

# Polygonisation

## The Shape of things to come

What are the needs for Scottish polygonised Historic Environment Data?

Mike Middleton

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## Executive Summary

The study identifies that the main drivers for polygonisation are:

- Designation
- Planning and permitted development
- Land Management

The European Commission's *INSPIRE Directive* is likely to become a driver following its transposition into Scottish Law in September 2009. As data becomes available to all levels of government the data will need to be fit for a broad audience.

There are three primary audiences for Historic Environment polygons, each with their own needs. These are:

- Professional Historic Environment practitioners
- Land Managers
- The Public

The audience for Historic Environment data is considerable with approximately 1500 different organisations, in the government alone, needing access to Historic Environment location information (The Scottish Office 1998).

There is a mis-match of need to available resource. The professional user is creating very detailed technical information attached to a plethora of polygon classes while the land manager is looking for a simple polygon data set that advises them when and who to consult. Both needs are valid but only one is being serviced.

There are two main classes of polygon identified. These are:

- Form polygons
- Discovery polygons

Form polygons depict the exact extent of something known. These polygons have a value in themselves as they add understanding by defining the location of the data they depict.

Discovery polygons aid in the discovery and understanding of information using location. These polygons do not improve the quality of the data.

Historic Environment polygons are created and curated by government.

- Historic Scotland produce and curate polygons for:
  - a. Scheduled Monuments
  - b. Inventory Gardens and Designed Landscapes
  - c. World Heritage Sites
  - d. PiC Events
- RCAHMS produce and curate polygons for:
  - a. The Historic Land-use Assessment (in partnership with Historic Scotland)
  - b. Site extents (not comprehensive)
  - c. RCAHMS Events
- Local Authorities produce and curate polygons for:
  - a. Conservation areas
  - b. Listed buildings (not comprehensive)
  - c. Site extents (not comprehensive)
  - d. Events (not comprehensive)



# The Shape of Things to Come: What are the needs for Scottish polygonised Historic Environment data?

## Introduction

2. Organisations across the Scottish Historic Environment sector have already begun to define the boundaries of Historic Environment features in the landscape. Defining areas /creating polygons is not something that is going to happen but is something that is happening already. Curators are creating polygons to satisfy their own needs but, with data being opened up to the public and with government initiatives aimed at streamlining the creation and sharing of government data, the question arises, what are the needs for Scottish polygonised data?

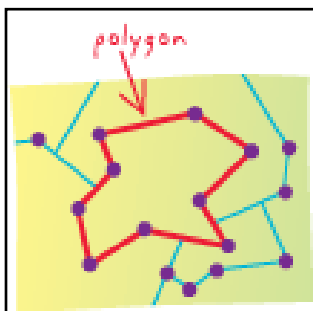
## Aim

3. This report aims to answer this question by looking at the legal framework and what within it is driving polygonisation. The report will identify what polygons are being created and who is using them, and it will compare the drivers to the available resource to identify where there might be opportunities for future co-operation, efficiency and development.

## Background

4. The need for this study was identified in discussions between Historic Scotland (HS) and the ALGAO Scotland Historic Environment Record Forum (HER Forum). Both parties agreed that the study should look at initiatives relating to the polygonisation of records and the standards required for information to be made available through PASTMAP.<sup>1</sup> The bid for the project was prepared by the HER Forum and submitted by the late Ian Shepherd for the Forum and Rebecca Jones at the Royal Commission on the Ancient and Historical Monuments of Scotland (RCAHMS). The study was funded by Historic Scotland (sponsored through Mairi Davies) and the project was managed by RCAHMS.

### Polygons



© ESRI

Polygons are a closed shape defined by a series of coordinates. They define an area, and areas are useful because they allow us to manage the historic environment.

By being able to define sites and landscapes, individuals from all parts of the community can interact with them.

Polygons make it possible to manage, promote and appreciate our historic environment.

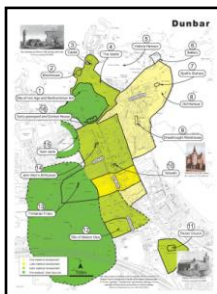
## Previous work

5. This study builds on the work started in the following reports:
  - Baker, D 1999, *An Assessment of Scotland's Sites and Monuments Records*
  - Flower, C 2001, *Report on the Working Group on the Operational Roles of the SMRs*
  - Coleman, R et al. 2004, *Managing Urban Data: A Study of SMRs, the NMRS and User Groups*
  - Jeffrey, S 2005, *On-line Delivery of Archaeological Information for Farmers*.

## Methodology

6. Two groups have been consulted in the preparation of this report.
7. The first group comprised the Scottish Sites and Monuments Records (SMRs) and the Historic Environment Records (HERs) (Appendix 1). A questionnaire was circulated to all sixteen services with a follow-up on-site visit to each to allow more detailed discussion of comments made in the questionnaires. Notes made during the on-site visits were added to the questionnaire with a copy being sent to the local service to confirm that the responses accurately reflected their views.
8. The second group consulted consisted of stakeholders (Appendix 2). Stakeholders for this report were defined by the project board (Appendix 3). The list comprised people and organisations that contributed to *Discovery and Excavation Scotland in 2007*<sup>2</sup> as well as specific individuals and organisations identified by the project board. The local authority services were also offered the opportunity to nominate people and organisations for inclusion in the list. Stakeholders were asked to fill out a short questionnaire. Some stakeholders were also contacted by phone to follow up comments in their questionnaire responses.
9. The responses give a valuable insight into the workings of the Historic Environment community but may sometimes be perceived as controversial. To allow the focus to remain on the issues the authors of some quotes have not been named. Those that are named have been offered the opportunity to read and modify their contribution to the sections where they are quoted. To reduce the impact on the local services, the questionnaire contained questions that will be used to inform three reports and a polygonisation standard. These are listed in Appendix 4.

### Why are polygons important?



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Polygons are extremely flexible. They can define in plan the location of just about anything.

From monuments and fieldwork to designations or mapping potential, polygons are the tool of choice for a whole range of Historic Environment curators. Yet, there are no agreed standards.

## Part 1: The Legal Framework

10. It is legislation, policy and the need to manage Historic Environment assets and communicate what this means to the wider world that has been the greatest driving force behind polygonisation. The legislation comes from a variety of national and international governments and, it covers everything from World Heritage Sites to Local Planning policy. What follows is not a definitive list but an exploration of the legislation and policies that have had the greatest bearing on polygonisation.

### The Valletta Convention

11. The convention states that, 'the aim of this Convention is to protect the archaeological heritage as a source of the European collective memory and as an instrument for historical and scientific study.' (Council of Europe 1992, Article 1.1)

12. In Article 2, 'the identification of the heritage and measures for protection', the Convention talks about the identification of areas, which it calls 'archaeological reserves';

'Each Party undertakes ... making provision for the creation of archaeological reserves, even where there are no visible remains on the ground or under water, for the preservation of material evidence to be studied by later generations.' (Council of Europe 1992, Article 2 (ii))

13. It specifically identifies these as areas in Article 4 (i), where it says; 'Each Party undertakes ... making provision for the acquisition or protection by other appropriate means by the authorities of areas intended to constitute archaeological reserves.' (Council of Europe 1992, Article 4 (i))

14. The convention goes on to say that 'maps' of archaeological sites need to be up to date: 'Each Party undertakes ... making provision to make or bring up to date surveys, inventories and maps of archaeological sites in the areas within its jurisdiction.' (Council of Europe 1992, Article 7 (i))

### The European Landscape Convention

15. Brigitte Skar neatly summarises the idea enshrined in the convention as; 'If people are given an active role in decision-making ... they are more likely to identify with the areas and towns where they spend their working time and leisure.' (Skar 2006, p 213)

16. According to modern landscape theory, '[The historic environment] is not solely a "physical thing in the landscape" but rather "a way to observe the landscape"'. It depends on, "which story one wants to tell" ... [rather] than formal and definable designation.' (Skar 2006, p 212)

17. She goes on to note that; 'The [Historic Environment] ... gives the people of today a framework for historical consciousness and a sense of identity.' (Skar 2006, p 212) That what is important in the Historic Environment depends on who is telling the story.

18. The Convention points out that managers of all landscapes have the duty, '... to assess the landscapes.... taking into account the particular values assigned to them by the interested parties and the population concerned.' (European Landscape Convention, 2000, Article 6 C.1.b.)

19. It is implicit in the Convention that curators must maintain a record of the objects they curate, including their location and area in the landscape, in a way that is both publicly accessible and promoted, so that anyone can use these objects to present their landscape story.

### Case Study

St Andrews is recognised by some as:

- An influential medieval Burgh
- The oldest university in Scotland
- The 'home' of golf
- A major centre of pilgrimage.

None of these attributes is more important than the others and no one of these has all their landscape elements surviving. What is important is that those elements that do survive are identified and the information on what and where they are is made available to all those with an interest, so that each person can promote their own landscape story.

*'What is important in the historic environment depends on which story one wants to tell.'*  
(Skar 2006, p 212).

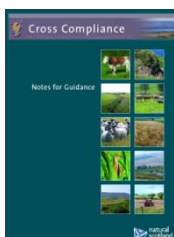
## The Common Agricultural Policy

20. In Scotland, the Common Agricultural Policy (CAP) manifests itself in two ways:

- The Single Farm Payment Scheme (SFPS)
- the Scotland Rural Development Programme (SRDP) 2007-13.

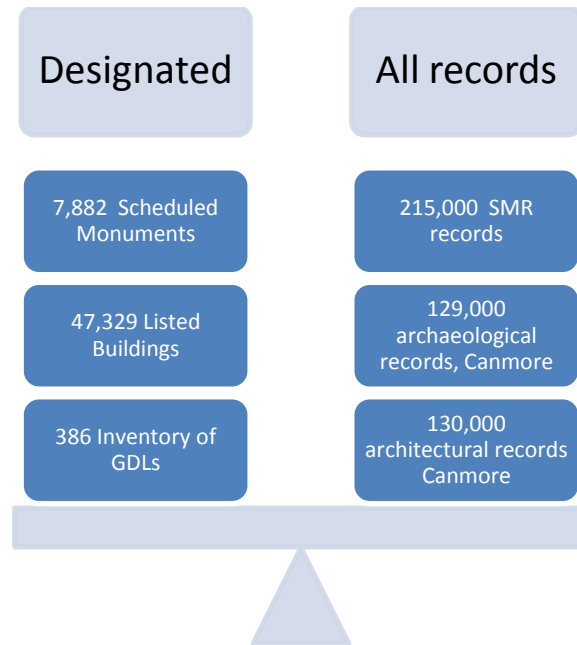
### The Single Farm Payment Scheme

21. The Single Farm Payment Scheme (SFPS) was introduced in 2005 as part of a package of reforms to the Common Agricultural Policy. The scheme moves away from earlier productivity-based schemes to one based on good agricultural and environmental practice, which covers issues ranging from animal husbandry and food safety to the environment. Underpinning the scheme is the requirement that applicants are bound to abide by Cross Compliance made up of a series of Statutory Management Requirements (SMRs) and Good Agricultural and Environmental Conditions (GAEC)<sup>3</sup>. Referring to historic features GAEC 17 states that:



'You must avoid altering, damaging or destroying protected elements of the historic environment. These elements are scheduled monuments, listed buildings and sites included in the Inventory of Historic Gardens and Designed Landscapes [sic]' (Cross Compliance: Notes for Guidance, GAEC 17 Historic features, 175).

22. Scotland’s Historic Environment Audit (SHEA 2007) notes that the Scottish SMRs contain 215,000 records and that the RCAHMS database, Canmore, contains 129,000 archaeological records and 130,000 architectural records, 7,882 sites are designated as Scheduled Monuments, 47,329 buildings and other structures are designated as Listed Buildings and there are 386 records on the Inventory of Gardens and Designed Landscapes. The omission of undesignated sites from GAEC17 is seen to diminish its value making it too weak in the eyes of the wider Historic Environment community.



*Only designated sites are protected under Good Agricultural and Environmental Conditions 17 (GAEC17)*

23. The conditions are regularly reviewed, with Historic Scotland and other stakeholders in the Historic Environment community recommending that undesignated sites be added. However, because of potential difficulties in identifying sites and the lack of a suitable data set for land managers and auditors, the Rural Directorate see the addition of undesignated sites as unenforceable.

24. The implication is that, if undesignated sites are to be included in GAEC17, a data set defining the extent of these sites needs to be publicly available and easily accessible.

***'Any attempt to change GAEC 17 will fail if farmers can't find the sites.'***

*Dr Andrew Burke (SRDP Historic Environment Liaison Officer, HS).*

***'The majority of Scotland's archaeological heritage lies in rural areas and 90% of this has no statutory protection. It is reasonable for the Scottish public to expect Scottish farmers to protect known archaeological and historic sites as part of their c£400 million annual subsidy. This is consistent with Scottish Government policy as expressed in its SHEP. An accessible database showing a standardised area extent is essential for farmers and other land managers to identify known archaeological and historic sites.'***

*Jonathan Wordsworth (Rural Land-use Adviser. Archaeoloav Scotland).*

### Scotland Rural Development Programme 2007-13

25. The aims of the Scotland Rural Development Programme (SRDP) are to increase competitiveness in agriculture and forestry, improve the environment and the countryside and enhance the quality of life in rural areas. (Scottish Government 2008b)
26. SRDP intends to achieve this by using three mechanisms for targeting funding to rural areas. These are:
- Land Managers' Options (LMOs)
    - 'Land Managers' Options provide support for the provision of economic, social and environmental improvements across Scotland...LMOs are non-competitive and each participant is limited to a maximum allowance.' (Scottish Government 2007a)
  - Rural Development Contracts – Rural Priorities
    - 'Rural Priorities ... will deliver targeted environmental, social and economic benefits. It will contribute to delivery of the Scottish Government's strategic objectives ... It is a competitive mechanism to ensure that contracts are awarded for the proposals which are best able to deliver these priorities.' (Scottish Government 2007c)
  - Less Favoured Area Subsidy Scheme (LFASS )
    - 'LFASS aims to contribute to the maintenance of the countryside, and viable rural communities, by ensuring continued agricultural land use and maintain and promote sustainable farming systems'
27. The implications of SRDP have already been felt in the Scottish SMR/HER community, with all those working in rural areas seeing consultations drop off significantly, compared to previous schemes. This reflects one of the main differences in the way that this scheme works compared to its predecessors.
28. 'The landscape has changed in terms of how agri-environment schemes are run. There is a move away from bureaucracy and blanket consultation to lighter-touch governance and measures that are enabling.' Dr Andrew Burke (SRDP Historic Environment Liaison Officer, HS)
29. In practice, this means self assessment, and applicants to the schemes are provided with guidance on who they can contact for advice and where they can access Historic Environment data.
30. Although the mechanism for auditing the Historic Environment has changed, the underlying guidance remains the same.
31. Applicants are warned: '[You must not] knowingly damage or destroy features of historic or archaeological interest on any part of your land.' (Scottish Government 2007b)

*'The landscape has changed in terms of how agri-environment schemes are run. There is a move away from bureaucracy and blanket consultation to lighter-touch governance and measures that are enabling.'*

*Dr Andrew Burke (SRDP Historic Environment Liaison Officer, HS).*

And advised,

‘In order to avoid damaging or destroying historic or archaeological features, it is important that you are aware of the location, nature and extent of any such features recorded on your land. It is advisable to mark these clearly and accurately on any farm plans ....’ (Scottish Government 2007b)

*‘There is a need for land managers to be able to access good quality data. Foresters and farmers need to have an accurate portrayal of where there is known archaeology. They don’t deal in ambiguities. What they want and need to know is, where can they plant and where can they not plant.’*

*Dr Andrew Burke (SRDP Historic Environment Liaison Officer, HS.*

*‘Polygonisation ... is key to providing farmers ... with clear accessible information on the position and extent of archaeological and historic sites that should be protected as part of cross compliance under the SRDP.’*

*Jonathan Wordsworth (Rural Land-use Adviser, Archaeology Scotland).*

## **Scottish Historic Environment Policy, October 2008**

32. Scottish Historic Environment Policy, October 2008 (SHEP 2008) sets out the Scottish Ministers policies for the Historic Environment and their vision on how they want to identify the many aspects of our environment and protect and manage them in a sustainable way (SHEP 2008, 1.12.c). It goes on to urge curators to broaden access to the Historic Environment and break down intellectual, physical and economic barriers (SHEP 2008, 1.12.e).

33. It states:

‘The policy of Scottish Ministers is that all of the people of Scotland should be able to enjoy, appreciate, learn from and understand Scotland’s Historic Environment, and be assisted in that through access, research, knowledge, information and education and proactive conservation investment, without compromise to cultural significance.’ (SHEP 2008 1.14.d)

34. The policy goes on to identify the audience interested in the Historic Environment:

‘... there needs to be greater awareness, knowledge and understanding of the Historic Environment. This needs to address lay, vocational, technical, professional, scientific and academic needs. Better understanding should inform interpretation, enabling people to understand the development of the Historic Environment and the significance of key monuments in Scottish history. A fuller evidence base will inform policy making and investment decisions.’ (SHEP 2008 1.49)

35. And that:

‘the relevant bodies with responsibilities for any aspect of the Historic Environment should ensure ... that: appropriate and effective systems are established for monitoring and recording the condition of the Historic Environment.’ (SHEP 2008 1.16.e)

36. Expanding on this by saying:

‘Scottish Ministers also look to the planning authorities to undertake their responsibilities for the Historic Environment in a pro-active and committed way. They should develop appropriate policy frameworks and procedures, and use all local mechanisms available to them for designation, management and control. They should also ensure that they have access to sufficient information and suitably qualified and experienced staff to meet their needs.’ (SHEP 2008 1.40)

37. SHEP 2008 goes on to set out the Scottish Ministers’ policy on designation. Historic Environment designation in Scotland consists of:

- Scheduled Monuments
- Listed Buildings
- Conservation Areas

38. There are also non-statutory designations in the form of an inventory of:

- Gardens and Designed Landscapes

39. SHEP 2008 identifies a broad audience for Historic Environment information. In terms of polygonisation it specifies that the, ‘... relevant bodies with responsibilities for any aspect of the Historic Environment ...’ should be the organisations who, ‘... establish ... effective systems ... for monitoring and recording.’ It is implicit that it will be these organisations that decide what constitutes an effective system.

## **Planning**

40. Planning law in Scotland is detailed in The Town and Country Planning Act (Scotland) 1997, Chapter 8, and the Planning etc. (Scotland) Act 2006, which amends the 1997 Act. These are supported by Scottish Planning Policy (SPP) and Planning Advice Notes (PAN) specifically, SPP 23: Planning and the Historic Environment and PAN 42: Archaeology.

41. SSP23 sets out the framework for how the Historic Environment is dealt with during planning and clarifies the roles of the various government organisations within this process. It also sets out the language and hierarchy of Development Planning from Structure Plans/Strategic Development Plans to Local Plans/Local Development Plans and, Strategic Environmental Assessment (SEA), the mechanism by way of which these may be challenged.

42. PAN42 sets out why archaeology is important and why Sites and Monuments Records are, ‘an essential prerequisite to any policy aiming to protect and manage archaeological remains.’ In the same paragraph it goes on to state:

‘The SMR should have 4 main elements,’ one being, ‘a map record ... which identifies the location and extent of each monument....’ (Scottish Office 1994, para 12)

## **The Royal Commission on the Ancient and Historical Monuments of Scotland**

43. The Royal Commission on the Ancient and Historical Monuments of Scotland (RCAHMS) was established by a Royal Warrant in 1908, which was revised in 1992. RCAHMS is an executive non-departmental government body financed by the Scottish Government. Their mission statement requires them to:
- identify, survey and interpret the built environment of Scotland
  - preserve, care for and add to the information and the items in the National collection relating to the archaeological, architectural and historical environment
  - promote public understanding and enjoyment of the information and the items in the collection<sup>4</sup>
44. RCAHMS has conducted significant amounts of fieldwork and has created a variety of polygons. Being Scotland’s national collection for the historic environment, RCAHMS also maintains polygons created by innumerable individuals and organisations who have deposited material with the archive.
45. RCAHMS maintained a paper polygon record of site extents on 1:10,000 OS quarter sheets until about 2004. The system, inherited from the former OS archaeology division, plotted polygons manually for all sites where information was available. Polygons were not created for all sites, only for sites where the information available was of a sufficient quality to allow the site to be accurately plotted. Sites would be plotted based on both RCAHMS survey work and 3<sup>rd</sup> party archive deposits.
46. RCAHMS have not yet fully developed a digital successor to the 1:10,000 OS quarter sheet polygon recording system.

## Part 2: What polygons are being created?

### Scheduled Monuments

Scheduled Monuments		
Type	Audience	Author
Indicative of designation	National	Historic Scotland

47. The scheduled monument data is indicative of the paper schedule. This data set is described as indicative as the area designated as scheduled is not the polygon but the area as described in the text of the accompanying scheduling document. The data is created by Historic Scotland; it is free and can be downloaded via the Historic Scotland website.<sup>5</sup>

48. Across the sector, the use of scheduled monument polygons is seen as very important and the local authority services identified it as the most important and most frequently used data set. However, recent work by the Ordnance Survey (OS) to correct positional inaccuracies in the base mapping means the scheduled monument data set inherits positional discrepancies from the older mapping, an issue highlighted as a problem by some of the local authorities. One local service commented:

‘HS need to go over their data set as there are lots of issues caused by the recent move from Landline to MasterMap.’ SMR/HER service.

*‘... they stop us breaking the law. [They] enable us to meet statutory requirements.’*

*SMR/HER service.*

49. This issue is not quite as simple as this. Peter McKeague of RCAHMS summarises it as:

‘...in the early 2000s the OS undertook a programme of Positional Accuracy Improvement (PAI) over its rural 1:2,500 scale mapping. PAI addressed issues of accuracy inherent in rural mapping since the transformation of mapped detail from the County Series maps to the British National Grid in the 1950s. PAI is coincidental with the transition from OS LandLine to, and gradual adoption of, OS MasterMap. As a result of that process, the position of some features may have moved relative to other mapped detail. (McKeague forthcoming)

*‘... [They are] used as an indicator that a particular site has statutory protection, and that issues such as setting should also be taken into consideration in any assessment of the impact on the site of a development proposal.’*

*SMR/HER service.*

## Properties in Care

Properties in Care		
Type	Audience	Author
Indicative	National	Historic Scotland

50. This data set defines the extent of Properties in Care (PiC) and is used by Historic Scotland within their PiC management tool (HERMAN (Rees & Turner 2008)). Historic Scotland maintains this data as a tool to manage and record the extent of properties under guardianship. It is important to note that the extents of PiCs may differ from areas scheduled and that in some cases PiCs may not be scheduled at all.
51. The PiC data set is designed for internal Historic Scotland use and is described by one of the PiC team as, 'not fit for dissemination in its present form.' The data set is under review and is not expected to be available for general, non HS, use for some time.

## Listed Buildings

52. It is important to note that Historic Scotland does not create listed buildings polygon data. A point data set created by Historic Scotland is free, and can be downloaded via the Historic Scotland website.<sup>6</sup>
53. It should also be noted that, although Historic Scotland identifies the buildings and maintains the list, it is the local authorities who have the responsibility to interpret the list and identify curtilage.
54. This study identified three polygon data sets created by local authorities, representing various different interpretations of listed building data. The three data sets identified here were not created by the local authority Historic Environment services, instead, they are data sets known to them and used by them. This is therefore, not a definitive list, rather a catalogue of the data known to local Historic Environment services.

Listed buildings (Fife)		
Type	Audience	Author
Definitive	Local	Development Services

*6189 listed buildings polygons defining curtilage.*

Listed buildings (Dumfries and Galloway)		
Type	Audience	Author
Indicative	Local	Development Services

*A comprehensive polygons layer. Only the buildings are polygonised. No attempt is made to polygonise the curtilage.*

## Listed buildings (Perth and Kinross)

Type	Audience	Author
Indicative	Local	Planning

*Perth and Kinross council ran a listed buildings polygonisation project between 2003 and 2005. 3000 polygons were created.*

55. Listed buildings are identified as one of the most contentious polygonised data sets. Views on the need for listed buildings polygons ranged from:

‘What would be the point?’ SMR/HER service.

To:

‘Listed buildings should be polygonised. It is often very difficult to determine from a listed building description alone what elements (particularly within the curtilage of a building) enjoy listed status.’ SMR/HER service.

56. There is not a consistent structure for the management and protection of listed buildings across the local authorities. Some authorities have Conservation Officers while others, such as East Lothian Council, don’t leaving the archaeology service to take on the conservation role. In Highland Council, the vacant post of Conservation Officer exists but the authority is not actively seeking to fill it, again leaving the local archaeology service to support the conservation role temporarily.

57. There is also little consistency on how Conservation Officers work with local archaeological services. Some, like Dundee City, work completely independently while others, such as Scottish Borders, work with the local archaeologists as a heritage team. This variety of systems and services is reflected in the data, with some services having combined systems and sharing software, and others keeping their data separate.

58. All the local services used listed building data and most of the local archaeologists feel listed buildings polygons would be useful: 12 believing they would be useful and two already having access to them.

59. It is interesting to note the experience of one Conservation Officer who has created listed buildings polygons:

‘Curtilage is too huge a task to define and it is subjective... We originally made the decision to polygonise listed buildings. We polygonise just the buildings not the curtilage but we are finding that Development Control take these polygons too literally ... We are coming back to the view that listed buildings should only be portrayed on a GIS (Geographic Information System) as point data. We are going to drop our polygonised data from the intranet.’ Local authority Conservation Officer.

60. At the same time it is also interesting to see how strong the demand is for this type of data:

‘We are looking at generating polygons for listed buildings. If we have to make the decision locally on what is the curtilage then let’s make it and record it.’ Local authority Conservation Officer.

## Conservation Areas

Conservation Areas		
Type	Audience	Author
Definitive	National	Local Government

61. Local Authorities are required to define Conservation Area polygons as part of a requirement to produce a Local Plan.<sup>7</sup> Polygons are available from the local authorities in the form of the Local Plan. There is no nationally available resource.

62. Conservation Area polygons were identified by local authority services as one of the more important data sets.

## Gardens and Designed Landscapes

Gardens and Designed Landscapes		
Type	Audience	Author
Definitive	National	Historic Scotland

63. This is a non-statutory data set that defines the extent of the inventory Gardens and Designed Landscapes (GDL). GDLs that are included on the inventory are recognised in the planning system. The data is created by Historic Scotland; it is free and can be downloaded via the HS website.

64. Used by all but one of the Scottish local authority archaeology services, GDL are frequently used and are seen as important. Overall, the general consensus is that the data set is good but limited:

‘... We digitise our own as many not polygonised.’ SMR/HER service.

65. The inventory is seen, by the local services, as not comprehensive and some maintain their own local non-inventory GDL polygon layer or define non-inventory GDLs as site extents.

66. GDLs are also identified as having positional accuracy issues (see 48/49 above).

## World Heritage Sites

World Heritage Site		
Type	Audience	Author
Definitive	International	Historic Scotland

67. There are five World Heritage Sites in Scotland. The records of the boundaries are available from Historic Scotland. They can be downloaded, free, via the HS website.

68. Only Orkney mentioned having an interest in the World Heritage Site polygons for their area.

## Archaeologically Sensitive Areas

Archaeologically Sensitive Areas		
Type	Audience	Author
Definitive	Local	D&G SMR

69. Dumfries and Galloway Council is alone in having formally identified Archaeologically Sensitive Areas. These are areas that have been identified as locally important and are defined in the Local Plan. Their designation is non-statutory but they are used within planning locally to, ‘safeguard ... character and archaeological interest...’ (Wilson 1999, p61)

## Historic Land-use Assessment

Historic Land-use Assessment		
Type	Audience	Author
Indicative	National	HS/RCAHMS

70. The Historic Land-use Assessment project (HLA) is jointly sponsored by RCAHMS and HS. Through an analysis of known sites, aerial photography, and modern and historic mapping, HLA aims to categorise the entire Scottish landscape by 2012. The aim is to create a non-definitive polygon data set based on current knowledge, available sources and professional judgement. The project is approximately 75% complete.

71. Of all the polygonised data sets used by the curators, HLA is used the least. It also provoked an extreme range of responses from: ‘Genuinely very good.... Like it a lot.’ (SMR/HER service) to, ‘HLA is a grandiose waste of money!’ (Stakeholder).

72. Issues with the data range from concerns about the scale at which landscapes are defined, the complexity of the layering structure and the information attributed to each polygon:

‘Too broad a brush stroke.’ SMR/HER service.

‘We ... [have] serious concerns about the lack of attribute data.’ SMR/HER service.

*‘... HLA [is] like any like other interpretive tool, a tool to be used as a guide, tempered by professional judgement, common sense and caution.’*

*SMR/HER service.*

73. In most local authorities, it seems, HLA had not yet found its audience. There is a general sense of it not being used and, when it is, there is a sense of curators being overwhelmed, ‘it needs to be broken down ... We just don’t have the time to do this.’ SMR/HER service.

74. Where it is used confidently, services are more forgiving, ‘not a single reclassification.’ SMR/HER service.

75. 40% of the stakeholders identified using HLA data with Planners and Engineering-and-Environmental consultants being identified as the most intensive users. ‘HLA has been invaluable in enabling us to manage the [National] Park,’ was the response from one National Parks stakeholder, going on to add, ‘HLA was a key tool in producing the State of the Park Strategy and the Park Plan.’

76. To address some of the concerns RCAHMS is undertaking a survey of HLA users in 2009-10.

## Events Polygons

### Events polygons

Type	Audience	Author
Definitive	National	SMRs/HERs/HS/RCAHMS/Eventer <sup>8</sup>

77. A table containing a list of the local services that create events polygons can be found in Appendix 5.

78. There are various interpretations of what an event is. *Informing the Future of the Past II* provides the most up-to-date overview.<sup>9</sup> The definition accepted by the Association of Local Government Archaeological Officers (ALGAO) is:

‘A single episode of primary data collection over a discrete area of land. This event can only consist of one investigative technique and is a unique entity in time and space.’ (Bourn 1999).

*‘What is an archaeology service doing if they don’t maintain events polygons in their area? It is a core requirement of a service to know what has gone on in their area within a GIS system.’*

*SMR/HER service.*

79. The definitive nature of this data set makes it one that is seen as useful to all. Eleven of the Scottish local authority Historic Environment services create events polygons, the remainder wish to implement them in due course.

80. Although the creation of events polygons is seen as universally useful by local authority services, how they are created is not standardised. For some, the entire survey area is recorded as the event; for others, only the area disturbed by the intervention (the trenches or area of excavation); in some cases, both are recorded on separate layers.

81. Added to this, events polygons can be created by the person or organisation conducting the fieldwork - the ‘eventer’. This type of polygon is beginning to be submitted through the Online AccesS to the Index of archaeological investigations (OASIS) for use by the local authority services and RCAHMS.

82. Historic Scotland also recently commissioned Rathmell Archaeology Ltd to produce a Properties in Care (PiC) management tool. The database, known as HERMAN, contains a range of management information including polygonised events (Rees & Turner 2008).

## Site Extent Polygons

### Site Extent Polygons

Type	Audience	Author
Indicative	National	SMRs/HERs/RCAHMS/Academic/Commercial

83. A table containing a list of the local services that create site extent polygons can be found in Appendix 5.

84. In most cases, what is being polygonised as a site extent polygon could generally be identified as a monument. A definition of a monument can be found in *Informing the Future of the Past II: C.4 Monument*. It states:

‘Almost any structure or deposit of man-made origin can be classified as a monument, submerged, buried or standing proud.’  
(Gilman and Newman (eds.) 2007, p C.7)

*‘It is important all sites we know of are polygonised ... Archaeology is a spatial discipline. If you know where it is, then show it ... [It is] important to good decision making.’*

*SMR/HER service*

85. Site Extent Polygons are an indicative, non-definitive data set created, in most cases, by local curators to aid them in managing their local historic environment resource. The polygons are created using current knowledge, available sources and professional judgement.

86. Two distinct types of site extent polygon were identified. These were:

- Known Site Extent Polygons
  - A polygon defining the limits of known upstanding and prospected remains.
- Buffered Site Extent Polygons
  - A polygon defining the limits of a site with an additional buffer around the monument to protect areas where professional judgement suggests there is significant potential for further surviving remains.

87. Buffered Site Extent Polygons can be broken down further into:

- Bespoke Buffered Site Extent Polygons
  - Irregular buffers based on topography and professional judgement.
- Standard Buffered Site Extent Polygons
  - Standardised buffers based on known Site Extent Polygons with the addition of a standard buffer width applied to all monuments.
- Automated site-centred Buffered Site Extent Polygons
  - Automatically created circular polygons based on a site’s grid-reference with a buffer diameter assigned based on the monument type. Different monument types may have different buffer diameters i.e. all standing stones may be assigned a buffer of 10 m.

88. Nine of the local services have created some Site Extent Polygons and five others have the ambition to create them.

89. Opinion is divided between two camps on the reasons why Site Extent Polygons are needed:

- Resource management
  - ‘They are the only way of effectively managing the Historic Environment, without site extents then no management can be applied to sites.’ SMR/HER service.
  - ‘Polygons make it much easier to visualise the relationship between individual elements of an historic landscape.’ SMR/HER service.
  - ‘How do you avoid a dot?’ SMR/HER service.
  
- And third party land management
  - ‘They are very useful and help the public to an understanding of the scale of a monument – but they are not essential.’ SMR/HER service.
  - ‘If access to data is wider than the officers who now operate the system for DC (Development Control), then ... the data alone is not adequate for use as a land management tool.’ SMR/HER service.
  - ‘When SMR data was only intended for use internally, by specialist officers who were familiar with the nature of the data ... polygonisation was possibly not such an issue, as those using the data would be aware that a point on the map did not represent the entirety of the site....’ SMR/HER service.

90. Two of the local services do not think Site Extent Polygons are needed:

‘Polygons are needed for land management but I don’t think they are that important for archaeological sites.’ SMR/HER service.

With one having strong views against them:

‘[Site Extent polygons] are only of any use for specific questions and should only be used for those questions after which they should be thrown away. They only reflect the understanding of a site at the time of the question and do not and can never truly represent the known extent of a site. It would be a terrible waste of money to polygonise sites as the inferred original landscape can only be the entire landscape. It will never be the right extent. It will only ever be a false boundary. It would be reckless and misleading to even try.’ SMR/HER service.

91. Site Extent Polygons are also regularly created by archaeological professionals working in the academic and commercial sectors.

'The problem is that most of the sites are polygonised 'by eye' rather than being based on any survey or field work. Because of this we are obliged to check all the non-statutory sites in the field. It isn't clear where the shapes are coming from.... Because we can't verify the source we have to verify them.'

Commercial Stakeholder.

*'We generate a lot of polygons and these don't seem to get back into the system. We deposit our EIAs (Environmental Impact Assessments) with planning and so presumably the local archaeologists see them.'*

Commercial Stakeholder.

## Area Triggers, Consultation Triggers and Mapping 'Potential'

92. Area triggers, consultation triggers and mapping 'potential' are used by a number of curators. How they are used varies with some curators using them to inform others from within their own local authorities that there are constraints where consultation is required, with others using them to highlight the unknown aspect of the record to their colleagues.
93. Where they are used to inform others, the polygons tend to be the same as those created for Site Extent Polygons with the attributes removed. Instead of accessing the site detail the users are provided with guidance on who to consult for advice. Like Site Extent Polygons, the polygons are created using current knowledge, available sources and professional judgement.
94. When used to map potential, the polygons tend to remain in-service. Here the polygons are an *aide-mémoire* for the curator. They tend to be created based on gut feeling rather than fact and reflect characteristics like an increased abundance of sites in a given area or the similarity of a landscape to another where more information is available.

## Other Polygons

95. Other Historic Environment polygonised data sets identified during this survey are:
- Battlefields: a coarse, bespoke in-house data set produced by East and Mid Lothian.
  - Burgh Survey Mapping: polygonised by Rathmell Archaeology Ltd for use in Dundee.
  - The Scottish Burgh Survey Series provide paper based polygons identifying both the known and the potential for the surviving historic assets.
  - British Geological Survey (BSG) mapping data was identified as important to Stirling and Clackmannan.
  - Scottish Natural Heritage (SNH) data for Ancient Woodlands was also identified as important to Stirling and Clackmannan.
  - The Antonine Wall: A number of polygons were created, by RCAHMS, during preparation work for the Antonine Wall's nomination as a World Heritage Site.
96. One SMR identified the digitisation of site extents from OS 1st and 2nd edition mapping as being an urgent priority. Based on work they had already done they estimated that, '15-20,000 sites could easily be added [to the record] if old maps [were] polygonised.' They go on to explain, 'Old maps need to be polygonised because if we export the data it (landscapes) will be blank. If it isn't polygonised it has the potential to be missed and not dealt with by 3rd parties using downloads of our data.'

## **Other Data Relevant to Polygonisation**

97. RCAHMS air photograph transcriptions were mentioned time and again throughout the survey. Comprising lines rather than shapes this polyline data set has been used by many as the source information from which to create polygons.

‘... cropmark transcriptions have been very useful, especially for SRDP. Without this data I wouldn’t have been able to do anything.’ SMR/HER service.

98. Other line based data identified included:

- Roman roads: Scottish Borders
- Ridge dykes: Scottish Borders
- Antique shorelines: Dundee, Rathmell Archaeology Ltd

### Part 3: Who uses Historic Environment Data?

99. The survey contacted over 120 stakeholders working across the sector (Appendix 2). As well as being given the opportunity to discuss polygon use they were briefly questioned on their present use of Historic Environment data.

100. Of those who responded, the majority could be classified as professional users and of these 78% use Historic Environment data at least weekly (Chart 1).

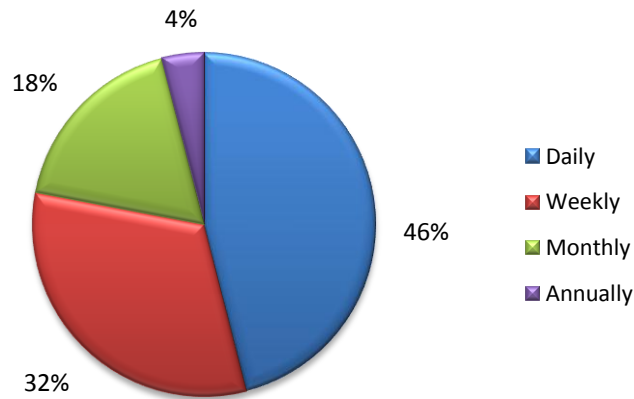


Chart 1: How frequently do you use Historic Environment location information?

101. Historic Scotland data are the most used data sets with 98% of stakeholders using it in some way (Chart 2). Local authority Historic Environment data and Royal Commission data were also used regularly with all three seen as essential sources that need to be consulted in advance of fieldwork.

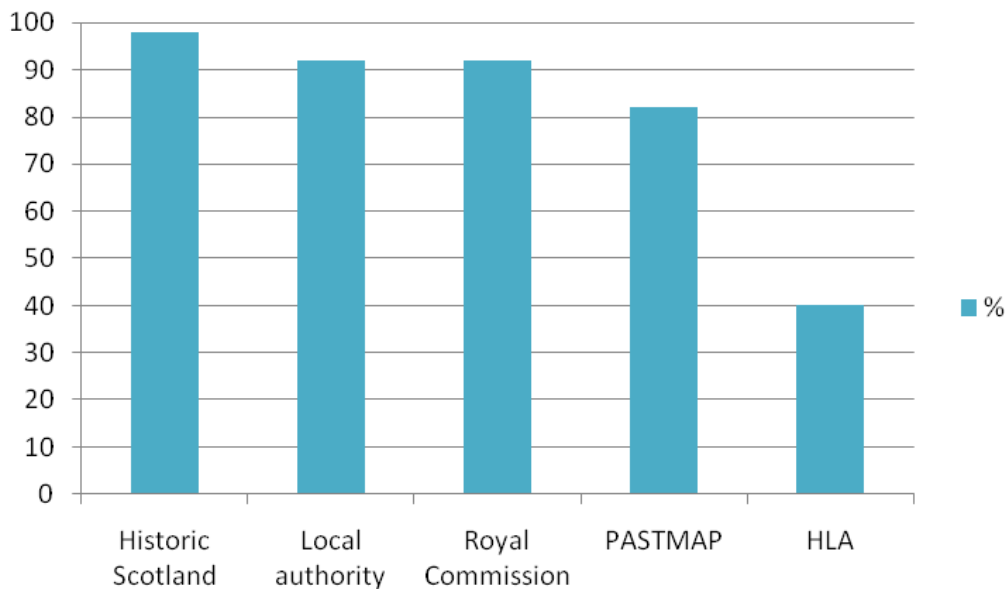


Chart 2: Do you use Historic Environment data from any of the following sources?

102. The majority of users access information using PASTMAP, Canmore and Local authority websites (Chart 3). Data use is significant among professional users with over 70% accessing data online and 64% regularly downloading it. Data is downloaded for a variety of uses. Some reasons to download the data mentioned during this survey included downloading the data to use it within in-house, user, GIS software; downloading the data to use on portable fieldwork systems and downloading the data so it can be ‘frozen’ for use in Public Local Inquiry.

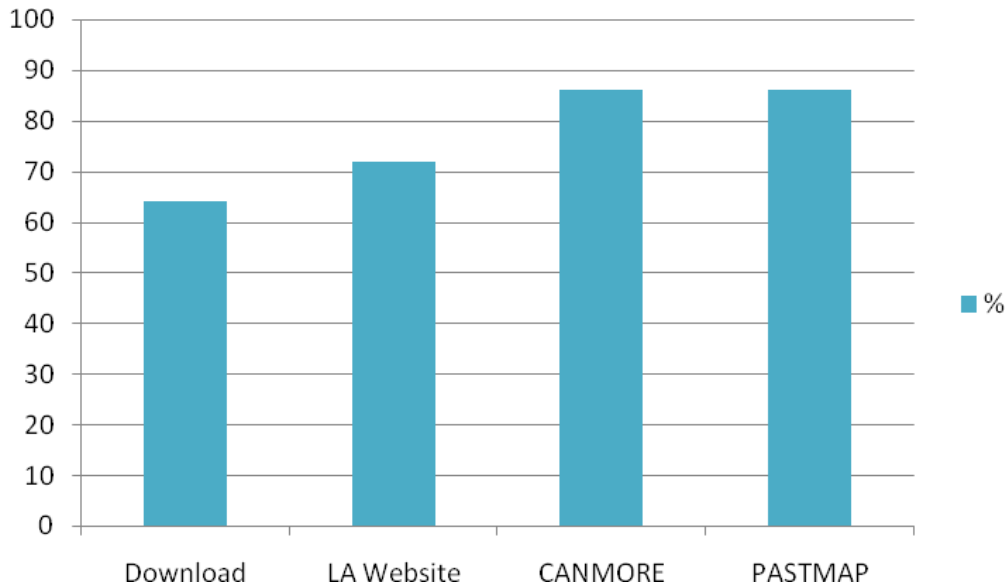


Chart 3: How do you access site location information?

103. Users are evenly split between those who do and don't get the location information they need from point data (Chart 4).

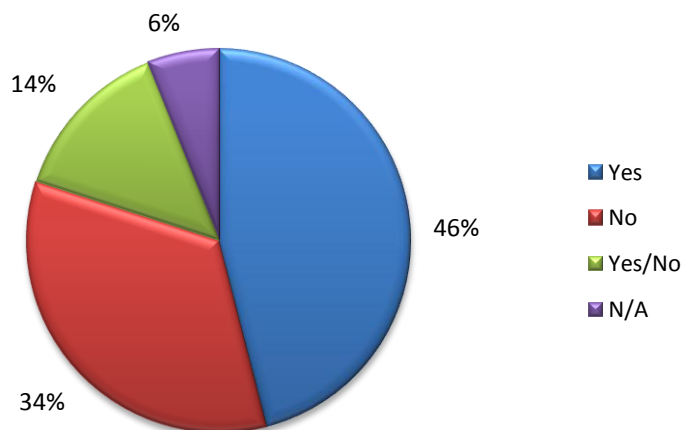


Chart 4: Does point data provide you the location information you require?

104. A majority of stakeholders (66%) feel there is a need for more access to polygonised location information (Chart 5).

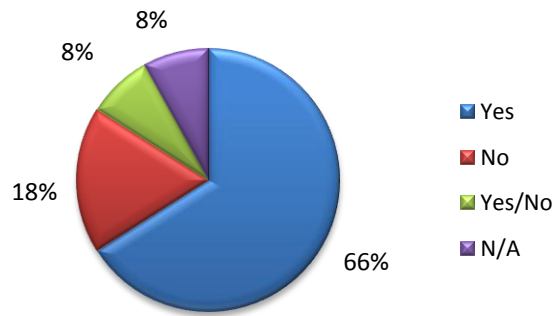


Chart 5: Is there a need by your organisation for greater access to polygon location data?

105. Similarly, a majority of stakeholders (70%) feel that web services that allowed the data to be streamed over the web for use within the remote users GIS software would be something they would exploit (Chart 6).

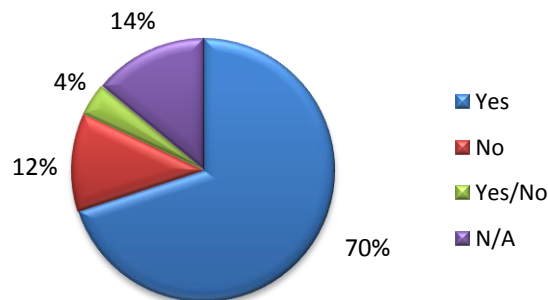


Chart 6: Would you use polygon location data in your GIS system if it could be accessed 'live' on the web using web map services?

106. The most positive response was to making polygonised data available for use on interfaces such as Google Earth (Chart 7). 78% of stakeholders said they would use this service and there was a general feeling that this was the most inclusive way of making the data available, requiring no software investment by the user.

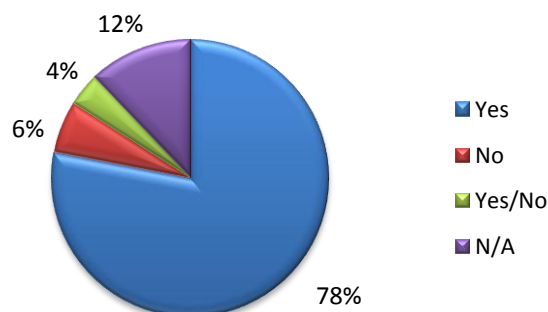


Chart 7: Would you use polygon location data if it could be accessed through an interface such as Google Earth where the data can be combined with data from other sources?

107. To understand the use of Historic Environment polygons, this report will discuss eight different user groups. These are:

- National government
- Local government (Not including the Local SMRs/HERs listed in Appendix 1)
- Academic
- Commercial archaeological
- Engineering consultancy
- Museum
- Public use: Local societies and interested amateurs

108. The need for Historic Environment data is so great it covers a huge range of organisations both public and private. An extensive but not comprehensive list of Historic Environment data users is available in Appendix 6. This report has not contacted all those listed, instead a sample of organisations have been questioned to give a broad insight into the needs of users from across all sectors (Appendix 2).

### **National Governmental Use**

109. National government stakeholders are at the top end of those using Historic Environment data with 80% of those questioned using Historic Environment data daily. This group identified using Historic Environment polygons in two distinct ways. These are to:

- Define statutory protection
- Manage national estates.

### **Defining statutory protection**

110. A range of government agencies are responsible for defining or managing statutory protection. From Ancient woodland to Sites of Special Scientific Interest, the process of designation involves significant consultation. Designation imposes a land charge on the land owner and the process needs to be carefully managed. Polygons are seen as a tool that would improve the process, and in particular improve communication.

### **Case Study: Historic Scotland**

111. As seen in Part 2, Historic Scotland is responsible for the designation of Scheduled Monuments, Listed Buildings, Designated Wrecks and World Heritage Sites. Statutory protection is not static, and a programme of work that schedules new sites, modifies existing sites and declassifies others is continuous. In preparation for a scheduling trip, HS collect available Historic Environment data and sift it three times to identify a list of the sites most likely to meet the scheduling criteria and so merit a field visit.

112. 'We contact all potential owners of the monuments in advance of field visits, and where possible arrange to meet them, so having a polygon for the site/monument as well as point, can be very useful.' Mairi Davies, Historic Scotland, Scheduling Team.

113. Mairi Davies explained in more detail that, ‘point data for very large sites, or linear features like Roman roads, ... pose a real problem, since it can be difficult to work out from text sources alone what the surviving extent of the site is. This can hamper our attempts to identify the true owner(s) of a monument and make it difficult to explain to potential owners what we are looking for.... Being able to understand the area or extent of a monument is crucial in identifying who owns it. Polygons would make many aspects of our work easier.... In cases where a site is not well known or is not mapped on the OS, it helps us convey to a member of the public what we are talking about ... not having a polygon can lead to misunderstanding. [Who owns a monument] is crucial to us, as scheduling is a burden on the land owner and has to be registered at the Land Register. Being able to define a site in advance would help us identify the owner in advance of the site visit, ensuring that we begin the relationship with the landowner on a good footing ... Often, parts of the same monument are owned by different people and occupied/farmed by others. Once we have identified who the owner(s) might be, we send them a letter, a map indicating the location of the site, and a copy of our booklet on Scheduled Monuments. By sending out maps with shapes on them, contacts can write on the map and say who owns what ... [Polygons allow] better communication, certainty/confidence [and] increased efficiency when dealing with the public.’

*‘Being able to define a site in advance would help us identify the owner in advance of the site visit, ensuring that we begin the relationship ... on a good footing ....’*

Mairi Davies, Historic Scotland,  
Scheduling Team.

114. The needs for polygons as identified from discussions with Historic Scotland are:
- Designation: The need to define the extent of statutory protection.
  - Clarity: The need for HS and land owners to know where sites are and who owns them.
  - Improved Communication: The need for land managers, curators and inspectors to communicate effectively and agree on the location of known sites.
  - Efficiency: The need for HS to be able to access existing data from local and national government and use it in conjunction with modern technology to protect nationally important sites.

### **Managing National Estates**

115. SHEP 2008 (paragraph 1.19 (f)) identifies the, ‘Scottish and UK government departments, executive agencies, non-departmental bodies and other bodies with direct responsibilities for parts of the Historic Environment, whether managing individual assets or areas of landscape or with key policy responsibilities, and whose policies impact on the Historic Environment,’ as:

- Scottish Government Departments
- NHS (Scotland)
- Scottish Courts Service
- Scottish Prison Service
- Forestry Commission Scotland
- Transport Scotland
- Ministry of Defence, Defence Estates Agency
- Northern Lighthouse Board.

**Case Study: Scottish Government Rural Payments and Inspections Directorate (SGRPID, formerly SERPID)**

116. The SEARS Natural Scotland website indicates that, 'SGRPID provides a number of financial incentives and schemes offering advice and guidance which are available to both the arable and livestock sectors of the farming industry.'<sup>10</sup> They are responsible for managing the Single Farm Payment Scheme and the Scotland Rural Development Programme.

117. Janet Quinn, Inspections co-ordinator at SGRPID, pointed out that, 'if land managers didn't have access to the data upfront they can't be challenged,' suggesting that land managers will not be held responsible for damaging sites of historic importance if there is not a data set, of sufficient quality, that they can use.

*'We need a historic environment data set that is as accurate as possible and accessible that can inform non specialists.... The majority of farmers, if they know there is something, will protect it.'*

Janet Quinn, Inspections co-ordinator at SGRPID.

118. She went on to say, 'we need a Historic Environment data set that is as accurate as possible and accessible that can inform non specialists. An accurate portrayal of where there is known archaeology.... The majority of farmers, if they know there is something, will protect it.'

119. With respect to PASTMAP she suggested, 'PASTMAP and the data on it just aren't useful enough ... we will make do ... we have to use what we have ... but PASTMAP has a disclaimer on it about land use and planning. This is not helping.... The SMR data is not consistent. Not up to scratch.... We have to be able to hold the line at appeal. No woolly areas.'

120. She continued, 'The Scottish Government is moving towards streamlining the various rural agencies ... [and] government efficiency. In the past land managers were having many different inspections from different organisations now the intention is to have one overarching inspection. [Applicants] will be applying to a family of [government] organisations rather than individual organisations ... [but] all payments coming from the one organisation.... The next potential step is to involve the local authorities.'

121. Regarding the inspection system she explained, 'we (SGRPID) inspect 5% of applicants ... Inspectors go out with a hand held PC. The intention is that these GPS kits (Global Positioning System) will evolve to include all SRDP data [a development agreed for 2009]... The idea is to move to a GIS based system [where] the inspector on going into an area, has a data download that tells the inspector what to ask.'

122. The needs for polygons as identified from discussions with SGRPID are:

- Clarity: The need for land managers to know where sites are on their land, allowing SGRPID to use existing regulation to monitor sites using the existing inspection system.
- Improved Communication: The need for land managers, curators and inspectors to communicate more efficiently and agree on the location of known sites.

- Efficiency: The need for non-specialist SGRPID inspectors to be able to use data from local and national government with modern technology to monitor a range of environmental issues, of which the Historic Environment is just one.

*'SGRPID inspect 5% of applicants ... Inspectors go out with a hand held PC. The intention is that these GPS kits (Global Positioning System) will evolve to include all SRDP data [a development agreed for 2009]... The idea is to move to a GIS based system [where] the inspector on going into an area, has a data download that tells the inspector what to ask.'*

Janet Quinn, Inspections co-ordinator at SGRPID.

#### **Case Study: Forestry Commission Scotland (FCS)**

123. The Forestry Commission Scotland (FCS) website says that they 'serve as the forestry directorate of the Scottish Government, advising on and implementing forestry policy and managing the national forest estate.'<sup>11</sup> They are tasked to, 'protect and expand Scotland's forests and woodlands and increase their value to society and the environment,' by working, 'with the Scottish Government to deliver the Scottish Forestry Strategy.'
124. Howard Davies, the GIS Technical & Development Manager for Forestry Commission Scotland, summaries the Forestry Commission's use of the data as, 'we use the data to assess forestry proposals and to make sure no damage is caused to environmental and historic resources. We also use the system to assess new areas and to generate KPIs (Key Performance Indicators)... We use it to monitor and manage our land.'
125. Howard went on to say, 'You have to remember we change the land use. We can have quite a significant impact on a landscape. The better the information we have the better we can minimise this impact on historic resources.'
126. Matt Ritchie, the Forestry Commission Scotland Archaeologist for Forest Enterprise Scotland, explained that, 'the national forest estate is managed by 10 forest districts. Historic Environment information is sourced from online sources such as Canmore and is often collated independently, held in GIS layers maintained by forest district conservation managers'
127. Howard Davies, adds, 'We take copies of the data we can get (national data sets) and load it into our GIS. This is then made available through our intranet and to those with GIS software. Everyone (all FCS employees) has access to the intranet.'

*'You have to remember we (Forestry Commission Scotland) change the land use. We can have quite a significant impact on a landscape. The better the information we have the better we can minimise this impact on historic resources.'*

Howard Davies. Forestry Commission Scotland.

128. Regarding future developments on the national forest estate, Matt Ritchie commented, 'I am working with colleagues across the UK to develop a national forestry historic environment tool. We will need to import a lot of data from a lot of different sources - particularly the local authority Historic Environment Records. The need to collate and manage the data ourselves is of paramount importance - our Forestry GIS is an essential tool used throughout forestry management and the lack of a comprehensive flexible historic environment data set is frustrating'
129. Matt Ritchie continued, 'Forestry Commission Scotland is sympathetic to the positive management implications inherent within the development of polygonisation within the historic environment record, but is cautious in relation to associated management requirements following any development of unconfirmed / untested polygons by desk-bound technicians.'

### **National Government Use: Discussion**

130. The need for Historic Environment polygons at a national level is significant. In 1998 The Scottish Office identified that about 12% of all land in Scotland is in public ownership split between approximately 1500 estates (The Scottish Office 1998).
131. The Scottish Historic Environment Policy, October 2008 (SHEP 2008), identifies that all these public organisations have to managing their Historic Environment assets. This implies that all these organisations must maintain a record of their estates Historic Environment assets and actively monitor their condition and conservation.

### **Local Government**

132. Planning and Development Management, *as explored in Part 1*, is the most significant consumer of Historic Environment data by local government. It is the *raison d'être* for many of the local services with all providing Development Control (DC) services to their local authorities and most funded in whole or in part by a planning or a planning related department (Appendix 1). As well as supplying data, the local services actively manage their resource, providing their planning departments with specialist staff who can advise on current issues and the correct way to use their data. As well as planning, outreach and community engagement were mentioned as a priority by four of the local authority services and SHEP 2008 would suggest that the management of local authority Historic Environment assets is also a priority.
133. The needs for polygons, as identified by Local Authorities are:
- Designation: The need to know the extent of statutory protection in local authority areas.
  - Planning: The need for local authorities to be able to access information on the location of sites so that this information can be incorporated into Development Planning from Structure Plans/Strategic Development Plans to Local Plans/Local Development Plans and, Strategic Environmental Assessments.
  - Development: The need for Development Management to know the extent of undesignated sites in their local authority area so that the impact of development on these sites can be mitigated.

- Improved Communication: The need for land owners, land managers and the curators of local authority services to communicate effectively and agree on the location of known sites.
- Efficiency: The need for local authorities to be able to access existing data from national government and use it in conjunction with modern technology to protect statutory and undesignated sites.
- Clarity: The need to know where sites are on local authority land to allowing specialist and non specialist local authority staff to manage the resource.
- Inclusion: The need to know the location of sites within local authority areas to allow the local population the opportunity to study, visit and enjoy the local Historic Environment.

## Academic Use

134. A great deal of Historic Environment data originates from academic research. Not only are the academics users of the data, they are actively engaged in the creation of new data.

Academics use Historic Environment data in two ways. These are:

- Teaching
- Research.

135. Teaching in the use of Historic Environment data and where to find it is seen as an essential part of cultural undergraduate degrees in this area.

Students are expected to be able to find, access and use data in assignments and dissertations. One academic commented; 'We ... download data from all the curatorial organisations for teaching....'

*'In a field where most of the data is poorly understood we need to be able to compare and share more.... This can only be done if we can define the sites and landscapes.'*

Academic Stakeholder.

136. The data was identified as useful not only to those studying historical and archaeological degrees but also to disciplines related to culture and commerce like tourism, planning, art and architecture.

137. 'Those going on to work in travel, tourism and business need to know there are [Historic Environment] resources they can access that they can rely on throughout their careers.'

Academic Stakeholder.

138. Polygonisation is seen as important to allow the broadest use of the data across the academic sector. Some disciplines like travel and tourism have a two tier interest in the data: 'In the first instance they are interested in what and where is it, only later do they want to know the detail.' Academic Stakeholder.

139. As regards research, polygonisation is seen as essential for improve the discovery of resources and improve the quality of research.

140. 'What we find is that the data that is available is fine for landscape level studies but just isn't good enough when you drill down. A lot of the data we collect is based on site areas and location, so we need area data to be more accessible.' Academic Stakeholder.
141. The needs for polygons as identified from discussions with the academic community are:
- Clarity: The need for students from a range of cultural and business courses to have access to meaningful Historic Environment data that is well located.
  - Improved teaching aids: The need for academics from a range of cultural and business courses to be able to use meaningful Historic Environment data as a teaching aid.
  - Efficient research: The need for better access to polygonised data to improve the discovery of unpublished material, to aid understanding and interpretation and ultimately to improve the protection of the Historic Environment by better understanding the resource.

### **Commercial Archaeological Consultancy Use**

142. Commercial use of Historic Environment data is mainly linked to planning and land management. When the curators apply conditions to development, it is the commercial organisations who work to fulfil these conditions by carrying out excavation and research on behalf of their clients. Since National Planning Policy and Guidance first embedded the Historic Environment within planning in the early 1990s, commercial activity has been producing the vast majority of new data across the sector.
143. Data tends to be consulted online in the first instance to allow the organisations to quantify the size and scale of projects. The data is used to enable the companies to estimate costs and tender for business.
144. Once projects have been successfully tendered the data is mostly downloaded and used in-house.
145. The data is used as a starting point from which to start projects. Other than designations downloaded from Historic Scotland, it is rare that the downloaded data is used in final reports without some modification. Data is regularly downloaded from different sources and harmonised to provide a synthesised, project specific, data set. The process will involve going through the data and rationalising it by combining data where assets are interpreted as the same or deleting assets where they are not relevant to the project.
146. Existing polygonisation of undesignated sites is only seen as partially useful as it is rarely possible to identify the sources that went into defining the polygon.
147. 'Any polygon is only as good as the research behind it and if you want a really accurate polygon you have to go through the sources, maps, APs, ... test it in the field and then ... survey it. This is what we have to do for the non statutory sites within our study areas.' Commercial Stakeholder.

148. Events polygons showing the location of recent work are seen as particularly important to the sector as a tool to enable 'grey literature' and recent work to be discovered. An anecdote by one contractor illustrates this;
149. '[I had a] problem ... with a study that was [displayed] as a single point ... that was in fact a study for a pipeline where over 100 new sites had been identified... Polygonising events would resolve this problem....' Commercial Stakeholder.
150. The needs for polygons as identified from discussions with the commercial sector are:
- Clarity: The need for clients, curators and contractors to be clear on the areas and assets affected by potential development.
  - Efficiency: Better quality data to allow contractors to be more accurate when tendering.
  - Efficiency: Better quality, well attributed data to reduce the data cleaning process and to reduce the costs of development.

## Engineering/Environmental Consultancy Use

*'Points are virtually useless in conveying site locations and extents at large scales, particularly where non-heritage specialists are involved. Policies and guidance have to be rigorous as they are liable to be tested at public inquiry, therefore they must be based on the best possible data available.'* Environmental Consultancy Stakeholder.

151. The work of commercial archaeological units and the work of the engineering and environmental consultancies is very similar and closely linked. In many cases the engineering and environmental consultancies commission commercial archaeological units to prepare work on their behalf.

152. The main focus of Engineering/Environmental consultancies is on desk based legal and regulatory documentation. Their work tends toward the writing of Development Impact Assessment statements; management plans for sites, monuments and landscapes; policy development such as Supplementary Planning Guidance and Environmental Impact Assessments/Environmental Statements.

*'It is difficult to explain to developers what we mean by a site.'*

Commercial Stakeholder.

153. The needs for polygons as identified from discussions with this sector are:
- Clarity: The need for clients, curators and contractors to be clear on the areas and assets affected by potential development or regulation.
  - Efficiency: Better quality, well attributed data to reduce the data cleaning process and to reduce the costs of development.

*'With better information on location we can better assess if a development will have an impact.'*

Commercial Stakeholder.

## **Museum Use**

154. No drivers were identified for polygonisation from within the museum sector although any improvement in data quality is seen as a positive. It was noted that improvements in data quality are reflected in exhibitions, publications, guides and information provided in response to public enquiries but that generally museums tend to be more focused on site detail rather than site location.

## **Public Use: Local Societies and Interested Amateurs**

155. This survey has not been particularly successful at soliciting a response from this sector. The limited response received pointed out the obvious difference between public users and the professionals, that being access to technology. Local societies and interested amateurs work on a shoe string and traditional, mostly manual, methods of recording are preferred.

156. Public use of data beyond the general interest of local societies and interested amateurs can be inferred. From the study it is possible to identify two public needs for Historic Environment data. These are:

- Planning (*Householder Permitted Development Rights*)
- General economic activity

## **Householder Permitted Development Rights**

157. The Town and Country Planning (General Permitted Development) (Scotland) Order 1992 sets out the existing regulations on permitted works. There is a trend toward relaxing planning regulation and this is reflected in the recent Householder Permitted Development Right: Consultation Paper (Scottish Government 2008c).

158. The likely relaxation on householder development rights does not change the obligation of the householder to check to see if there are reasons why permitted development rights might be restricted for their property. There is a continued need for householders to be able to access Historic Environment data that advises them of any possible Historic Environment constraints.

## **General Economic Activity**

159. The Historic Environment has an impact on almost every element of the society. It also has a direct relationship to tourism. People come from across the world specifically to visit Scotland's historic places and landscapes. People live in historic houses, farm historic landscapes and develop historic towns. People's lives are formed from a patchwork of landscapes and places and it is the Historic Environment that gives the people of today a framework for historical consciousness and a sense of identity.

160. The public needs for Historic Environment polygons are:

- Designation: The need to know the extent of statutory protection.
- Planning: The need to know the extent of local conservation and protection.
- Development: The need for householders to know the extent of sites in their area so that the impact of development on these sites can be mitigated.
- Improved Communication: The need for the public, land managers and the curators of to communicate effectively and agree on the location of known sites.

- Management: The need of the public to know where sites are so they can manage their resource.
- Economy: The need to know where sites are so they can be promoted them and used for economic gain.
- Inclusion: The need to know the location of sites to allow the public the opportunity to study, visit and enjoy their Historic Environment.

## Discussion

161. The study has identified that that the main drivers for polygonisation are:

- Designation
- Planning and permitted development
- Land Management

### The INSPIRE Directive

162. Although not yet a driver, the European Commission's *INSPIRE Directive* is likely to become a driver following its transposition into Scottish Law in September 2009.

163. Aimed at, 'establishing an infrastructure for spatial Information in the European Community.' (European Commission 2007 L 108/1) It sets out an approach to the more systematic and effective use of environmental geographic information in the development and delivery of policy and services, and it aims to streamline government by making more efficient use of the geographic information it collects.

164. Building on the principles of collecting information at one level of government and making this information available to all other levels. It promotes the idea of government efficiency through the sharing of resources.

165. The implication is that data will become available to all levels of government and will need to be fit for a board audience.

### The Audience for Historic Environment Polygons

166. The study identifies that the audience for polygons is large and diverse. It identifies that there is a significant professional audience using Historic Environment data at least once a week. The study also identifies that there is an even larger groups, including land managers and the public, also needing access to polygonised data. Three audiences each with their own needs.

### Professional Historic Environment Practitioners

167. Although there are needs for polygonised Historic Environment data from all audiences it is the Historic Environment Professionals who are creating the polygons. Not surprisingly the polygons are created to suit the task at hand and are often not seen as suitable for wider dissemination. There is a reluctance to allow the polygons to be used by others. There is a fear that the data will not be fully understood and that the data is not fit for external use. This reflects a concern that the data alone is often not sufficient and that in many cases the data needs to be supplemented by advice from a historic environment professional.

168. An example offered by one local authority service was of a buffered site extent polygon being used by a farmer to claim compensation. The worry here is that the farmer might be receiving more compensation than they were entitled to, due to the buffering around the site.

169. Another example offered was a polygon defining the extent of known buildings within a rural medieval township. This scenario sees a land manager protecting the buildings but deep ploughing the area around the buildings for forestry, not realising that this area is also likely to contain surviving historic assets.

### **Land Managers and the Public**

170. There is significant frustration concerning access to polygonised Historic Environment data from within the land management community. They understand this type of data has to be produced by Historic Environment professionals but they find they are unable to get hold of the data they need. Either the data does not exist; or it does exist but the curator won't release it or they are given data that is inconsistent, not comprehensive and too complex for their needs.

171. There is a mis-match of need to available resource. The professional user is creating very detailed technical information attached to a plethora of polygon classes while the land manager is looking for a simple polygon data set that advises them when and who to consult. Both needs are valid but only one is being serviced and, even then, only partially. A middle ground between audience and supplier may have to be sought.

### **Polygon Classes**

172. The study catalogued the polygons being produced across the sector in Part 2 and what this has identified is that there are two distinct classes of polygon being used.

### **Form Polygons**

173. This type of polygon maps and depicts the exact extent of something known. This might be the boundary of designation, the limit of a survey of the extent of a site. These polygons have a value in themselves as they add understanding by defining the location of the data they depict. Form polygons add information and value.

### **Discovery Polygons**

174. These polygons aid in the discovery of information using location. This might be the exact location of something that has a known extent; it might be a large area where the polygon is large due to poor locational tolerance of the underlying data or it might be a where the polygon is based on potential rather than known fact (i.e. pottery from a parish: the pottery has no known find location but is known to originate from a specific parish. The pottery could, in this case, be linked to the parish polygon to aid its discovery). It is not always important for the user to see these polygons because discovery polygons improve the discovery and understanding of data but not the quality of the data.

## Part 4: Summary and conclusion

### Summary

175. The study identifies that the main drivers for polygonisation are:
- Designation
  - Planning and permitted development
  - Land Management
176. The European Commission's *INSPIRE Directive* is likely to become a driver following its transposition into Scottish Law in September 2009. As data becomes available to all levels of government the data will need to be fit for a broad audience.
177. There are three primary audiences for Historic Environment polygons, each with their own needs. These are:
- Professional Historic Environment practitioners
  - Land Managers
  - The Public
178. The audience for Historic Environment data is considerable with approximately 1500 different organisations, in the government alone, needing access to Historic Environment location information (The Scottish Office 1998).
179. There is a mis-match of need to available resource. The professional user is creating very detailed technical information attached to a plethora of polygon classes while the land manager is looking for a simple polygon data set that advises them when and who to consult. Both needs are valid but only one is being serviced.
180. There are two main classes of polygon identified. These are:
- Form polygons
  - Discovery polygons
181. Form polygons depict the exact extent of something known. These polygons have a value in themselves as they add understanding by defining the location of the data they depict.
182. Discovery polygons aid in the discovery and understanding of information using location. These polygons do not improve the quality of the data.
183. Historic Environment polygons are created and curated by government.
- Historic Scotland produce and curate polygons for:
    - a. Scheduled Monuments
    - b. Inventory Gardens and Designed Landscapes
    - c. World Heritage Sites
    - d. PiC Events
  - RCAHMS produce and curate polygons for:
    - a. The Historic Land-use Assessment (in partnership with Historic Scotland)
    - b. Site extents (not comprehensive)
    - c. RCAHMS Events
  - Local Authorities produce and curate polygons for:
    - a. Conservation areas
    - b. Listed buildings (not comprehensive)
    - c. Site extents (not comprehensive)
    - d. Events (not comprehensive)

## Conclusions

184. Polygons are widely used across the Historic Environment sector. They are seen as a useful tool that adds value by defining geographic detail or improving data discovery. They are being used by two very different audiences that want to use the data in very different ways. Certain data sets, like Scheduled Monuments, offer national coverage; they are comprehensive and are freely available but many of the others are inconsistent, piecemeal and are often restricted. Inconsistencies in data structure and data availability combined with government aims to deliver lighter touch governance and streamlined services has led to frustration among users.
185. Polygonisation standards, soon to be produced by RCAHMS in collaboration with HS and ALGAO, will go a long way to improving the consistency and quality of this data. Initiatives like the *INSPIRE directive* are likely to increase the need to access such data. Government policy is aimed at empowering the customer through access to data; the focus is on the customer, efficiency, streamlining and adding value through collaborative solutions.
186. There is an opportunity for the curatorial community and the significant government and professional audience to invest in a collaborative, problem solving approach that provides all three audiences with the resources they need. Much of the work has already been done and a great deal of data has already been created. There is no doubt that there is much still to be produced but the community must focus on the requirements of the customers.
187. Broad use gives the data value. The large audience and demand for this data indicated that the data has a significant impact on both the landscape and the economy. The Scottish Government alone needs all departments involved in land management and designation as well as all government owned estates to have access to the data. Wider use sees the data being needed by all involved in planning from curators and large scale developers to individual householders.
188. Yet, although the demand is significant, the resources allocated to delivering a solution are scant. Some curators do not even have the IT systems to create this data let alone the staff to create and maintain it (Middleton 2009).
189. The case for Historic Environment polygons is strong. Now the curatorial community in cooperation with the main user groups of professional and government data consumers need to work out how to deliver a collaborative solution fit for all users.

## Notes

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<sup>1</sup> <http://www.pastmap.co.uk>

<sup>2</sup> Those that could be contacted.

<sup>3</sup> <http://www.scotland.gov.uk/Topics/Agriculture/grants/Schemes/ccompliance> [Accessed 7th January 2009]

<sup>4</sup> <http://www.rcahms.gov.uk/> [Accessed 4<sup>th</sup> March 2009]

<sup>5</sup> HS, GIS downloader <http://hsewsf.sedsh.gov.uk> [Accessed 4<sup>th</sup> March 2009]

<sup>6</sup> See note 5.

<sup>7</sup> Planning etc. (Scotland) Act 2006

<sup>8</sup> The eventer is the person or organisation who undertook the event.

<sup>9</sup> Gilman and Newman (eds.). 2007 - *Informing the Future of the Past: Guidelines for Historic Environment Records (Second Edition)*, C.6: Events, C.20.

<sup>10</sup> <http://www.sears.scotland.gov.uk/ViewAgency.aspx?agency=SGRPID> [Accessed 25<sup>th</sup> February 2009]

<sup>11</sup> <http://www.forestry.gov.uk/forestry/HCOU-5YHKGG> [Accessed 25th February 2009]

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## Appendix 1: Local Authority Archaeological Services as of February 2009.

Unitary Local Authority (ULA)	HE Service provider (Feb 2009)	Name of service	HE Record type	Record ownership	Local Authority departments served
Aberdeen City Council	Aberdeen City Council	Aberdeen City Council Archaeological Unit	SMR	Unitary Local Authority (ULA)	<ul style="list-style-type: none"> <li>• Neighbourhood services</li> <li>• Museums and galleries</li> </ul>
Aberdeenshire Council	Aberdeenshire Council	Aberdeenshire Council Archaeology Service	SMR	ULA	<ul style="list-style-type: none"> <li>• Planning &amp; Environmental Services</li> </ul>
Angus Council	Aberdeenshire Council	Aberdeenshire Council Archaeology Service	SMR	ULA	<ul style="list-style-type: none"> <li>• Planning &amp; Environmental Services</li> </ul>
Argyll and Bute Council	West of Scotland Archaeology Service	West of Scotland Archaeology Service	SMR	ULA	<ul style="list-style-type: none"> <li>• Planning</li> </ul>
Clackmannanshire Council	Stirling Council	Stirling and Clackmannanshire SMR	SMR	ULA	<ul style="list-style-type: none"> <li>• Environment Service</li> </ul>
Dumfries and Galloway Council	Dumfries and Galloway Council	Dumfries and Galloway SMR	SMR	ULA	<ul style="list-style-type: none"> <li>• Planning and Environment</li> </ul>
Dundee City Council	Rathmell Archaeology Ltd	Dundee Historic Environment Record	HER	ULA	<ul style="list-style-type: none"> <li>• Planning</li> <li>• Museums</li> </ul>
East Ayrshire Council	West of Scotland Archaeology Service	West of Scotland Archaeology Service	SMR	ULA	<ul style="list-style-type: none"> <li>• Planning</li> </ul>
East Dunbartonshire Council	Rathmell Archaeology Ltd	East Dunbartonshire SMR	SMR	ULA	<ul style="list-style-type: none"> <li>• Planning</li> </ul>
East Lothian District Council	East Lothian District Council	East Lothian Council Archaeology Service	SMR	ULA	<ul style="list-style-type: none"> <li>• Culture and Community Development within Community Services</li> </ul>
East Renfrewshire Council	West of Scotland Archaeology Service	West of Scotland Archaeology Service	SMR	ULA	<ul style="list-style-type: none"> <li>• Planning</li> </ul>
Edinburgh City Council	Edinburgh City Council	City of Edinburgh Council Archaeology Service	SMR	ULA	<ul style="list-style-type: none"> <li>• Culture and Sport within Corporate Services.</li> </ul>
Falkirk Council	Falkirk Council	Falkirk Council SMR	SMR	ULA	<ul style="list-style-type: none"> <li>• Falkirk Museum</li> </ul>
Fife Council	Fife Council	Sites and Monuments Record – Fife Archaeological Unit	SMR	ULA	<ul style="list-style-type: none"> <li>• Development Services within Physical Regeneration Environment Projects</li> </ul>
Glasgow City Council	West of Scotland Archaeology Service	West of Scotland Archaeology Service	SMR	ULA	<ul style="list-style-type: none"> <li>• Development &amp; Regeneration Services (planning)</li> </ul>
Highland Council	Highland Council	Highland Historic Environment Record	HER	ULA	<ul style="list-style-type: none"> <li>• Environment &amp; Development within Planning and Development Service</li> </ul>

Inverclyde Council	West of Scotland Archaeology Service	West of Scotland Archaeology Service	SMR	ULA	<ul style="list-style-type: none"> <li>• Planning</li> </ul>
Midlothian Council	East Lothian District Council	East Lothian Council Archaeology Service	SMR	ULA	<ul style="list-style-type: none"> <li>• Culture and Community Development within Community Services</li> </ul>
Moray Council	Aberdeenshire Council	Aberdeenshire Council Archaeology Service	SMR	ULA	<ul style="list-style-type: none"> <li>• Planning &amp; Environmental Services</li> </ul>
North Ayrshire Council	West of Scotland Archaeology Service	West of Scotland Archaeology Service	SMR	ULA	<ul style="list-style-type: none"> <li>• Planning</li> </ul>
North Lanarkshire Council	As of April 2009 North Lanarkshire Built Heritage and Design Team	As of April 2009 North Lanarkshire Built Heritage and Design Team	SMR	ULA	<ul style="list-style-type: none"> <li>• Planning</li> </ul>
Orkney Islands Council	Orkney Islands Council	Orkney Council Archaeology Service	SMR	ULA	<ul style="list-style-type: none"> <li>• Planning</li> </ul>
Perth and Kinross Council	Perth and Kinross Heritage Trust	Perth and Kinross Historic Environment Record	HER	Perth and Kinross Heritage Trust	<ul style="list-style-type: none"> <li>• Environment Service</li> </ul>
Renfrewshire Council	West of Scotland Archaeology Service	West of Scotland Archaeology Service	SMR	ULA	<ul style="list-style-type: none"> <li>• Planning</li> </ul>
Scottish Borders Council	Scottish Borders Council	Scottish Borders Historic Environment Record	HER	ULA	<ul style="list-style-type: none"> <li>• Planning and Economic Development</li> </ul>
Shetland Islands Council	Shetland Amenity Trust	Archaeology Section, Shetland Amenity Trust/ Shetland SMR	SMR	Shetland Amenity Trust	<ul style="list-style-type: none"> <li>• Planning</li> </ul>
South Ayrshire Council	West of Scotland Archaeology Service	West of Scotland Archaeology Service	SMR	ULA	<ul style="list-style-type: none"> <li>• Planning</li> </ul>
South Lanarkshire Council	West of Scotland Archaeology Service	West of Scotland Archaeology Service	SMR	ULA	<ul style="list-style-type: none"> <li>• Planning</li> </ul>
Stirling Council	Stirling Council	Stirling and Clackmannanshire SMR	SMR	ULA	<ul style="list-style-type: none"> <li>• Environment Service</li> </ul>
West Dunbartonshire Council	West of Scotland Archaeology Service	West of Scotland Archaeology Service	SMR	ULA	<ul style="list-style-type: none"> <li>• Planning</li> </ul>
West Lothian Council	West of Scotland Archaeology Service	West of Scotland Archaeology Service	SMR	ULA	<ul style="list-style-type: none"> <li>• Planning</li> </ul>
Western Isles Council	Western Isles Council	Western Isles Archaeology Service	SMR	ULA	<ul style="list-style-type: none"> <li>• Social and Community Services</li> <li>• Development</li> <li>• Technical Services</li> <li>• Education</li> </ul>

## Appendix 2: Stakeholders

Governmental: National		
Organisation	Job Title and Area of Responsibility	Contact
Historic Scotland (HS)	Inspector - Local Authority Archaeology Liaison Sponsor	Dr Mairi Davies
	Head of Policy Liaison and Modernisation	Dr Miles Oglethorpe
	Head of Archaeology Programmes & Grants Advice	Dr Noel Fojut
	Head of Scheduling	Dr Sally Foster
	Burgh Survey (BS)	Mark Watson
	Senior Archaeologist, Properties in Care, Previously responsible for GIS.	Richard Strachan
	Head of Listing	Dr Debbie Mays
	GIS	James Steel
	RCAHMS	Secretary & Chief Executive
Survey & Recording Operational Manager		Dr Rebecca Jones
Architecture, Industry & Maritime Operational Manager		Neil Gregory
Database and GIS projects Manager		Peter McKeague
Special Survey Operational Manager		Piers Dixon
Historic Land use Assessment Project Manager		Allan Kilpatrick
Aerial Mapping Manager		Kevin Macleod
Forestry Commission	Archaeologist	Angela Gannon
	GI manager	Matt Ritchie
National Parks	Loch Lomond Senior GIS / Data technician	Howard Davies
		Sally Newton
Defence Estates	Historic Environment Advisor	Phil Abrahamson

Governmental: Local (SMR/HER)		
Organisation	Area of Responsibility	Contact
Aberdeen City Council Archaeological Unit	Keeper, Archaeology	Judith Stones
Aberdeenshire Council Archaeology Service	Archaeologist	Bruce Mann
City of Edinburgh Council Archaeology Service	Curator of Archaeology	John Lawson
Dumfries and Galloway SMR	SMR Officer	Andrew Nicholson
Dundee Historic Environment Record	Director: Rathmell Archaeology Ltd	Thomas Rees
East Dunbartonshire SMR	Director: Rathmell Archaeology Ltd	Thomas Rees
East Lothian Council Archaeology Service	Heritage Officer (1)	Biddy Simpson (1)
	Historic Environment Officer (2)	Stephanie Leith (2)
Falkirk Council SMR	Keeper, Archaeology & local History	Dr Geoff Bailey
Fife Archaeological Unit	Archaeologist	Douglas Spiers
Highland Historic Environment Record	HER Officer	Sylvina Tilbury

Orkney Council Archaeology Service	Council Archaeologist for Orkney	Julie Gibson
Perth and Kinross Historic Environment Record	Heritage Officer	Sarah Winlow
Scottish Borders Historic Environment Record	Archaeology Officer	Dr Christopher Bowles
Shetland SMR	Regional Archaeologist, Shetland	Val Turner
Stirling and Clackmannanshire SMR	Archaeology Officer	Lorna Main
West of Scotland Archaeology Service	WoSAS Manager	Dr Carol Swanson
Western Isles Archaeology Service	Western Isles Archaeologist	Dr Mary Macleod

#### Governmental: Local (Conservation & Planning)

Organisation	Area of Responsibility	Contact
North Lanarkshire	Senior Planning Officer	Richard Cartwright
Dumfries and Galloway Council	Conservation Officers	Volkmar Nix
Scottish Borders Council	Principal Officer, Heritage and Design	Mark Douglas

#### Charities and Trusts

Organisation	Area of Responsibility	Contact
Archaeology Scotland (AS)	Rural Land Use Adviser	Jonathan Wordsworth
Archaeology Scotland (AS)	President	Dr Stephen Carter
Archaeology Scotland (AS)	Director	Eila Macqueen
Society of Antiquaries of Scotland	Director	Dr Simon Gilmour
ScARF, Society of Antiquaries of Scotland	Project Manager	Dr Jeff Sanders
SCAPE	Project Officer	Tom Dawson
Built Environment Forum Scotland (BEFS)		Jo Robertson
National Trust for Scotland (NTS)	Head of Archaeology	Robin Turner
NTS	Archaeologist	Dr Jill Harden
NTS	Buildings Archaeology	George Geddes
Scottish Wildlife Trust		Gill Calder
Scottish Trust for Underwater Archaeology	Chairman	Dr Nicholas Dixon
Architectural Heritage Society of Scotland	Director	Audrey Dakin
Association of Preservation Trusts Scotland		Mia Scott
Association for the Protection of Rural Scotland		John Gerrard
Garden History Society in Scotland	Conservation Officer	Alison Allighan
Historic Houses Association in Scotland		Alick Hay
The Institute for Archaeologists (IfA)	Chief Executive	Peter Hinton
Institute of Historic Building Conservation		Seán O'Reilly
Royal Incorporation of Architects in Scotland		Richard Atkins

Royal Town Planning Institute	Scottish Planning Policy Officer	Charles Strang
Scottish Civic Trust		Terry Levinthal
Scottish Stone Liaison Group		Colin Tennant
Scottish Vernacular Buildings Working Group		Veronica Fraser

Academic		
Organisation	Area of Responsibility	Contact
University of Aberdeen	Chair of Archaeology, Head of department	Professor Neil Price
University of Glasgow, University of York	Senior Lecturer & Head of Department	Dr Jeremy Huggett
University of Edinburgh	Head of Archaeology	Professor Jim Crow
University of the Highlands and Islands (UHI)	Head of department	Dr Jane Downes
University of the Highlands and Islands (UHI)	Lecturer	Dr Martin Carruthers
NAFC Marine Centre (UHI)	SSMEI Project Officer	Rachel Hope
Glasgow Caledonian – Heritage Futures	Senior Lecturer	Dr Ian Baxter
Archaeology Data Service	User Services Manager	Dr Stuart Jeffrey
University of Reading	Professor of Archaeology	Professor Richard Bradley
University of Ulster	Senior Lecturer in Maritime Archaeology	Dr Colin Breen
University of Hull	Senior Lecturer in Geography	Dr M Jane Bunting
Orkney College	Archaeologist	Nick Card
Centre for Battlefield Archaeology, University of Glasgow	Director	Dr Tony Pollard
School of Forensic and Investigative Science, University of Central Lancashire	Lecturer in Archaeology	Dr Vicki Cummings
University of Wales, Lampeter	Professor of Archaeology	Professor David Austin
University of Chester	Leader for Archaeology	Dr Meggen Gondek
University of Oxford	Reader in Archaeology (Computing and Statistical Methods)	Professor Gary Lock
University of Nottingham Underwater Archaeology Research Centre	Associate Professor of Archaeology	Dr. Jon C. Henderson
University of Birmingham	Professor of Ancient History & Archaeology	Professor John Hunter
University of Reading	Dean and Professor of Archaeology	Professor Steven Mithen
University of Cambridge	Disney Professor of Archaeology, Head of the Department of Archaeology, and Director, McDonald Institute for Archaeological Research	Professor Graeme Barker
University of St Andrews	Head of The School of Classics	Professor Gregory Woolf
University of Liverpool	Honorary Research Fellow, The Gask Ridge Project	Dr David J Woolliscroft
University of Liverpool	Senior Lecturer in Archaeology, Landscape Archaeology	Dr Philip Freeman

University of York		Professor Martin Carver
University of Glasgow (Dumfries campus)	Scottish Cultural Heritage	Dr Valentina Bold

#### Museum

Organisation	Area of Responsibility	Contact
National Museums Scotland (NMS)	Senior Curator	Trevor Cowie
Glasgow Museums Service	Research Manager	Dr William Kilbride
Hunterian museum	Head of multimedia	Jim Devine
Montrose Museum		Rachel Benvie
The Stewartry Museum		Dr David Devereux
Perth Museum and Art Gallery	History Officer	Mark Hall
Kilmartin House Museum	Director and Curator	Sharon Webb
Orkney Museum	Curator of Archaeology	Anne Brundle
Dumfries Museum	Museum Manager	David Lockwood
Stranraer Museum	Curator	John Pickin

#### Commercial Archaeological & Architectural Companies

Organisation	Area of Responsibility	Contact
AOC Archaeology Group		Dr Graeme Cavers
Addyman Archaeology	Partner (Simpson & Brown Architects with Addyman Archaeology)	Tom Addyman
Alba Archaeology (Highland) Ltd	Director	Fred Geddes
Archaeological and Ancient Landscape Survey (AALS)		Martin Wildgoose
Archaeological Heritage Services Ltd		Scott Jacobson
Archaeology and Micromorphology		Clare Ellis
Archaeological Research and Consultancy at the University of Sheffield (ARCUS)	Director	Dr James Symonds
CFA Archaeology Ltd (CFA)	Project Manager	Dr Melanie Johnson
EASE Archaeology		Graeme Wilson
GUARD	Geomatics Officer	John Arthur
Highland Archaeology Services Ltd	Director	John Wood
Firat Archaeological Services		Fiona Baker
Headland Archaeology (UK) Ltd	Senior Project Officer (EIA)	Richard Connolly
SUAT Ltd	Director	David Bowler
West Coast Archaeological Services		Steven Birch
Kirkdale Archaeology		Gordon Ewart
Stuart Farrell		Stuart Farrell
Rathmell Archaeology Ltd		Thomas Rees
Scotia Archaeology		John Lewis
Murray Archaeological Services Ltd		Dr Hilary Murray

Rebecca Shaw Archaeological Services		Rebecca Shaw
Rick Barton Archaeology	Archaeologist	Rick Barton
Orca	Archaeologist	Nick Card
Orkney College Geophysics Unit	Geophysicist	Susan Ovenden
British Archaeological Jobs and Resources	Director	David Connolly

Engineering/Environmental Other consultants		
Organisation	Area of Responsibility	Contact
Jacobs UK	Principal archaeologist	Alastair Rees
Land Use Consultants	Consultant	Steven Orr
Entec	Consultant Archaeologist	Ken Whittaker
RSK	Consultant Archaeologist	Joe Somerville
Terence O'Rourke Ltd	Archaeologist	John Trehy
Scott Wilson	Associate	Jay Carver

Other contributors to Discovery and Excavation Scotland		
Organisation	Area of Responsibility	Contact
Association of Certificated Field Archaeologists (ACFA)	Secretary	Susan Hunter
Edinburgh Archaeological Field Society (EAFS)	Editor EAFS Newsletter	Brian Tait
North of Scotland Archaeological Society (NoSAS)	Chairperson	Emma Sanderson
Scottish Church Heritage Research (SCHR)		Edwina Proudfoot
Stewartry Archaeological Trust		Alastair Penman
Biggar Museum Trust Archaeology Group	Trustee	Tam Ward

## Appendix 3: Project Board and Acknowledgements

### Project Board

Mairi Davies	Historic Scotland
The late Ian Shepherd	Chair, SMR Forum
Bruce Mann	Chair, SMR Technical Working Group
Rebecca Jones	RCAHMS
Peter McKeague	RCAHMS

### Acknowledgements

This report owes thanks to many. I would like to thank the project board, the stakeholders and the SMRs and HERs for the significant investment in time to complete the questionnaire and then to talk through the issues during the onsite field visit. I would like to thank Susan Casey for accompanying me on the field visits. Thank you to Peter McKeague, Bruce Mann, Mark Gillick, Graham Ritchie and Alistair Wilkie for their technical assistance. Thank you to Andrew Burke and Jonathan Wordsworth for their advice on agricultural policy and to Ian Shepherd and Rebecca Jones for initiating the project. Thanks also to Jack Stevenson and my wife Emily for their editing. Sadly, Ian Shepherd passed away in May 2009 and this report is dedicated to his memory.

## Appendix 4: Reports using the Local Authority Questionnaire Results.

### Casey, S 2009

- *Delivering Efficient Data Management: Local Authority Archaeological Liaison*  
RCAHMS report

### Middleton, M 2009a

- *Polygonisation: The Shape of Things to Come: What are needs for Scottish polygonised Historic Environment data?*  
Joint ALGAO Scotland HER Forum, HS & RCAHMS report

### Middleton, M 2009b

- *Inspired! An assessment of the IT capabilities of the Scottish Sites and Monuments Records.*  
Joint ALGAO Scotland HER Forum, HS & RCAHMS report

### Middleton, M 2009c

- *A Historic Environment Polygonisation Standard (Scotland).*  
Joint ALGAO Scotland HER Forum, HS & RCAHMS Standard

## Appendix 5: Records and Polygons Maintained by the Scottish SMRs/HERs

Records and polygons maintained by the Scottish local authority Historic Environment services based on data collected between October 2008 and February 2009.

	Total No. of records	No. of archaeological records	Site Extent Polygons % = percentage of sites polygonised	Buffered Site Extent Polygons	Events Polygons % = percentage of events backlog polygonised	Auto polygon based on grid-ref and thesaurus
Aberdeen City	3480	487	218 - 6%		+ (!)	
Aberdeenshire, Angus and Moray	AB: 18922 AN: 5503 MO: 5268	AB: 7315 AN: 2398 MO: 2244		AB: 12738 - 67% AN: 3587 - 65% MO: 3634 - 69%	+ (!)	
Dumfries and Galloway	22961			9045	184	+ (!)
East and Mid Lothian	9586	4203	129 - 1.2%		726 - 86%	
Edinburgh	17192	2105	+		40	
Falkirk	1365	791	+		+	
Fife	11000	9600			204 – 99%	
Highland	51509	46602	5734 - 11%		1782	40387
Orkney	3100	3100	+		+	
Perth and Kinross	16604	9146		9134 - 90%	463 – 60%	
Rathmell Archaeology Ltd	DCC△ 2757	DCC 219			95 – 99%	
Scottish Borders	14937		1639 – 8%		+	
Shetland	8000		+		30 – 20%	
Stirling and Clackmannan	7500		+		+	
Western Isles	13488	13488	200 – 0.5%		+	
WoSAS	34043	23680	296 - <1%		2322 – 75%	18475

+ SMR/HER has the ambition to create this type of polygon

+ (!) Have this type of polygon but unable to provide exact figures on how many

△ DCC = Dundee City Council

## Appendix 6: Historic Environment Data Users

This list is not extensive but not comprehensive.

Other contributors to Discovery and Excavation Scotland						
	Designation	Estate/Resource Management	Planning & Permitted Development	Grants & Auditing	Business/Economic	Research
<b>UK National Estates, including</b>						
The Crown Estates		x	x		x	
Defence Estates (Ministry of Defence)		x	x			
<b>Crown Office</b>						
Queen's and Lord Treasurer's Remembrancer (QLTR)					x	
<b>Scottish Government Directorates and Agencies, including</b>						
Directorate for Business, Enterprise and Energy				x	x	
Directorate for Culture, External Affairs and Tourism	x	x	x	x	x	x
Directorate for Climate Change and Water Industry			x		x	
Directorate for Environmental Quality	x	x	x		x	
Directorate for Housing and Regeneration		x	x	x	x	
Directorate for Rural Payments and Inspection		x		x	x	
Directorate for the Built Environment		x	x	x	x	
Directorate for Transport	x	x	x	x	x	
Forestry Commission Scotland	x	x	x	x	x	
General Register Office for Scotland						x
Health Directorate (NHS Scotland)		x	x			
Historic Scotland	x	x	x	x	x	x
Legal Directorate	x	x	x		x	
Marine Scotland	x	x		x	x	x
National Archives of Scotland					x	x
Registers of Scotland					x	x
Scottish Prison Service		x	x			
Scottish Rural Directorate		x		x	x	
Transport Scotland		x	x			
<b>Non Departmental Public Bodies (NDPBs), including</b>						
Architecture and Design Scotland	x	x	x		x	
Caledonian Maritime Assets Ltd	x	x	x		x	
Crofters Commission		x	x	x	x	
Cairngorms National Park Authority	x	x	x		x	x
Highlands and Islands Airports		x			x	
Highlands and Islands Enterprise		x	x	x	x	
Loch Lomond and The Trossachs National Park Authority	x	x	x		x	x
National Museums Scotland					x	x
Royal Commission on the Ancient and Historical Monuments of Scotland		x			x	x
Scottish Natural Heritage	x	x	x			x
Visit Scotland (including Event Scotland)					x	
Scottish Enterprise				x	x	
Scottish Environment Protection Agency		x	x	x	x	
Scottish Water		x	x		x	

	Designation	Estate/Resource Management	Planning & Permitted Development	Grants & Auditing	Business/Economic	Research
<b>Local Government</b>						
32 Local Authorities	x	x	x	x	x	x
Local Museums					x	x
Association of Local Government Archaeological Officers (ALGAO)	x	x	x	x	x	x
Emergency Services	x				x	
<b>Utilities</b>						
Water		x	x		x	
Electricity		x	x		x	
Gas		x	x		x	
<b>Trusts and Private Estates, including</b>						
The Association for the Protection of Rural Scotland				x		
Historic Houses Association (HHA)			x	x	x	x
National Trust for Scotland (NTS)		x	x			
Royal Society for the Protection of Birds (RSPB)		x	x			
Scottish Churches Architectural Heritage Trust				x		x
Scottish Historic Buildings Trust		x	x	x	x	
Scottish Wildlife Trust (SWT)		x	x			
<b>Professional and Charitable Organisations and Forums, including</b>						
Archaeology Scotland (AS)			x			x
Architectural Heritage Society of Scotland (AHSS)			x			x
Battlefield Trust			x			x
Built Environment Forum Scotland (BEFS)			x			x
Garden History Society (GHS)			x			x
Institute for Archaeologists (IfA)			x			x
Institute of Historic Building Conservation (IHBS)			x		x	x
Northern Lighthouse Board		x	x			
Royal Incorporation of Architects in Scotland (RIAS)			x		x	x
Royal Institution of Chartered Surveyors (RICS)			x		x	
Royal Town Planning Institute (RTPI)			x		x	
Scottish Civic Trust			x	x	x	x
Scottish Coastal Forum		x	x		x	x
Scottish Environment Link					x	
Scottish Vernacular Building Working Group			x			x
Society for the Protection of Ancient Buildings (SPAB)						x
Society of Antiquaries of Scotland (SoAS)						x
<b>Private and Other</b>						
Developers		x	x	x	x	
Family history societies						x
Farmers		x	x	x	x	
Foresters		x	x	x	x	
Heavy Industry (Mining, minerals, fabrication, etc)		x	x	x	x	
Heritage commerce (Tourism, restoration, etc)			x	x	x	
Heritage Lottery Fund				x	x	x
Heritage professionals (Architects, archaeologist, etc)			x	x	x	
Law (Public Enquiry, designation, etc.)	x	x	x		x	
Light Industry (Services)		x	x	x	x	
Local history societies						x

	Designation	Estate/Resource Management	Planning & Permitted Development	Grants & Auditing	Business/Economic	Research
<b>Private and Other (Continued)</b>						
Macaulay Land-Use Research Institute					x	
Media (TV,Film, news, etc.)					x	x
Private estates (country homes, sporting estates)		x	x	x	x	
Private house holders		x	x	x		
Private Museums					x	x
Universities						x

## Appendix 7: Glossary

ADS	Archaeology Data Service
ALGAO	Association of Local Government Archaeological Officers
BGS	British Geological Survey
CAP	Common Agricultural Policy
DC	Development Control
EIA	Environmental Impact Assessments
FCS	Forestry Commission Scotland
GAEC	Good Agricultural and Environmental Conditions
GIS	Geographic Information System
GPS	Global Positioning System
HER	Historic Environment Record
HERMAN	Historic Scotland's Properties in Care events database
HLA	Historic Land-use Assessment project
HS	Historic Scotland
LMO	Land Managers' Options
OASIS	Online Access to the Index of archaeological investigations
OS	Ordnance Survey
PAN	Planning Advice Note
PASTMAP	An online portal for the delivery of map based Historic Environment data derived from HS, RCAHMS and the Scottish Sites and Monuments records. <a href="http://www.pastmap.org.uk">http://www.pastmap.org.uk</a>
PAI	Positional Accuracy Improvement
PiC	Properties in Care
Polygon	A defined area
RCAHMS	Royal Commission on the Ancient and Historical Monuments of Scotland
RDC	Rural Development Contracts
ScARF	Scottish Archaeological Research Framework
SEA	Strategic Environmental Assessment
SEARS	A partnership of nine Scottish rural and land management public bodies
SGRPID	Scottish Government Rural Payments and Inspections Directorate
SHEA	Scotland's Historic Environment Audit
SHEP	Scottish Historic Environment Policy
SMR (1)	Sites and Monuments Record
SMR (2)	Statutory Management Requirements
SNH	Scottish Natural Heritage
SPP	Scottish Planning Policy