursuing the web mounting of data and some online presence has been discussed with Dundee City Council. From April 2009 Rathmell Archaeology Ltd entered a contract to supply North Lanarkshire Council with archaeological advice.

### Strengths

- Use of HBSMR software ensures standards are adhered to.
- Integrated GIS and database.
- All SMR/HER data stored on Council-owned hardware; service provision anticipates change in provider.

### Successes

- Implementation and use of OASIS.
- Process of data cleaning and enhancement (Dundee City Council) on a case-by-case basis.

### Opportunities

- Opportunities currently limited by Council policies and existing service level agreements.
- Some discussions with Dundee City Council Museums Service regarding linking of data.

### Barriers

- Limitations arising from commercial service agreement.

### Joint Working (SMR and RCAHMS)

- Ingest of updated East Dunbartonshire data.
- Continued development of communication between the SMR/HER and RCAHMS.
- Develop a Service Level Agreement.

## Scottish Borders

The Scottish Borders Historic Environment Record comprises an Oracle database, hosted by RCAHMS, with an integrated ArcGIS 9.2. Current Council policy prevents the entire database being made available online, although negotiations are underway for the presentation of mediated data via PASTMAP.

### Strengths

- Close links within Planning and Economic Development department, especially within Heritage and Design.
- Regular updating of HER with new data.

### Successes

- Use of the HER as an integral part of the planning system, with suitably mediated data.

### Opportunities

- Increased use of OASIS through insisting on use by contractors.
- Online presence via PASTMAP.
- Aspire to web mount data via an SMR website.

### Barriers

- Sound business case required for mounting of data online. This needs to be considered against the drive to generate income.

### Joint Working (SMR and RCAHMS)

- Further OASIS training and updates.
- Making data available on PASTMAP; directing enquiries to the Council archaeologist.
- Continued development of communication between the HER and RCAHMS.
- Development of database through a live link.
- Develop a Service Level Agreement.

## Shetland Amenity Trust

The Shetland SMR is held by the archaeologists within the Shetland Amenity Trust. Planning advice is provided to Shetland Islands Council. The SMR comprises an HBSMR database with integrated GIS. There are plans to put a version of the SMR online as part of the longer term vision of the Trust, together with other Trust datasets.

### Strengths

- Through the Shetland Amenity Trust set-up, there are good working relationships established with holders of other local datasets, for example biological records.
- Use of HBSMR software ensures standards are adhered to.
- Data enhancement through field-checking.

### Successes

- Employment of an SMR officer.
- Writing of summary texts.

### Opportunities

- The vision of the Shetland Amenity Trust in providing an integrated, searchable online database with access to multiple datasets.
- Use of OASIS to allow wider access to reports relating to Shetland.

### Barriers

- Single-seat GIS licence within the entire Trust office makes access difficult.

### Joint Working (SMR and RCAHMS)

- Additional training in OASIS
- Continued development of communication between the SMR and RCAHMS.
- Development of a HBSMR import routine for RCAHMS data downloads.
- Develop a Service Level Agreement.

## Stirling and Clackmannanshire

The Stirling Council Archaeology Service provides SMR services for Stirling and also provides an SMR service for Clackmannanshire Council. The SMR comprises an MS SQL Server 2000 database, a web-based map interface and paper records. The database and map interface are fully integrated. The SMR is online with the facility to add images and documents. An SMR service is also provided for the relevant part of the Loch Lomond and Trossachs National Park.

### Strengths

- Size of SMR allows projects such as the enhancement of the entire database to be completed in a manageable timeframe.
- Efficient and responsive IT support available.
- Bespoke database allows management of linked Site, Object and Events data.

### Successes

- SMR is available online.
- Writing of 7,500 summary texts and publication online.
- Facility to make images and documents available to all online.
- Have been able to make advances through use of archaeology data in pilot schemes.

### Opportunities

- There are no barriers imposed from the 'top down' preventing data sharing and linking of datasets.
- Current use of web services within the Council allows data sharing.

### Barriers

- IT developments considered on a case-by-case basis and not all requests can be met.
- Lack of time/business case to implement data standards.

### Joint Working (SMR and RCAHMS)

- Further OASIS training and updates.
- Potential to increase traffic between respective databases via data concordance/linking, providing a better service to the public by offering as much data as possible with the least web navigation.
- Making data available on PASTMAP.
- Provision of user-friendly advice and guidance on standards relating to heritage IT developments (including TDR status).
- RCAHMS to provide Canmore URLs within annual downloads.
- Continued development of communication between the HER and RCAHMS.
- Develop a Service Level Agreement.

## West of Scotland Archaeology Service

The West of Scotland Archaeology Service is a jointly provided local government service supplying an SMR for Argyll and Bute, East Ayrshire, East Renfrewshire, Glasgow City, Inverclyde, North Ayrshire, North Lanarkshire (until April 2009), Renfrewshire, South Ayrshire, South Lanarkshire, West Dunbartonshire and West Lothian. An SMR service is also provided for the western part of the Loch Lomond and Trossachs National Park. The SMR database is a bespoke Access 2003 database, integrated with ArcView 3.2. Both are expected to be upgraded to Access 2007 and ArcGIS 9.3 by the time of the report.

### Strengths

- Internal standards are MIDAS compliant.
- Comprehensive database integrated with GIS.
- Use of Monument/Event/Archive model and comprehensive Events recording.

### Successes

- Database and mapping is available online.
- Events can be searched for online.
- Implementation and use of OASIS.
- Process of data cleaning and enhancement on a case-by-case basis.

### Opportunities

- Aware of, and actively pursuing, opportunities for SMR development.
- There are no barriers imposed from the 'top down' preventing data sharing and linking of datasets.

### Barriers

- Host Council deals with IT and can be slow to respond.

### Joint Working (SMR and RCAHMS)

- Dissemination of standards for ingest and use by WoSAS.
- Increased communication from RCAHMS when operating within WoSAS areas.
- Continued development of communication between the HER and RCAHMS.
- Develop a Service Level Agreement.