

Historic Environment Polygonisation Standards (Scotland)





Royal Commission on the Ancient and Historical Monuments of Scotland

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Front cover: Broomend of Crichton, Aberdeenshire, henge
monument and standing stone. DP011657

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Historic Environment Polygonisation Standards

1 Introduction

This document sets out the baseline standards for the recording of Historic Environment polygons in Scotland.

By working together to produce this document Historic Scotland (HS), the Royal Commission on the Ancient and Historical Monuments of Scotland (RCAHMS), local authority archaeological services through the Association of Local Government Archaeological Officers: Scotland (ALGAO: Scotland) and the Sites and Monuments Records Forum (SMR Forum) have identified the minimum standards required to enable polygonised geographic data to be exchanged and shared effectively.

The standard comprises three parts. These parts summarise and signpost existing national and international standards and bring together the key points to provide a practical guide to anyone using or producing Historic Environment polygons. The three parts are:

Part 1: Historic Environment Polygonisation Standards (Scotland), which:

- identify what polygons are already being produced in Scotland
- define the baseline standards
- clarify the semantics of polygonisation vocabulary.

Part 2: Historic Environment Polygonisation Standards (Scotland): Technical Appendices, which:

- provide relevant detail on the UK metadata standard GEMINI 2
- provide relevant detail on the Historic Environment data standard MIDAS Heritage
- provide definitions and examples for MIDAS Heritage's required units of information.

Part 3: Historic Environment Polygonisation Standards (Scotland): Case Studies, which:

- provide case studies for all of the different polygons classes
- map the polygon classes to the MIDAS Heritage data standard.

It is hoped that this document will provide anyone using or creating polygons with the introductory information they need to help them understand the data they are using. It is also hoped that this document will maximise the potential for future data interoperability.

2 Definition

A polygon is an enclosed shape defined by a series of coordinates. Circles, although not literally polygons, are also referred to as polygons in a geographic information environment.

3 Polygon Classes

The report, *Polygonisation* (RCAHMS 2009), identified seven polygon classes already being created by the Scottish Historic Environment sector that provide national coverage and where the authorship is clearly defined. The report went on to recommend the creation of a consultation trigger layer for non-specialist users based on the Site Extent Polygons created by local authorities.

Polygon Class (*=single author)	Author
Scheduled Monuments*	Historic Scotland
Conservation Areas	Local Authorities
Inventory Gardens and Designed Landscapes*	Historic Scotland
World Heritage Sites*	Historic Scotland
Historic Land-use Assessment*	RCAHMS
Events	Local Authorities
Site Extents	Local Authorities & RCAHMS
Consultation triggers	Recommended RCAHMS Local Authority collaboration

In the table above, where the polygon class is marked by an asterisk, the authorship is restricted to a single organisation. As individuals and organisations outwith the author organisation will not be required to produce these polygons, it is unnecessary to define the standard here; instead, these polygon classes will be explored in the case studies that accompany this document.

4 General Standards

4.1 Metadata

All digital resources need to be accompanied by metadata. The *UK GEMINI Standard v2.0: A UK Metadata Standard for discovery of geographic data* (AGI, 2009), describes metadata as data that, 'provides additional information about a data resource, to enable the data resource to be better understood and used to good effect.' Metadata is created to promote resource discovery and the effective retrieval and management of information. The core metadata elements are listed in Technical Appendix 1.

4.2 Map Projection

All land based polygons must be created in metres using the Ordnance Survey National Grid – also known as the Ordnance Survey Great Britain 1936 coordinate system or OSGB36 – referencing the 1936 Ordnance Survey datum.

All marine polygons, that is any polygon created below the low water mark, should be plotted as latitude and longitude, using the Global Coordinate System.

4.3 Ordnance Survey Licensing

The Ordnance Survey (OS) identifies all data created using OS background mapping or any data created using the OS National Grid coordinate system as data derived from the Ordnance Survey. This means that anyone creating, using or sharing polygons needs to make sure they have the appropriate OS agreements and licences.

4.4 Digitisation Scale

Polygons should either be created from survey data tied to the OS National Grid or they should be digitised at the highest map scale possible relative to the scale at which they are to be viewed. Ideally this will be 1:2500 in rural areas and 1:1250 in urban areas.

4.5 Polygon Attribution

A polygon's attribute information is the information supplied with the polygon that needs to accompany the polygon either digitally or physically. The MIDAS Heritage data standard identifies what information needs to be recorded as attribution to support the effective sharing and long-term preservation of historic environment data (FISH 2007). MIDAS Heritage complies with the UK GEMINI Standard v2.0 and provides a specific application of the international standard (ISO 21127), known as CIDOC CRM, appropriate to the needs of the UK historic environment community.

4.6 Midas Heritage

All polygons should be created using the MIDAS Heritage Historic Environment data standard with specific reference to the Map Depiction Information Group (FISH 2007 Vol.2 p93–5).

MIDAS identifies nine mandatory units of information or attributions a polygon requires for it to be MIDAS compliant. These are:

Units of Information	Sample information
Primary Reference Number	123
Primary Reference Number Type	Event
Compiler (Organisation)	XYZ Archaeology group
Date of compilation	23-June-2009
Date of last update	23-June-2009
Positional Accuracy	Based on field survey using hand held GPS
Spatial Feature Type	Polygon
X Coordinate	341081
Y Coordinate	716127

4.7 Form and Discovery Polygons

The report, *Polygonisation* (RCAHMS 2009), identified two main classes of polygon. 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 and it is not always essential to see them.

5 Polygon Vocabulary

Polygon class 1 Event Polygons

There are various interpretations of what an event is. *Informing the Future of the Past II* (Gilman and Newman (eds) 2007) provides the most up-to-date overview and identifies that 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).

Polygonisation (RCAHMS 2009) identified two types of event polygon:

- Event Extent Polygons
- Intervention Event Polygons

Polygon class 1a Event Extent Polygons

An event extent polygon defines the limits of an event. This is the boundary around an area of land that has been investigated. Within this boundary all, or a percentage of, the land may have been studied and or investigated by some form of intervention. An event extent polygon may also be referred to as the study area or the limit of survey. The polygon should define the exact limit of the event when plotted against the largest map scale possible. An event extent polygon should not be buffered.

The user needs to be cautious when using event extent polygons. They can give the impression that a large area has been thoroughly examined when, in fact, it has not. It may be, for example, that an event polygon defines an area of land where only a tiny percentage of the land was excavated. Another example might be where an area of known resource has only been partially excavated. This might happen in a medieval burgh where a new development may only impact on the upper levels of a deep midden deposit.



Polygon class 1b Intervention Extent Polygons

Intervention extent polygons define the known limits of fieldwork interventions. These will be the limits of individual elements of work within an event. An intervention is any form of physical intervention and will include excavation trenches, sondages and test pits. Intervention extent polygons should be created in the field from field survey data tied to the National Grid. This could be a plan created over a paper map or a digital plan created using survey equipment. Intervention extent polygons should not be buffered.



Polygon class 2 Site Extent Polygons

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, C.7)

Polygonisation (RCAHMS 2009) identified two different types of site extent polygon. These are:

- Known Site Extent Polygons
- Buffered Site Extent Polygons

Polygon class 2a Known Site Extent Polygons

A known site extent polygon defines the limits of recorded remains. The polygon will be created based on sources and professional judgement. Known site extent polygons should not be buffered and should be plotted against the largest map scale available.

Additional attribution required:

Units of Information	Sample information
Representation Source	OS 1:2500 4th Edition (1935)

Polygon class 2b Buffered Site Extent Polygons

A buffered site extent polygon defines the limits of recorded remains and includes an additional buffer around the monument to protect areas where professional judgement suggests there is significant potential for further surviving remains. The size of the buffer will reflect local priorities, judgement and monument type. Buffered site extent polygons should always be prefixed by how the buffer was created.

The prefixes are:

- Bespoke
- Standard
- Automated site-centred

Polygon class 2b.i Bespoke – Buffered Site Extent Polygons

A bespoke buffer will be an irregular buffer based on the local topography and professional judgement. The buffer will be produced manually and should be produced with reference to the largest map scale available.

Additional attribution required:

Units of Information	Sample information
Representation Source	RCAHMS AP transcriptions
Buffer Zone Width	Varies
Quality	Bespoke Buffer

Polygon class 2b.ii Standard – Buffered Site Extent Polygons

A standard buffer is one of a standard size (50m for example) and applied uniformly to all site extent polygons. Standard buffers of differing sizes may be applied to different monument types and buffer widths may vary regionally reflecting local priorities. In some areas the same buffer width is applied to all sites; others may use a thesaurus of monument types to map different buffer widths to different monument classes while others may not use buffers at all.

Additional attribution required:

Units of Information	Sample information
Representation Source	OS 1:10560 2nd Edition
Buffer Zone Width	50 (m)
Quality	Standard Buffer

Polygon class 2b.iii **Automated Site-centred Polygons**

All existing monument databases contain a single grid reference recording the location of each monument. An automated site-centred buffer is a circular polygon created automatically based on a monument's grid-reference. This type of polygon is created by adding an automated buffer of a fixed diameter that may vary depending on the type of monument. Different monument types may be assigned different buffer diameters ie, 10m around standing stone, 50m around a fort, etc. Because an automated site-centred buffer is based solely on a single grid reference, and takes no account of a monument's known extent, it should only be used temporarily and should be replaced by a more meaningful polygon at the earliest opportunity. Extreme caution should be taken in the use of automated polygons as they can be misleading; if there is an error in the recorded grid reference, for instance, a site will be in the wrong place. Automated polygons are not based on any specific information relating to a monument other than its grid reference and therefore have the potential to be misinterpreted. For these reasons, automated polygons should be replaced by known site extent polygons as soon as possible. However, automated polygons have been used in a number of areas successfully. Although there are occasions when the polygons are in the wrong place or the polygons are of an inappropriate size, they have been found to provide a better understanding of the extent of a resource than point data alone.

Additional attribution required:

Units of Information	Sample information
Representation Source	Grid Reference
Buffer Zone Width	50m
Quality	Standard Buffer

Polygon class 3 Consultation Triggers Polygons

Consultation trigger polygons are a harmonised resource of data derived from the government Historic Environment sector, namely Historic Scotland, RCAHMS and the Local Authority SMRs and HERs. They define areas of known Historic Environment resource and provide details of who to contact for more detailed advice.

Additional attribution required:

Units of Information	Sample information
Contact point	Contact details for professional advice if required

6 Further Information

This document is a brief introduction to Historic Environment polygons and should be sufficient to clarify what Historic Environment polygons are, the terminology used and their scope. Those intending to use or create Historic Environment polygons are likely to require further technical guidance, which can be found on the RCAHMS website: <http://www.rcahms.gov.uk/historic-environment-polygonisation-standards-scotland.html>

7 Further Reading

AGI, 2009

UK GEMINI Standard v2.0: A UK Metadata Standard for discovery of geographic data

http://www.gigateway.org.uk/metadata/pdf/GEMINIV2_3c.pdf [Accessed 22nd June 2009]

Bourn, R 1999

Events and Monuments: a discussion paper

SMR News 8: Paras 3–7

FISH, 2007

MIDAS Heritage: The UK Historic Environment Data Standard

<http://www.english-heritage.org.uk/server/show/nav.19944> [Accessed 3rd March 2009]

Gilman, P and Newman, M (eds) 2007

Informing the Future of the Past: Guidelines for Historic Environment Records (Second Edition)

English Heritage

<http://www.ifp-plus.info/> [Accessed 22nd June 2009]

Ordnance Survey, 2003

The GIS files V2.0

<http://www.ordnancesurvey.co.uk/oswebsite/gisfiles/d01100.pdf> [Accessed 22nd June 2009]

RCAHMS, 2009

Polygonisation: The Shape of things to come: What are the needs for Scottish polygonised Historic Environment data?

Joint RCAHMS, ALGAO Scotland HER Forum and Historic Scotland report

http://www.rcahms.gov.uk/assets/files/Survey/POLYGONISATION_Report-RCAHMS_et_al_2009.pdf [Accessed 28th August 2009]