

# Why we need a Spatial Data Infrastructure for Archaeology

Peter McKeague  
Historic Environment Scotland



# Themes

- **Legislation and best practice**
  - INSPIRE – making Protected Sites data available online
  - to promote knowledge about the historic environment
- **Are we making the most of the data archaeologists create?**
  - access and licensing
  - multiple data creators
  - format
- **Sensitivity**
  - who should access data and to what level of accuracy  
(-charging policies)
- **Why does it matter?**



<http://blueeyedennis-siempre.blogspot.co.uk/2011/10/i-wouldnt-start-from-here.html>

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# The legislative bit...



INSPIRE sets down the general rules for establishing an infrastructure for spatial information in Europe for the purposes of Community environmental policies and policies or activities which may have an impact on the environment

A Protected Site is defined as an

“Area designated or managed within a framework of international, Community and Member States' legislation to achieve specific conservation objectives”  
[Directive 2007/2/EC].

“..a Protected Site is an area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or **other effective** means.”

[International Union for the Conservation of Nature]

**Some historic environment data is covered within INSPIRE under the Protected Sites Theme**

# INSPIRE compliant metadata and web services available through the Scottish Spatial Data Infrastructure Portal

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historic environment

Sorted by relevancy 1 - 20 on 43

TYPE OF RESOURCES

- Dataset (30)
- Service (14)

TOPICS

- Environment (23)
- Boundaries (8)
- Society (7)
- Planning cadastre (4)
- Health (2)
- 3 more

INSPIRE THEMES

KEYWORDS

- Environment (23)
- Protected sites (21)
- InfoMapAccessService... (10)
- Boundaries (8)
- Society (7)
- 10 more

CONTACT FOR THE RESOURCE

- Historic... (24)
- Angus Council (3)
- City of Edinburgh... (3)
- Scottish Government (3)
- Scottish Natural... (2)
- 7 more

SOURCE CATALOGUE

- 48e84e1c-d7ac-4c19-a... (28)

But designation data is also directly from the Historic Environment Scotland spatial download page

HISTORIC ENVIRONMENT SCOTLAND  
ARAINNEACHD EACHDRAIDHEIL ALBA

Home Search Downloads

## Downloads

The following datasets are available for download and provide links to additional resources. You can also find the downloads via our [Atom Feed](#), or [Web Feature Service](#).

Please note that some devices may require additional software to use Atom feeds.

- All
- Listed Buildings
- Scheduled Monuments
- Gardens and Designed Landscapes
- Battlefields
- Historic Marine Protection Areas
- Conservation Areas
- World Heritage Sites
- Properties in Care
- Historic Landuse Assessment

### Listed Buildings

This dataset comprises the statutory addresses and supplementary information for listed buildings in Scotland.

Listing is the recognition that a building or structure is of 'special' interest.

We also provide web services and an Atom Feed.

[Download Listed Building spatial data](#)

More Information

Further Details  
Web Mapping Service  
Web Feature Service  
Atom Feed  
More Information About Listed Buildings

To find out when the dataset was last updated go to Further Details and look for the Dataset Reference Date under Additional Information.

National aggregators for digital data

# The INSPIRE Geoportal



**INSPIRE GEOPORTAL**  
Enhancing access to European spatial data  
European Commission > INSPIRE > Geoportal > INSPIRE Thematic Viewer

Home Priority Data Sets Viewer INSPIRE Thematic Viewer Harvesting status Find out more about

### Data Sets - Protected sites of Europe



Hover over a country

Show: Downloadable Viewable

**INSPIRE Geoportal Data Set Statistics**

2467	Metadata records
574	Downloadable Data Sets

Select a COUNTRY

Austria	63   50   61	Finland	66   3   1	Latvia	6   3   3	Portugal	28   11   10
Belgium	18   16   17	France	841   283   234	Liechtenstein	20   1   1	Romania	4   2   2
Bulgaria	3   2   1	Germany	383   110   152	Lithuania	1   1   1	Slovakia	8   1   1
Croatia	5   0   0	Greece	3   0   3	Luxembourg	8   8   8	Slovenia	9   5   0
Cyprus	3   0   0	Hungary	6   0   1	Malta	5   5   5	Spain	9   8   9
Czech Republic	8   6   7	Iceland	3   1   0	Netherlands	15   11   10	Sweden	18   13   14
Denmark	9   7   6	Ireland	11   0   0	Norway	9   6   1	Switzerland	17   0   0
Estonia	3   3   2	Italy	488   0   8	Poland	15   2   0	United Kingdom	432   16   9

Select the whole EUROPE



**INSPIRE GEOPORTAL**  
Enhancing access to European spatial data  
European Commission > INSPIRE > Geoportal > Download details

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Choose metadata language: original MD language

### Património cultural classificado e em vias de classificação

**Download Options**

**View Options**

**Data set Metadata**

**Resource Title**  
Património cultural classificado e em vias de classificação

**Resource Abstract**  
Conjunto de dados geográficos relativo ao património classificado e em vias de classificação de Portugal continental, respetivas áreas de servidão (zonas gerais e especiais de protecção) e de restrição (áreas de sensibilidade arqueológica, restrições arquitectónicas e urbanas, zonas non adifcandi).

**Lineage**  
Conjunto de dados geográficos sobre o património classificado e em vias de classificação.

**Unique Resource Identifier**  
Code: <http://id.igeo.pt/cdg/c417447a-c81c-4057-8b81-88b80dfd45d>  
Code: 70c329df-8cff-412e-b6b3-5e3904b6324f Namespace: PT\_DGPC

**Spatial Data Theme**  
Sítios protegidos

**Topic Category**  
structure

**Reporting Tags**

**Conditions Applying To Access And Use**  
Sem restrições

**Limitations On Public Access**  
Sem restrições

**Geographic Bounding Box**

Leaflet | Credits: © OpenStreetMap contributors | EC-GIBCOO, © EuroGeographics for the administrative boundaries (disclaimer)

**Responsible Party**  
Organisation name Direção-Geral do Património Cultural  
E-mail [dgpc@dgpc.pt](mailto:dgpc@dgpc.pt)

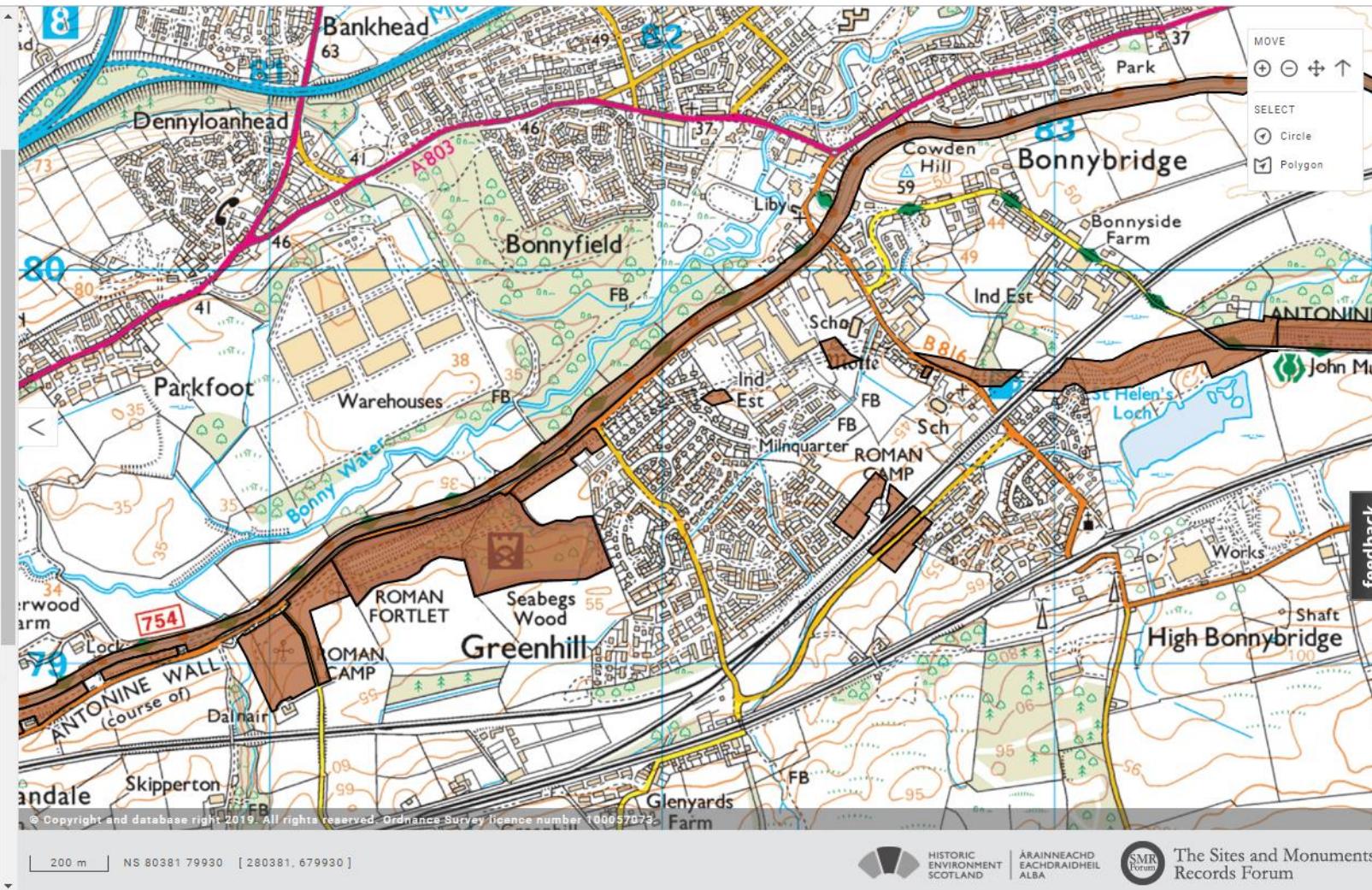
**Metadata Point Of Contact**  
Organisation name Direção-Geral do Património Cultural  
E-mail [dgpc@dgpc.pt](mailto:dgpc@dgpc.pt)

**Metadata Language**  
por  
Metadata Date  
2019-06-21

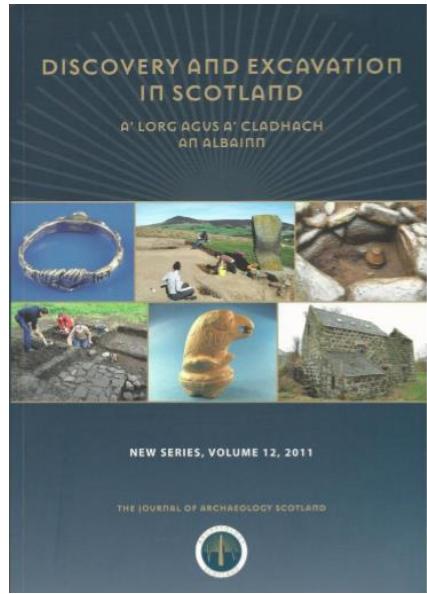
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**Download metadata**  
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## Online portals provide access to a range of Protected Sites data

DATA LAYERS	
<input type="checkbox"/>	Listed Buildings Not available at this zoom level
<input type="checkbox"/>	Canmore Not available at this zoom level
<input type="checkbox"/>	Canmore Maritime Available
<input type="checkbox"/>	Scheduled Monuments 11 found
<input type="checkbox"/>	Historic Environment Record Available
<input type="checkbox"/>	Garden & Designed Landscapes Available
<input type="checkbox"/>	Conservation Areas Available
<input type="checkbox"/>	Battlefields Available
<input type="checkbox"/>	World Heritage Sites 2 found
<input type="checkbox"/>	Historic Marine Protected Areas Available
BASE LAYERS	
<input type="radio"/>	OS Licensed Scotland Available
<input type="radio"/>	OS Licensed (hillshade) Available
<input type="radio"/>	OS Licensed Scotland (greyscale) Available
<input type="radio"/>	OS Open Data Available



But what about the wealth of primary spatial data gathered through fieldwork?  
Data can be created through academic research, in response to planning applications or through community groups.



**OASIS**  
Online Access to the Index of archaeological investigation

© Clive Ruggles

Home England Scotland Wales Northern Ireland OASIS form Blog Cookies Privacy Policy Log in ▾

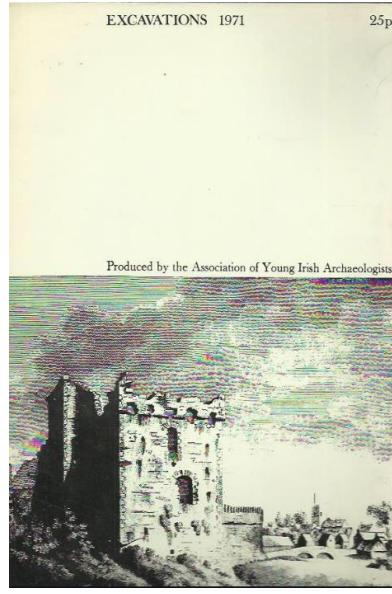
Main Menu

- » HOME
- » PARTNERS
- » HERALD
- » DOCUMENT ARCHIVE
- » PUBLICATIONS
- » TECHNICAL INFORMATION
- » CONTACTS
- » HELP

Current page: Main  
Last visited:

Page Contributors: Catherine Hardman, Keith May, Peter McKeague, OASIS, oasis

**OASIS**



This site is still in a testing phase, please let us know if you spot anything by clicking here i

excavations.ie

Home About Links Contact Details Mapping

2003:1051 -  
BALLYDAVIS/GREATHEATH/MORETT/CAPPAKEEL/EMO  
PARK/BALLYSHANEDUFF OR THE  
DERRIES/TULLAGHAN/BALLYADDING/JAMESTOWN OR  
BALLYTEIGEDUFF, Laois

County: Laois Site name: BALLYDAVIS/GREATHEATH/MORETT/CAPPAKEEL/EMO OR THE DERRIES/TULLAGHAN/BALLYADDING/JAMESTOWN OR BALLYTEIGEDUFF

Site Record No.: NIA licence number: 030623  
Author: Jonathan Dempsey, Archaeological Consultancy Services Ltd, Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth.  
Site type: Various  
UTM: E 459654m, N 707031m  
Latitude, Longitude (decimal degrees): 53.110588,-7.109016

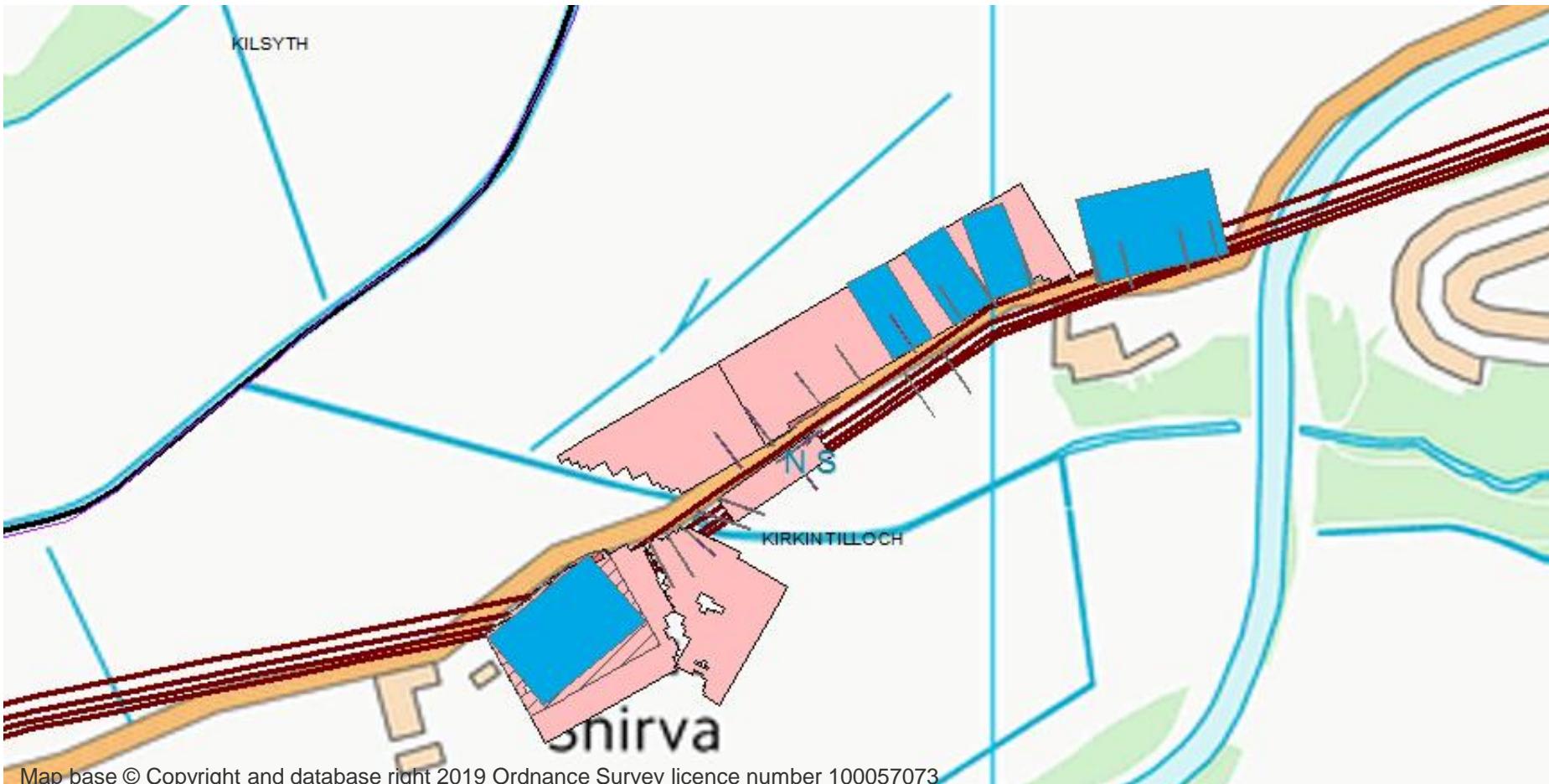
Advanced Search

Every year archaeologists undertake thousands of projects from remote sensing to complex excavations.

These projects are expensive to undertake, the data created is unique and in many cases irreplaceable  
(Preservation by record)

Yet we only use a fraction of this data in compiling the archaeological record – consigning the spatial component of the record to a point rather than mapping the full extent of the fieldwork

# A history of investigation: geophysical surveys along the Antonine Wall from 1995 to 2007



Resistivity 1995  
Resistivity 1998

Magnetometry 2007  
Resistivity 2007

Data can be combined with other datasets such as airborne mapping  
Interpretation or excavation data



## OASIS DATA COLLECTION FORM: Scotland

[List of Projects](#) | [Search Projects](#) | [Change your details](#) | [SMR/HER coverage](#) | [Log out](#)

[Printable version](#)

OASIS ID: gsbprosp1-73753

### Project details

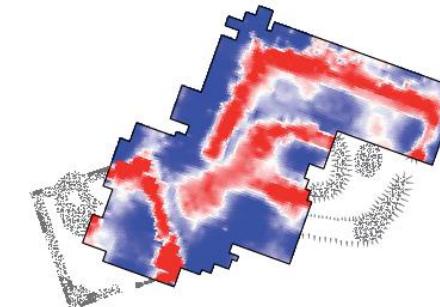
Project name	Geophysical Survey at Baliscate, Tobermory
Short description of the project	Results from the resistance survey correspond with the extant earthworks and structural remains with areas of high resistance. Penetrating Radar survey mainly detected natural features but there is the potential of a prehistoric ground surface within.
Project dates	Start: 19-05-2009 End: 21-05-2009
Previous/future work	No / No
Any associated project reference codes	57999 - Related HER No.
Any associated project reference codes	4251 - HER event no.
Any associated project reference codes	294740 - NMRS UID
Type of project	Research project
Current Land use	Woodland 3 - Mixed
Monument type	CHAPEL Medieval
Significant Finds	WALL Medieval
Investigation type	'Geophysical Survey'
Prompt	Research
Solid geology	ANDESTIC AND BASALTIC LAVAS AND TUFFS - UNDI
Drift geology	PEAT
Techniques	Resistivity - area
Techniques	Ground penetrating radar

### Project location

Country	Scotland
Site location	ARGYLL AND BUTE KILNINIAN AND KILMORE Baliscate
Study area	0.50 Hectares
Site coordinates	NM 4967 5407 56.6112456108 -6.080170953810 56.36



<https://canmore.org.uk/site/294740/>



Courtesy: GSB Prospection

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```

# A history of investigation: geophysical surveys along the Antonine Wall from 1995 to 2007

List of Projects

## Project details - Geophysical techniques: Magnetometry

Please enter the details of your Magnetometry event below. Mandatory fields are marked with a \*.

Please use the 'other' field if your project doesn't match the options in the list (these will not be added to the list for subsequent entries).

Instrumentation \*

Select instrumentation

Other:

Instrument type \*

Select instrument type

Other:

Size of survey area \*

Numbers can be entered with up to 2 decimal places

Size

Units

Select from list ▾

Instrument set-up \*

Number of parallel sensors

Select instrument set-up

Resolution \*

expressed in nano tesla (nT)

Select resolution

Traverse separation \*

in metres (numbers can be entered with up to 2 decimal places). If you wish to enter a null value please use 0, not a hyphen

Reading interval \*

in metres for land-base geophysics or in Hertz for maritime projects (numbers can be entered with up to 2 decimal places)

Notes

Please enter any additional observations you may have about the survey (up to 1000 characters)

Capturing the technical metadata through OASIS

We can capture the exploration metadata consistently and publish as a database  
but consistently fail to document the spatial content



HOME SEARCH DEPOSIT RESEARCH ADVICE ABOUT HELP

## The Geophysical Survey Database

Historic England, 2012

Introduction  
Downloads  
Query  
Results list  
Metadata  
Usage Statistics

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Primary contact  
Paul Linford  
Geophysics Manager  
Remote Sensing Team  
Historic England  
Fort Cumberland  
Fort Cumberland Road  
Portsmouth  
PO4 9LD  
UK  
Tel: 02392 856749  
Fax: 02392 856701

[Send e-mail enquiry](#)

Resource identifiers  
ADS Collection: 1091

Results list: Full Record

<< previous record

Database Id: 4191

Survey Name

Geophysical Survey - Antonine Wall Phase III; Shirva

Source of record

OASIS

Survey Description

The line of the Antonine Wall has been confirmed and found to correlate most closely with investigations carried out by the Centre for Field Archaeology (CFA). Of the main elements only the Ditch has been conclusively detected and appears most clearly in the magnetic data. Limited, more tentative evidence for the Rampart has been identified, again primarily in the magnetic data, in the field adjacent to Wester Shirva Farm. No clear evidence for the Military Way was found in this field. Further eastwards the Rampart is likely to run under the modern road, while the Military Way and any possible associated features lie in a field that was largely unsuitable for survey. Resistance survey in the field next to Wester Shirva farm produced anomalies that might indicate part of a rectangular enclosure. Surface obstructions precluded the expansion of the survey area, thus the true nature and significance of these anomalies cannot be fully assessed.

Survey Dates

02 Jul 2007 - 05 Jul 2007

County

EAST DUNBARTONSHIRE

Grid References

NS 6900 7550

Surveyor

GSB Prospection Ltd

solid Geology

UNKNOWN

drift Geology

ALLUVIUM

drift Geology

GLACIAL SAND AND GRAVEL

Monument

MILITARY ROAD Roman

Monument

FRONTIER DEFENCE Roman

NMRS UID

45157

SAM No.

727

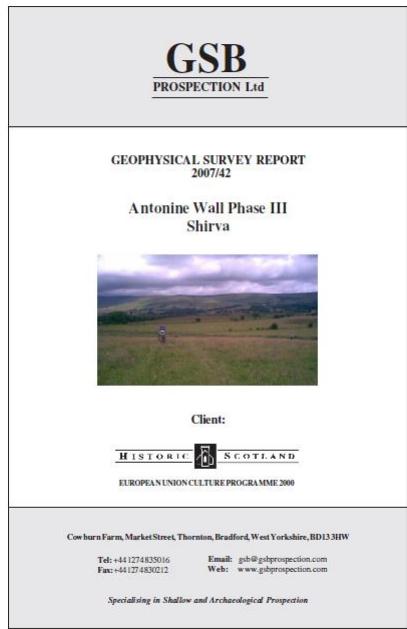
OASIS

gsbprosp1-43961

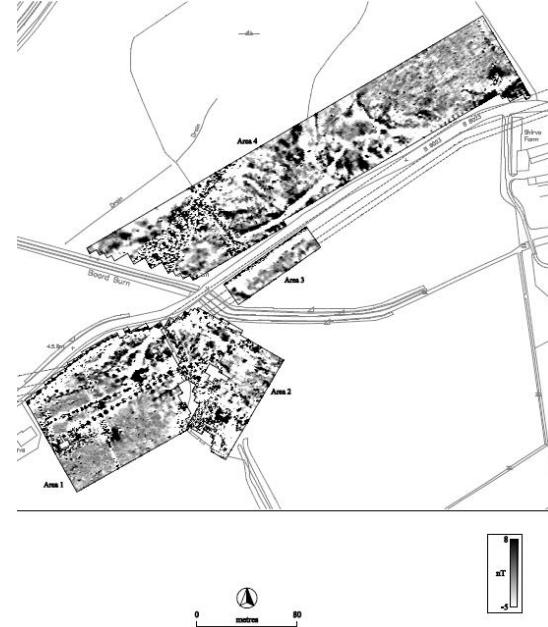
Survey Technique

1890: Resistivity - area

# Survey outputs: the tyranny of the PDF



Grid extents by technique



Greyscale plot of results



Analysis of survey results

Are we getting best value from survey data?

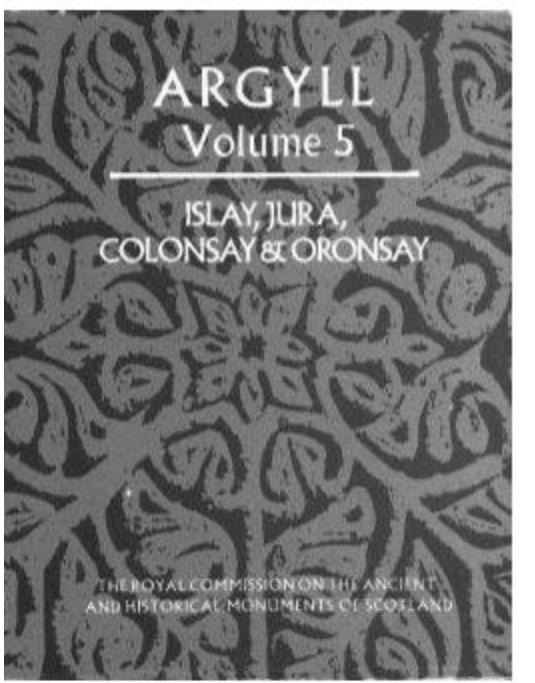
More flexible and  
Reusable formats

Project specifications also  
required copies of the  
digital data

- Name
- 01-pdf
  - 02-cad
  - 03-doc
  - 04-data
  - 0742\_digital-readme



Interpretation



No. 237 HUT-CIRCLE, FIELD-SYSTEM, ETC.

9.3 m in diameter within a wall 2.25 m thick and 0.9 m high externally; the entrance, on the sc., measures 1 m in width at the inner end and 1.2 m at the outer. On the sw there is an open-ended annexe bounded by a low curving wall. A low perpendicular stony bank (*P*) (no. 239664) appears to be a much damaged hut-circle measuring 8.4 m by 9.6 m within a wall 3 m thick and up to 1 m high. The entrance probably lies within the broad gap on the ns., and stones cleared from the adjacent fields obscure much of the wall, while within the interior there are traces of a subrectangular sheep-pen. A field-bank runs from the hut-wall towards the s. and another towards the n. Hut-circle *G* (no. 238665) appears for the most part as a low stony mound about 8 m by 9.5 m and not more than 0.4 m high. The outline of the wall has been obscured by the dumping of field-clearance stones but the entrance may have faced s., and a spread of stony debris on the w edge of the mound may mark the remains of an external curving annexe. Hut-circle *H* (no. 232665) is built on the top of a slight hillock and measures 5 m by 6 m within a heavily robbed wall standing 1 m high internally. The entrance, on the n., is flanked on the s. by a curving length of wall. On the sw arc there is an open-ended external annexe bounded by a wall which springs from the hut-wall on the w. About 15 m to the ss. there are the remains of two small structures; their purpose is not clear, but they may be later sheep-pens similar to those already mentioned within the interior of some of the other hut-circles.

Associated with the hut-circles there is a series of banks representing the remnant of what must originally have been a more extensive field-system; in the area sw. of the road and s. of a modern dry-stone wall the older remains have been largely obliterated by rig-and-furrow cultivation which covers an area of about 1.8 ha. The earlier field-boundaries can, in general, be distinguished from the more substantial banks associated with the rig-and-furrow, the former appear as low stony peat-, grass- or heather-covered banks, sometimes defined by projecting upright stones, and they tend to run in gentle curves making use of the forward edges of natural terraces. The bank that is cut by the road immediately w. of hut-circle *B* is about 2 m thick and only 0.15 m high above present ground-level. In the area east of hut-circle *B*, banks define two fields or enclosures of subrectangular and trapezoidal plan, measuring about 0.9 ha and 0.5 ha in size respectively; gaps in the banks, one at the se angle of the larger field and the other at the w angle of the smaller, may be original entrances. On the s. side of the road the earlier field-banks are, in general, peripheral to the banks associated with rig-and-furrow, and in the area n. of the modern dry-stone wall only a few traces remain visible, including a curvilinear enclosure about 0.12 ha in area. Accompanying the hut-circles and field-banks there is a scatter of at least fifteen small heather-covered clearance-cairns which, because of the layer of peat that almost covers them, appear as low stony mounds measuring, on average, 2 m in diameter and 0.3 m in height.

The banks that bound or divide the areas of rig-and-furrow cultivation have been built in a series of short straight lengths; like the earlier examples just described, they tend to follow the forward edges of natural terraces that divide different levels of rig-and-furrow, and some of them have served as dumping-places for field-clearance. Some of the stones cleared from rig-and-furrow cultivation have been



124

HUT-CIRCLE, FIELD-SYSTEM, ETC.

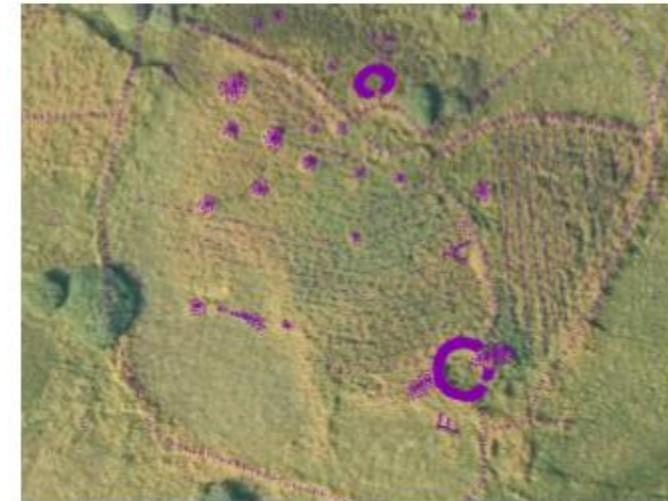
No. 237



Hut-circles, field-systems and cairns, An Sidhean, Islay (No. 237), plan  
(scale 1:2000)

125

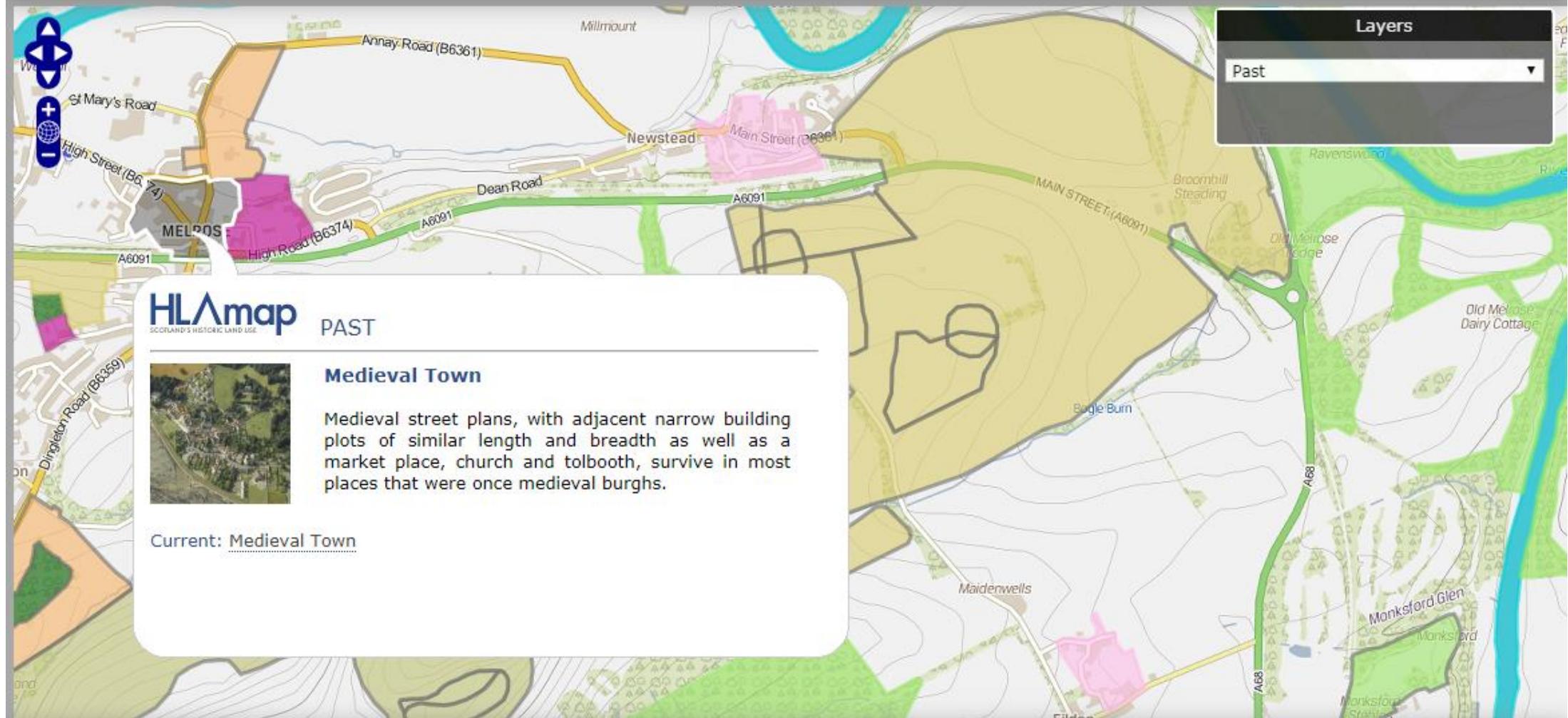
New life for old plans: An Sidhean is part of the Loch Gruinart / Ardnave RSPB Reserve, Islay



# Data formats and licensing



Historic Landuse assessment (HLA) project created a vector based dataset across Scotland



OS NGR NT 54725 33934 Map sheet NT53SW

Map Viewer version 1.0.

Map opacity

100%

Scale 1:10500

## Northumberland Historic Landscape Characterisation (HLC)

Liz Williams, 2015

[Introduction](#)

[Overview](#)

[Downloads](#)

[Metadata](#)

[Usage Statistics](#)

### Historic Landscape Characterisation

Data copyright © Historic England,  
Northumberland County Council  
unless otherwise stated



### Primary contact

Liz Williams  
Heritage and HER Officer  
Conservation Team  
Northumberland County Council  
County Hall  
Morpeth

### Downloads

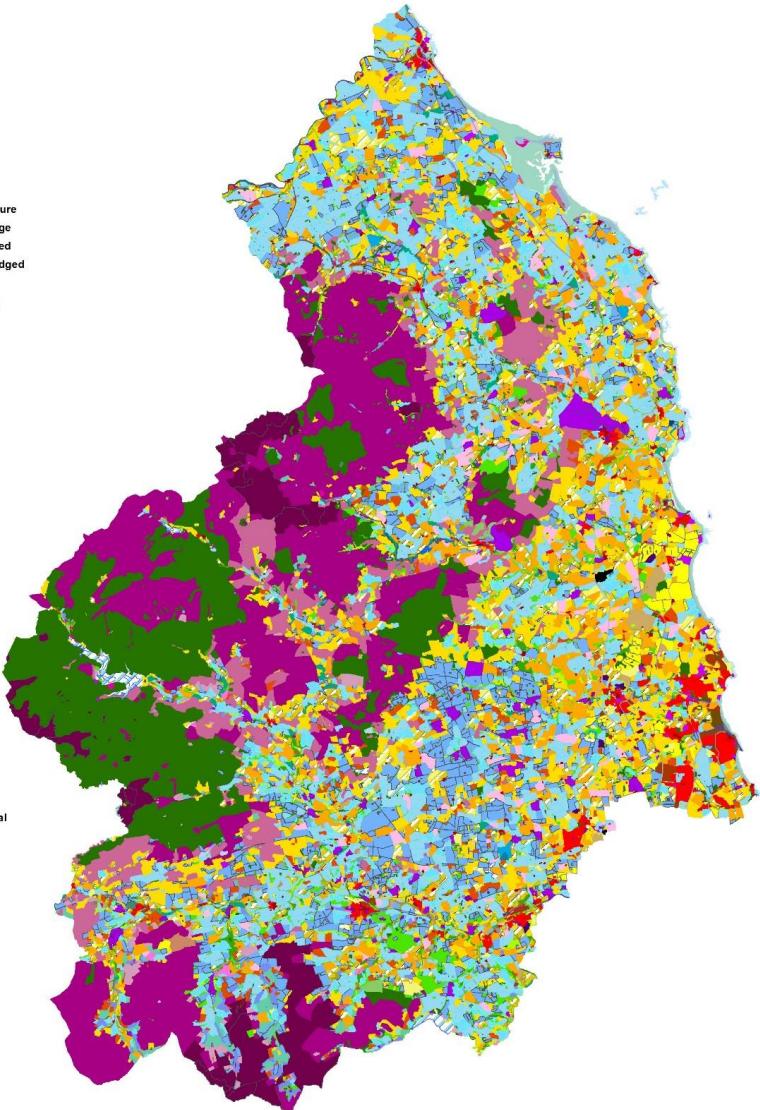
Reports

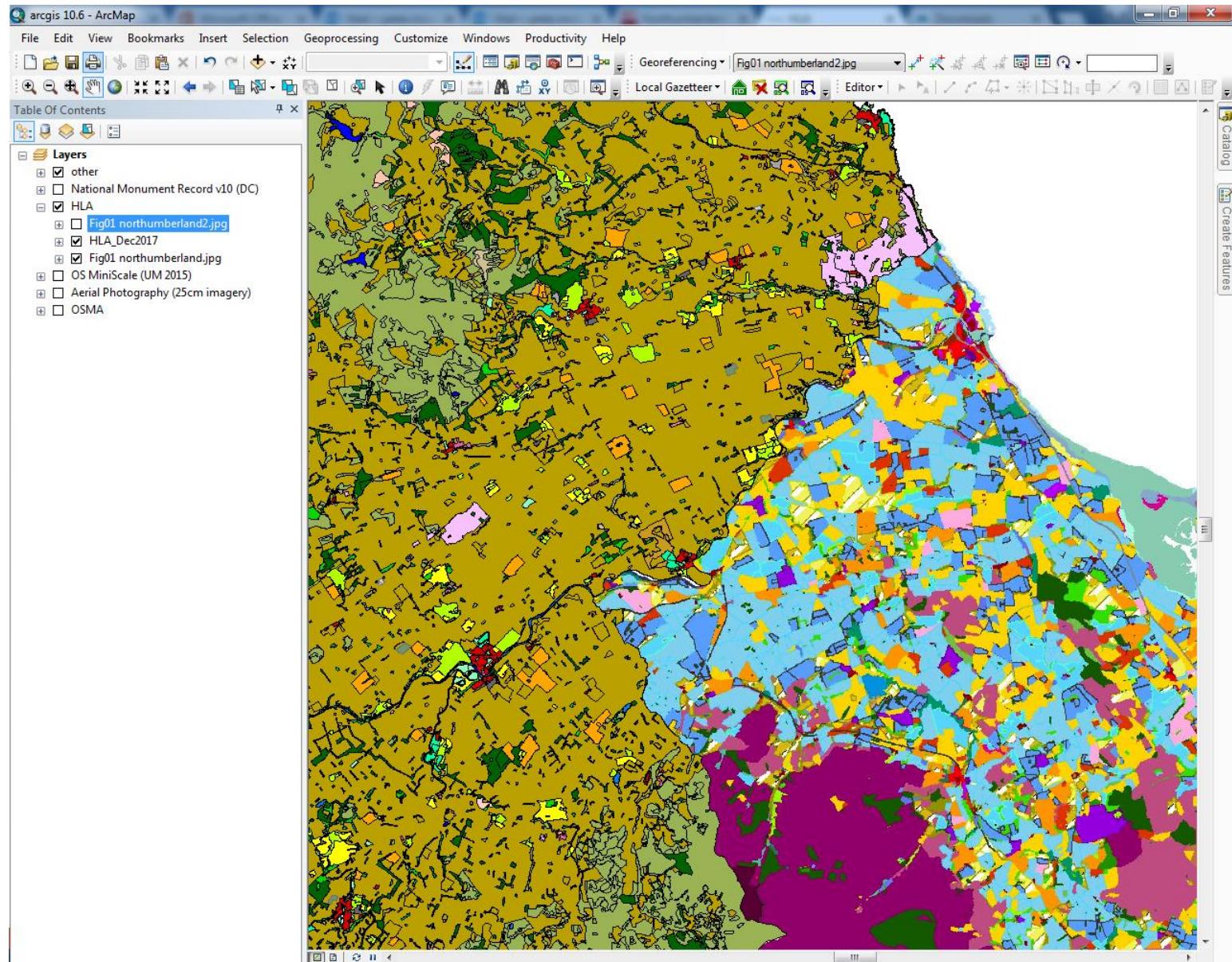
	APPENDIX 4 Occurrence and trajectory of change	<a href="#">PDF</a>	535 Kb
	APPENDIX 5 Physiographic Model Methodology	<a href="#">PDF</a>	901 Kb

### Figures and Plates

	Map of all historic landscape character types Fig01	<a href="#">JPG</a>	1.81 Mb
	Map of broad entry level historic landscape character types Fig07	<a href="#">JPG</a>	308 Kb
	Photograph of Embleton Bay Plate01	<a href="#">JPG</a>	1.11 Mb

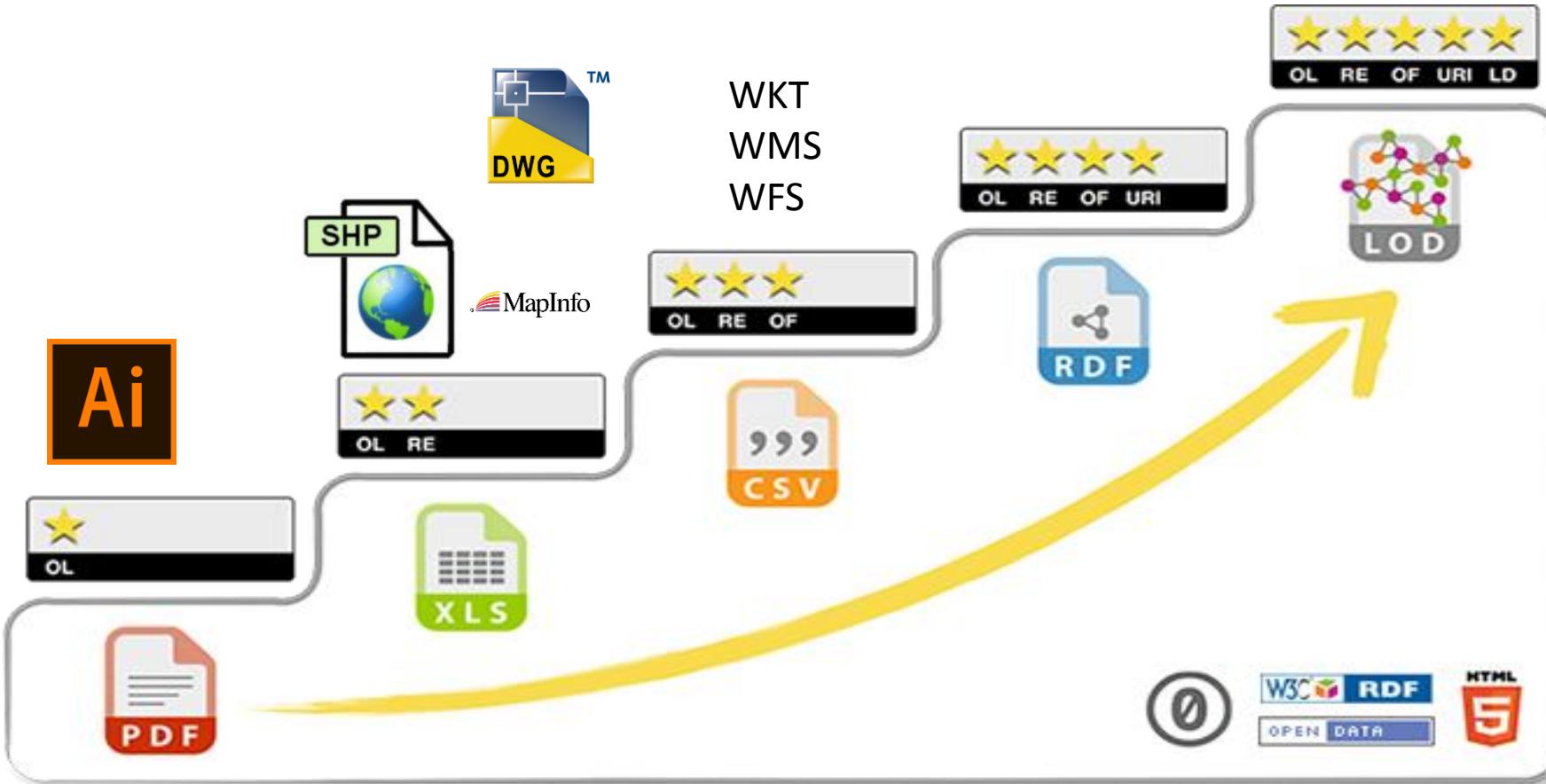
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- █ dunes
- █ intertidal zone
- █ rocky foreshore
- █ saltmarsh
- █ airfield
- █ disused railway
- █ harbour
- █ railway
- █ road
- █ ancient fields
- █ piecemeal enclosure
- █ reorganised piecemeal enclosure
- █ surveyed enclosure erratic edge
- █ surveyed enclosure wavy edged
- █ surveyed enclosure straight edged
- █ other small surveyed fields
- █ other irregular upland (intake)
- █ irregular floodplain fields
- █ paddocks/closes
- █ other small irregular fields
- █ other medium irregular fields
- █ other large irregular fields
- █ late 19th century fields
- █ 20th century restored fields
- █ other 20th century fields
- █ horticulture
- █ other farming
- █ abandoned industry
- █ abandoned extractive site
- █ active extractive site
- █ other active industry
- █ utilities
- █ institution
- █ school
- █ active military airfield
- █ active military site
- █ disused military airfield
- █ disused military site
- █ open upland moorland
- █ enclosed upland moorland
- █ open lowland moorland
- █ lowland enclosed moorland
- █ reverted moorland
- █ designed landscape
- █ other parkland and recreational
- █ sports ground
- █ recreation golf course
- █ pre-1860s settlement
- █ late 19th century settlement
- █ 20th century settlement
- █ artificial lake/pond
- █ reservoir
- █ natural open water
- █ marsh
- █ river
- █ ancient woodland
- █ ancient replanted woodland
- █ scrub
- █ pre-1860 woodland
- █ late 19th century woodland
- █ 20th century woodland





Whereas the archived HLC data is a dumb raster format...

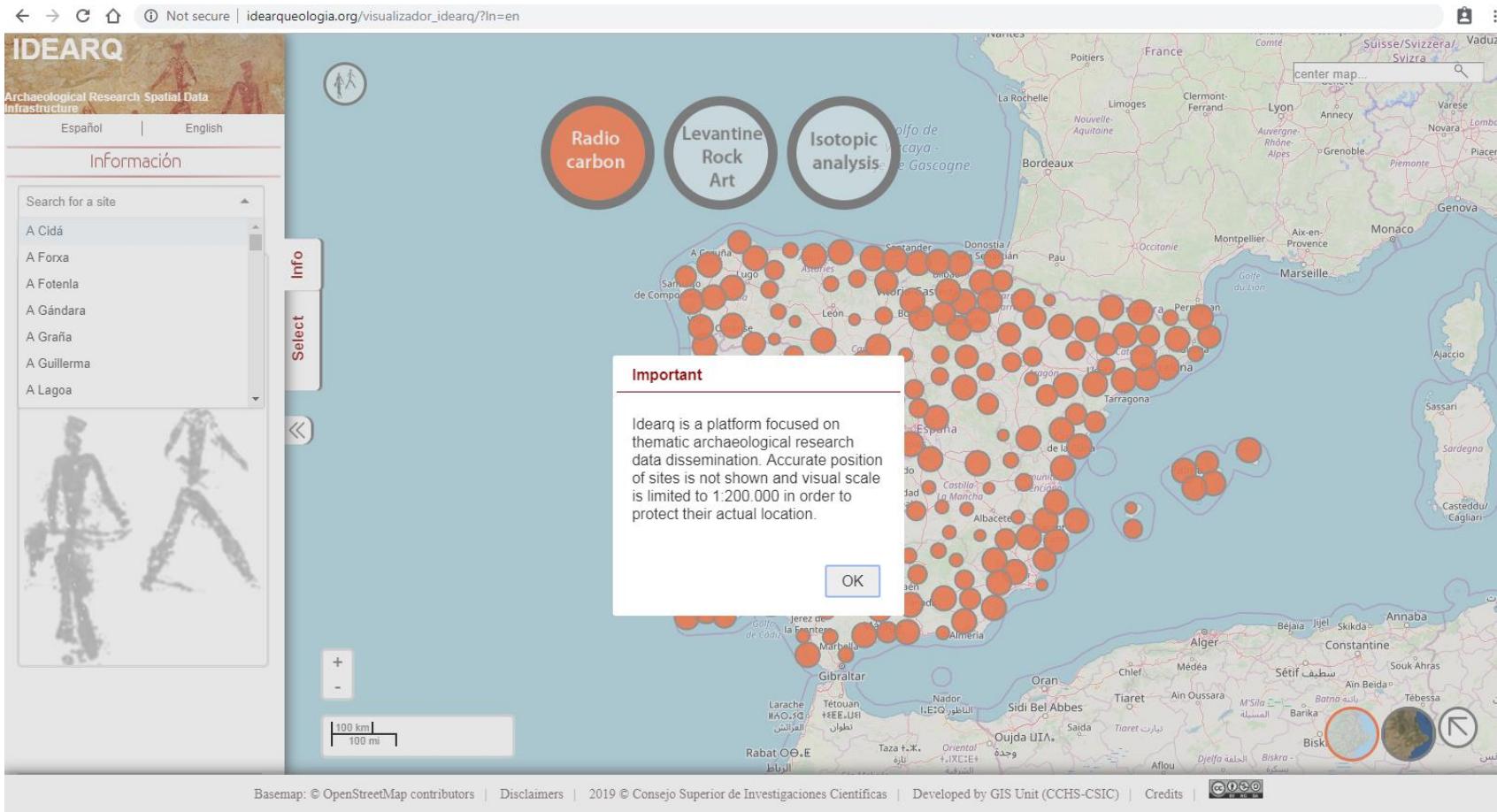
# Measure once



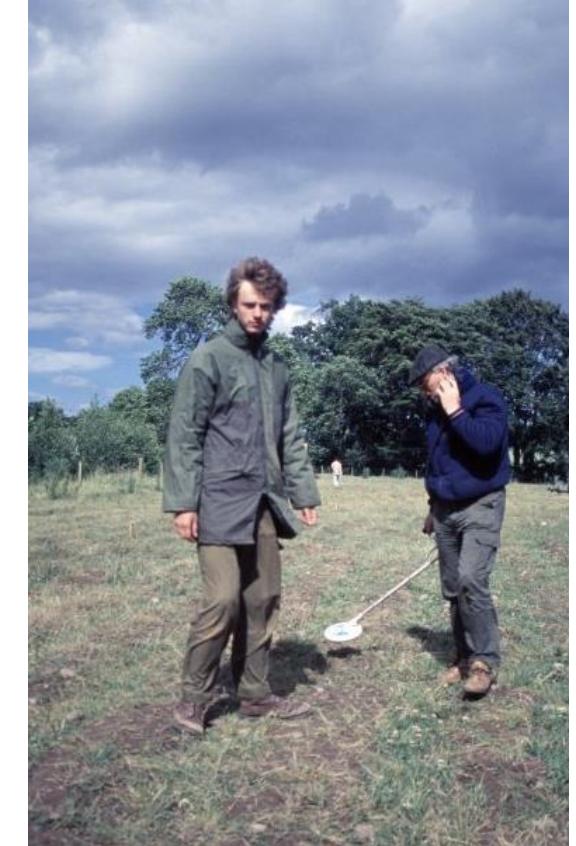
<https://5stardata.info/en/>

## Use often!

# Sensitivity



[http://www.idearqueologia.org/visualizador\\_idearg/?ln=en](http://www.idearqueologia.org/visualizador_idearg/?ln=en)



We need to reflect different approaches to sensitivity of data

## **INSPIRE sets down the general rules for establishing an infrastructure for spatial information in Europe for the purposes of Community environmental policies and policies or activities which may have an impact on the environment**



- Data should be collected once and maintained at the level where this can be done most effectively
- The ability to combine seamlessly spatial data from different sources and share it between many users and applications
- Spatial data should be collected at one level of Government and shared between all levels
- Spatial data needed for good Governance should be available on conditions that are not restricting its extensive re-use
- It should be easy to discover which spatial data is available, to evaluate its fitness for purpose, and to know which conditions apply for its use.

**Source:** David Fry, Inspire Directive: GIS Professional issue 15, April 2007, 18

# Towards an inclusive Spatial Data Infrastructure for Archaeology

## Data creators

National Agencies

Local authorities

Estate management

Private sector  
- Commercial archaeology  
- Consultancy

Community groups  
Private research

Universities

## Reporting

Organisational Portals

Data aggregation

Governance  
- Operational  
- Technical

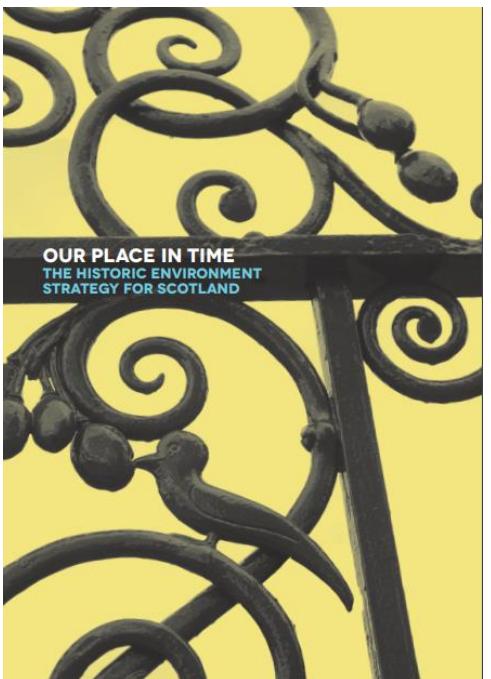
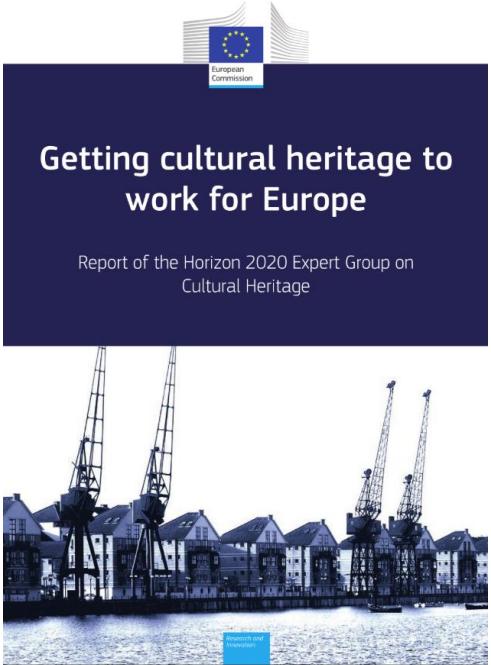
Heritage SDI

Data standards

Organisational resources  
Portals  
Web services

**National Spatial Data Infrastructures**  
Discovery metadata  
Web Map Services  
Web Feature Services  
Feed to INSPIRE (and other) Geoportal

Thematic portals



The need to move from 'an object-orientated approach towards a spatial approach in heritage planning'

and to

'consider cultural landscapes early as part of land use and spatial planning processes'

(European Commission Directorate-General for Research and Innovation [2015](#)).

Ensure that decision making is informed and that sound evidence-based information is available at all levels of decision making.

(Scottish Government 2014)

# Why does spatial data matter?

geoportal

CULTURE ET PATRIMOINE

- Archéologie préventive
- Guyane française (1780)
- Carte de l'état-major - environs de Paris (1815-1824)
- Monuments nationaux
- Musées
- Photographies aériennes 1950-1965
- Carte de Cassini
- Carte de l'État-major - environs de Paris (1815-1824)
- Carte topographique type 1900 - Paris et ses environs
- DUNKERQUE
- Cartes 1950

Données cartographiques : © IGN, Planet Observer

GEONOVUM

Vakantie, verloot, vereniging

Geostandaarden Themas Over Geonovum

Home / Themas

Themas

- Digitalisering openbare ruimte
- Energie
- Geo-beleid, wet- en regelgeving
- Kennisplatform API's
- Maatschappelijke vraagstukken
- SDI.Next: een data infrastructuur waarpop je kan bouwen
- Standaardisatie
- X files

geoland.at

Wo in Österreich ist...

Home Themen Geodaten Länder INSPIRE Über Uns

Allgemeines

- Kultur
- Bildung
- Naturschutzgebiete
- Raumordnung
- Wald
- Wasser
- Hochwasser
- Wasserschutzgebiete
- Naturschutz
- Nationalparks
- Europeschutzgebiete

GOV.UK

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Home > Organisations > Geospatial Commission



Part of Cabinet Office

## Featured



18 April 2019 — News story  
**Geospatial Commission making geospatial data more accessible**

New 'Data Exploration Licence' launched to harmonise and simplify access and use of geospatial data.

We need the best data to inform our own decisions  
People expect to find data online  
In the next decade geospatial technology will be ubiquitous  
Automated decision making through Big Data analysis

# Manifesto

That there is a need to coordinate better use of the geospatial data created through archaeological fieldwork and research to:-

- Maximise the value from unique observations about the past – often gathered at great expense
- enable better data discovery
- better inform our own decision making processes
- but also to inform environmental policies, planning activities and research about the historic environment
- promote knowledge and appreciation about the historic environment

We need to learn from and build on what is already there

- INSPIRE
- Best practice – One Geology, marine Spatial Data Infrastructures
- Ariadne and Carare data aggregators

But also acknowledge the Challenges:

- Information silos
- Not mandated
- Declining resources
- Lack of coordination