

# Using the 'Aerial Archaeology Mapping Explorer' App

(**N.B.** It should be noted that some of the screenshots used here may differ slightly from what you see, given differences in screen size and possible changes to the background application)

## Introduction

The 'Aerial Archaeology Mapping Explorer' map gives people access to a compilation of archaeological mapping data collected by Historic England, and its predecessor organisations, over a period of over 30 years. The archaeological mapping has been collected from a variety of modern and historic aerial photographic sources. These have increased over time and now include airborne laser scanning (also known as [lidar](#)). For further information on the history of the mapping projects and details of how and why features have been recorded see [Historic England Aerial Investigation & Mapping \(formerly National Mapping Programme\) Standards Technical Review](#)

This app consists of mapped data, depicting the actual appearance in plan of individual features in the landscape, either as they still exist, or as they have been seen on historical aerial sources. This differs from many other records that only record the general extents of a feature, or group of features. Where the data was created digitally, each feature also includes textual data, which can be seen by clicking on it. This data records its date, interpretation and the form of its appearance at the time of recording. Because these data come from aerial sources, the majority of these sites would not have been recorded without these surveys.

The level of this data depends on the project, and especially its date. For some projects, because of the way in which they were recorded, this information is only given at the 'site' level. This means that each feature recorded as part of the site includes data for all the elements of that site. For example, a Bowl Barrow, which was recorded within a mixed barrow cemetery containing other barrow types, will be recorded as [BARROW CEMETERY\BOWL BARROW\SAUCER BARROW](#) etc in the textual database. For more recent projects each feature has only the data specific to that individual element, so for the example above, it will just have BOWL BARROW listed

For some projects carried out by external contractors, monument records were input directly into the relevant Historic Environment Records (HER). In these cases, the textual data may represent the entirety of the HER record rather than necessarily just the elements recorded from the aerial imagery etc.

## Accessing the 'Aerial Archaeology Mapping Explorer' App

The app can be accessed via the Historic England Research pages at

<https://historicensland.org.uk/research/results/aerial-archaeology-mapping-explorer/>



To begin with, a splash page will prompt you to agree to the HE Archive terms and conditions.

Aerial Archaeology Mapping Explorer

Be aware that the most comprehensive record of data for any given area will be in the local Historic Environment Record, the links to which are provided within the application.

- When you first open the map you will see the project areas (in red) which highlight where mapping data exists. You can click on a polygon to download a free publication (where one exists) highlighting the archaeological discoveries for the area.
- Zoom in and you will see monument polygons (grey) appear - these reveal the extent of the archaeological features recorded. Click on any one, and the pop-up will take you to the [Heritage Gateway](#) site, where you can view the complete archaeological monument record.
- Zoom in once more, and the detailed mapping will appear. View the legend to see the form of the features. Click on any feature, and the pop-up will reveal what it represents

Although this data is provided for public use, please acknowledge Historic England when referencing the data

Any queries about data supply should be directed to the Historic England Archive [archive@HistoricEngland.org.uk](mailto:archive@HistoricEngland.org.uk) (01793 414600)

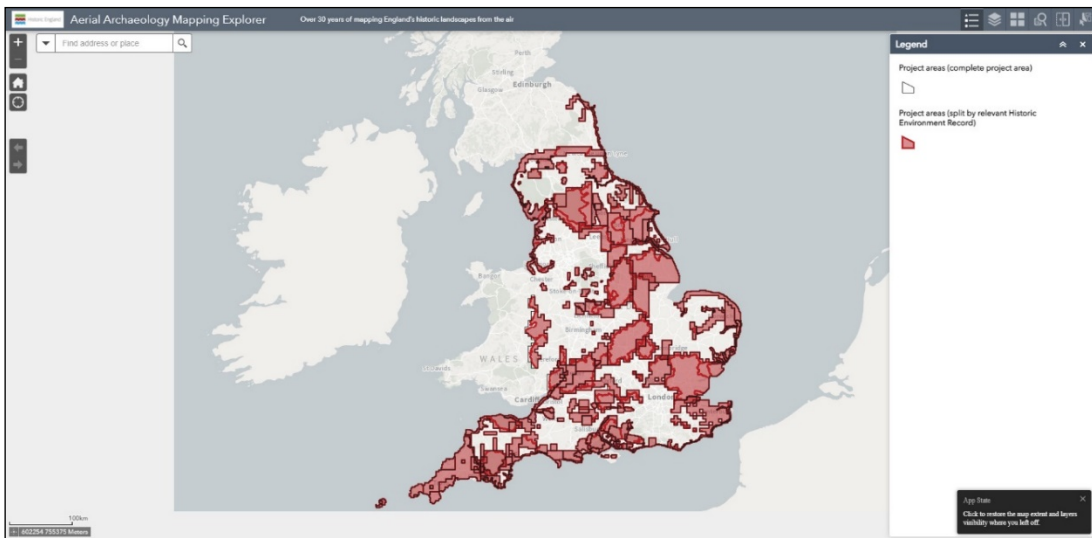
The app is currently under development and is likely to change in appearance

Click to confirm

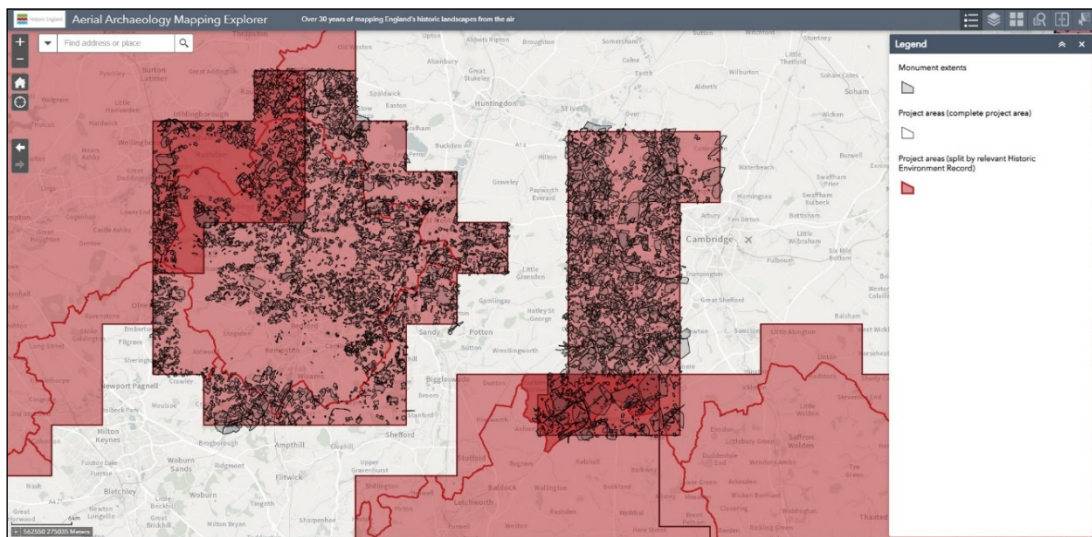
OK

If you do not tick the box, you cannot progress and enter the app.

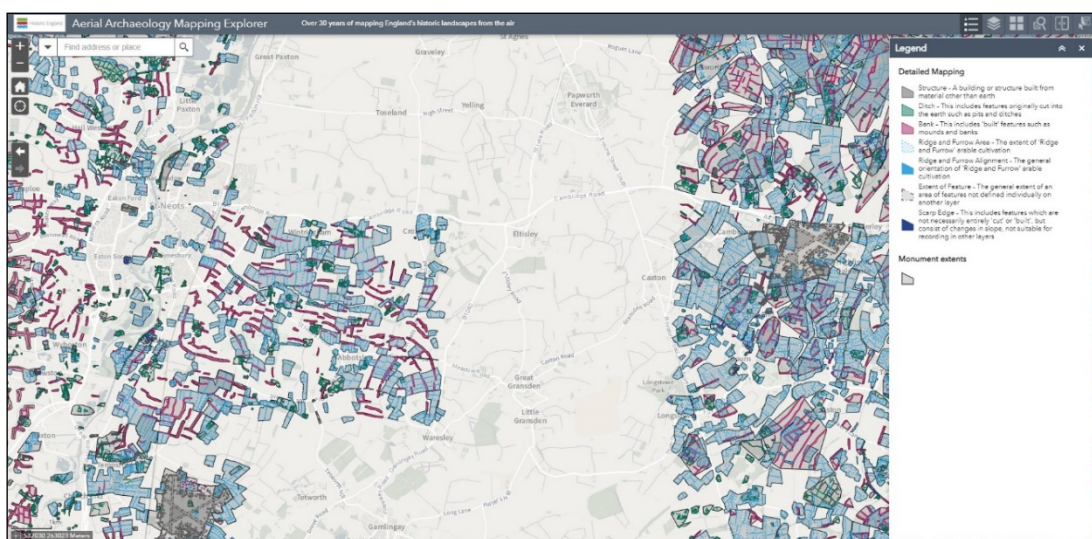
When the application opens, you will see a map of the country with the various project areas, where mapping has been carried out.



Zooming reveals the polygons defining the general extent of the archaeological monuments



And then as you zoom further you will see the actual mapping of the archaeological features that make up the monument

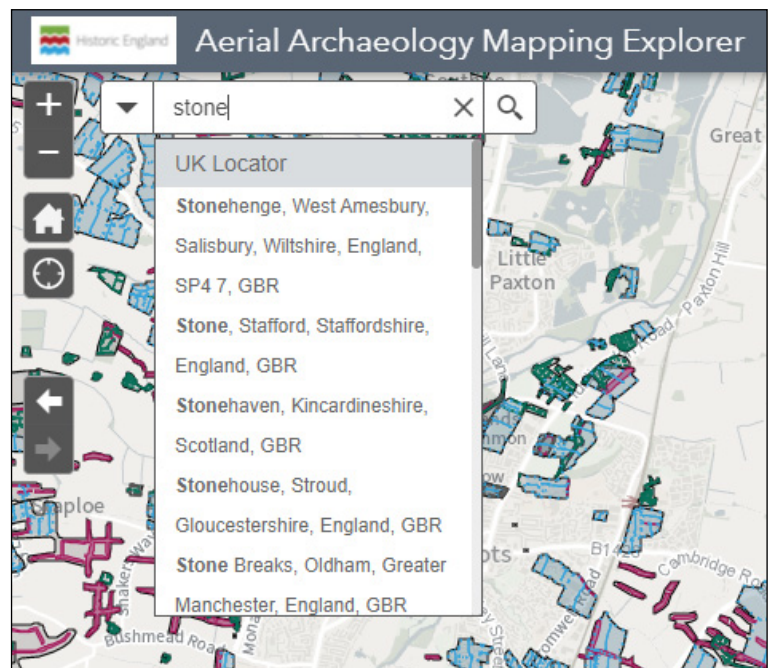


As you zoom in, the 'Legend' will change to reflect the visible layers.

## Navigation

You can zoom in and out using the + and – keys; alternatively you can pan and zoom using your mouse/touch pad according to your normal settings. To return to default settings click on the “house” 🏠 between the + and -. The ← and → arrows allow you to go back and forth between the last views.

## Searching

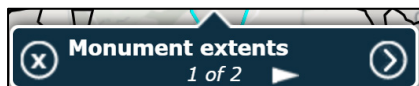


The primary search option is by OS Open Names locator, but if you wish to search by Postcode etc. these should also be available. By clicking on the ▼ you can see a full list of the search options including OS Code-Point Open postcode locator, OS Open Names locator, UK Locator & ESRI World Geocoder, amongst others.

## Pop-up Box/Feature information

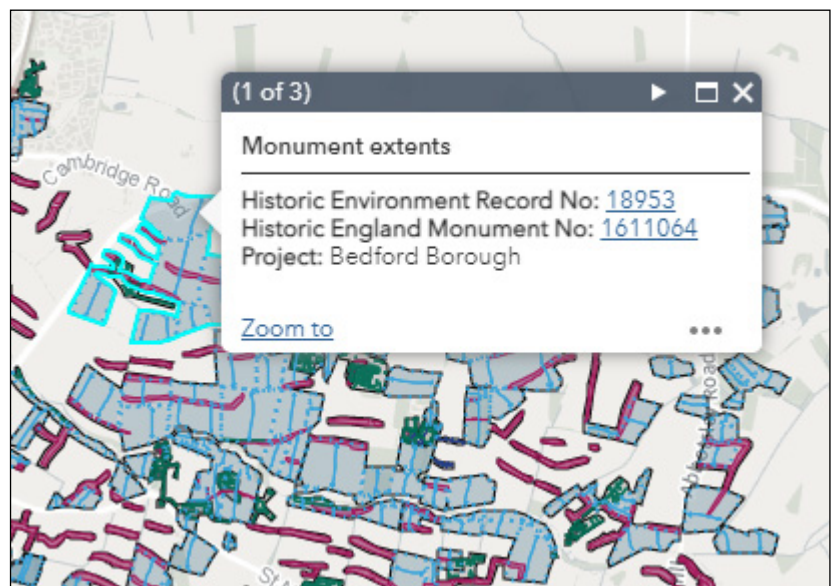
Clicking on any feature (i.e. polygon) brings up a pop-up box with information about the features in the vicinity. This includes any of the layers that are currently turned on (e.g. Monument extents, Detailed Mapping).

N.B. If clicking on the pop-up brings up a pop-up like this,



instead of the image to the right, then you need to alter the ‘Zoom’ settings in your browser to reduce the zoom level e.g. from 100% to

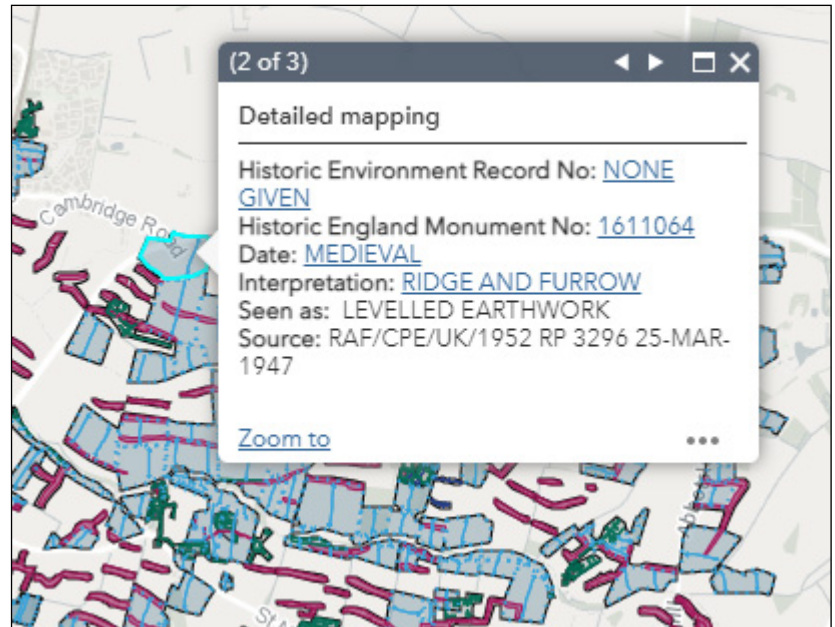
90%. Because this process differs between browsers, it’s not possible to give instructions here, but it should be relatively simple. Once reduced, the pop-up should display correctly.



The pop-up box will record the number of elements in the top left corner e.g. (1 of 4), (1 of 5) etc. Scrolling through the boxes, using the ► and ◀ tabs will reveal details about each element; as each pop-up appears, the extents of the feature in question are highlighted.

The nature of the data displayed will depend on the layer being queried.

Various elements within the different pop-ups have hyperlinks to other relevant data, such as the HER or Historic England research records for the site.



## Tools

To the right of the map is a box containing the layer list. Above the map and box is a greyed out banner with more information. On the right hand side of the banner are various tools to help you access data.



From left to right they are follows.

## Legend

This is simply a key showing how the different layers appear in terms of their symbology, and with a brief description of what that means

## Layers



Each layer has two elements; a ► to allow the symbology to be displayed, and a tick box controlling whether or not a given layer is displayed.

...

## ***Layers Explained***

### **Detailed Mapping**

This layer contains the vector mapping depicting the sites in detail. It is symbolised according to the original form of the feature. It does not show whether or not the feature is still visible in the landscape. The layers used are as follows:

- Structure – A building or structure built from material other than earth
- Ditch – This includes features originally cut into the earth such as pits and ditches
- Bank – This includes 'built' features such as mounds and banks
- Ridge and Furrow Area – The extent of 'ridge and furrow' arable cultivation
- Ridge and Furrow Alignment – The general orientation of 'ridge and furrow' arable cultivation
- Extent of Feature – The general extent of an area of features not defined individually on another layer
- Slope – This includes features which are not necessarily entirely 'cut' or 'built', but consist of changes in slope, not suitable for recording in other layers

The pop-up gives information about the proposed DATE and TYPE of the feature, together with links to the relevant HER monument record and/or the Historic England monument record. Where these exist in Heritage Gateway, this is the link used, but for some HERs, they do not have records in Heritage Gateway and so the link goes direct to the HER online. Heritage Gateway is a website that allows you to search for information on England's historic sites and buildings, including images of listed buildings. On it you can cross-search over 60 resources, offering local and national information relating to England's heritage.

In addition to these, there are also links to the 'Heritage Data' pages for the FISH definitions of PERIOD, TYPE and EVIDENCE terms used in the pop-up. FISH (Forum on Information Standards in Heritage) is the body that defines the agreed terminology for all elements relating to the historic environment such as terms for PERIOD, TYPE etc.

### **Monument Extents**

This layer shows the overall extent of each monument recorded as a separate record within either the relevant HER or the Historic England database.

The pop-up gives information about the project in which the site was recorded together with links to the relevant HER monument record and/or the Historic England monument record. Where these exist in Heritage Gateway, this is the link used, but for some HERs, they do not have records in Heritage Gateway and so the link goes direct to the HER online.

**N.B.** Because of the nature of the recording process, some projects created temporary numbers, and these are the ones that were held by Historic England at the time of the creation of the map. This means that some links go to 'dead' urls because the link numbers do not exist. We have been able to update some of these via concordance data made available by HERs, but this has not yet been possible for all projects.

### **Project areas (complete project area)**

This shows the total extent of the various projects carried out over time.

The pop-up gives information about the nature of the project (i.e. hand drawn or digital), the approximate date it was completed and the team that carried out the mapping together with links to the report, if one exists.

### **Hand drawn Mapping**

As noted above, mapping has been carried out since the 1980s and in the early years, this was done using manual and computerised techniques, but with the end product being hand drawn overlays designed to be placed over paper maps. These have since been scanned and are made available in this application as a raster layer. Unfortunately, these do not have any textual data, nor monument extents (outlines of the general extent of any given monument).

Because this is an external feed (wms) it is not possible to control the scale at which this data becomes visible.

Because there is no attached data there is no pop-up information.

### **National Heritage List for England (NHLE)**

This is a link to the Historic England data relating to designation data (including Scheduled Monuments, Listed Buildings, Parks and Gardens etc).

At present this appears as separate layers for each monument type e.g. Scheduled Monuments, Listed Buildings, etc

The pop-up provides basic information about each monument, such as its name and monument number, as well as a link to the list entry.

Because this is an external feed (wms) it is not possible to control the scale at which this data becomes visible.

The other layers provided link to additional\alternative sources of imagery and have no other data, and hence no pop-up information.

### **Lidar derived imagery - 1m DSM (Source Environment Agency)**

This is the data feed from the Environment Agency, which displays imagery as a single hillshade combined with a colour ramp for elevation.

Because this is an external feed (wms) it is not possible to control the scale at which this data becomes visible.

### **High Resolution Aerial Imagery**

This is an external feed (wms) from Geostore as part of The Aerial Photography for Great Britain (APGB) agreement.

Because this is an external feed (wms) it is not possible to control the scale at which this data becomes visible.

## World Imagery

This is the image layer that comes from the ESRI 'Living Atlas'. According to ESRI, the layer presents low-resolution satellite imagery for the world and high-resolution satellite and aerial imagery, typically within 3-5 years of currency, for most of the world.

This imagery is available at all scales.

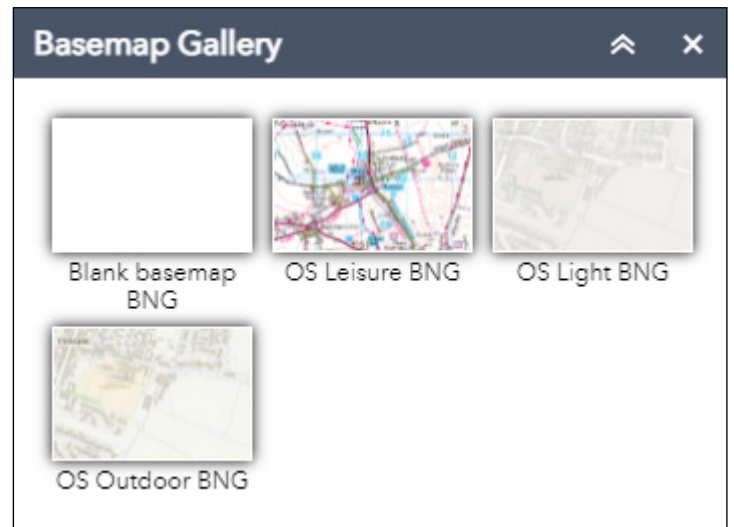
**N.B.** This imagery is projected according to WGS1984, whereas the map is projected according to the British National Grid. For this reason, it is not possible to use this as an alternative Base Map.

## Basemap Gallery

The 'Basemap Gallery' widget presents a gallery of base maps and allows you to select one from the gallery as the base map for your app.

The default setting is the Historic England OS basemap, which uses the various levels of OS mapping. However, the option is available to use other basemaps, such as imagery, topographic or terrain data.

To select an alternative basemap, click on the option of your choice. Be aware that some of the basemaps (e.g. terrain, National Geographic) are not as high resolution as others.



For more information, see <https://doc.arcgis.com/en/web-appbuilder/create-apps/widget-basemap.htm>



## Query

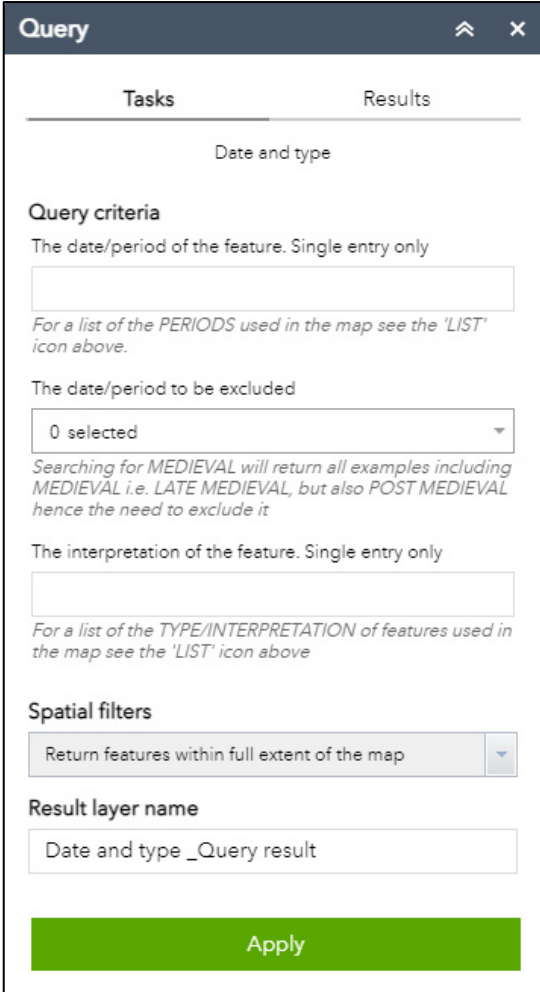
The 'Query' widget allows you to filter the mapped features by date and interpretation.

Because of the way that the data is structured, with multiple entries for each site, the Query has to be structured in a very specific way.

It is only possible to query on a single PERIOD or TYPE at a time.

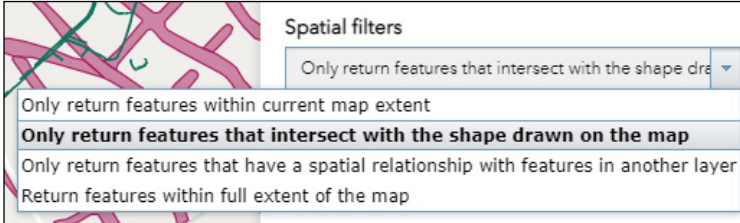
In order to help users with the range of PERIODs and TYPE that can be searched, there is a link to both the full list of PERIODs and TYPEs available as PDFs via the LIST widget (below).

As well as filtering by attribute data, it is also possible to filter spatially.



The screenshot shows the 'Query' widget interface. It has a dark header with 'Query' and navigation icons. Below the header are two tabs: 'Tasks' and 'Results'. The main content area is titled 'Date and type'. It contains several sections: 'Query criteria' with a text input field for 'The date/period of the feature. Single entry only' and a dropdown for 'The date/period to be excluded' (currently showing '0 selected'); 'Spatial filters' with a dropdown menu; and 'Result layer name' with a text input field. A large green 'Apply' button is at the bottom.

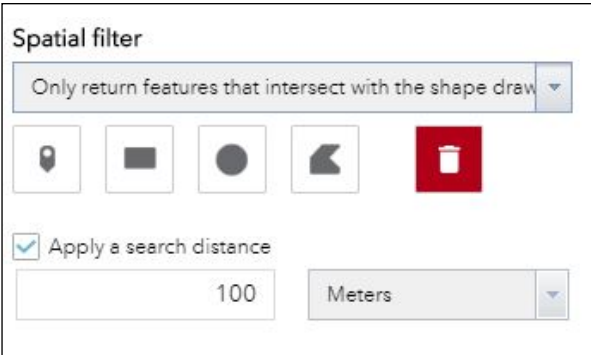
In the case of the spatial filters, if you want to define an area to search, you select the option "Only return features that intersect with the shape drawn on the map" and then choose from a number of shapes.



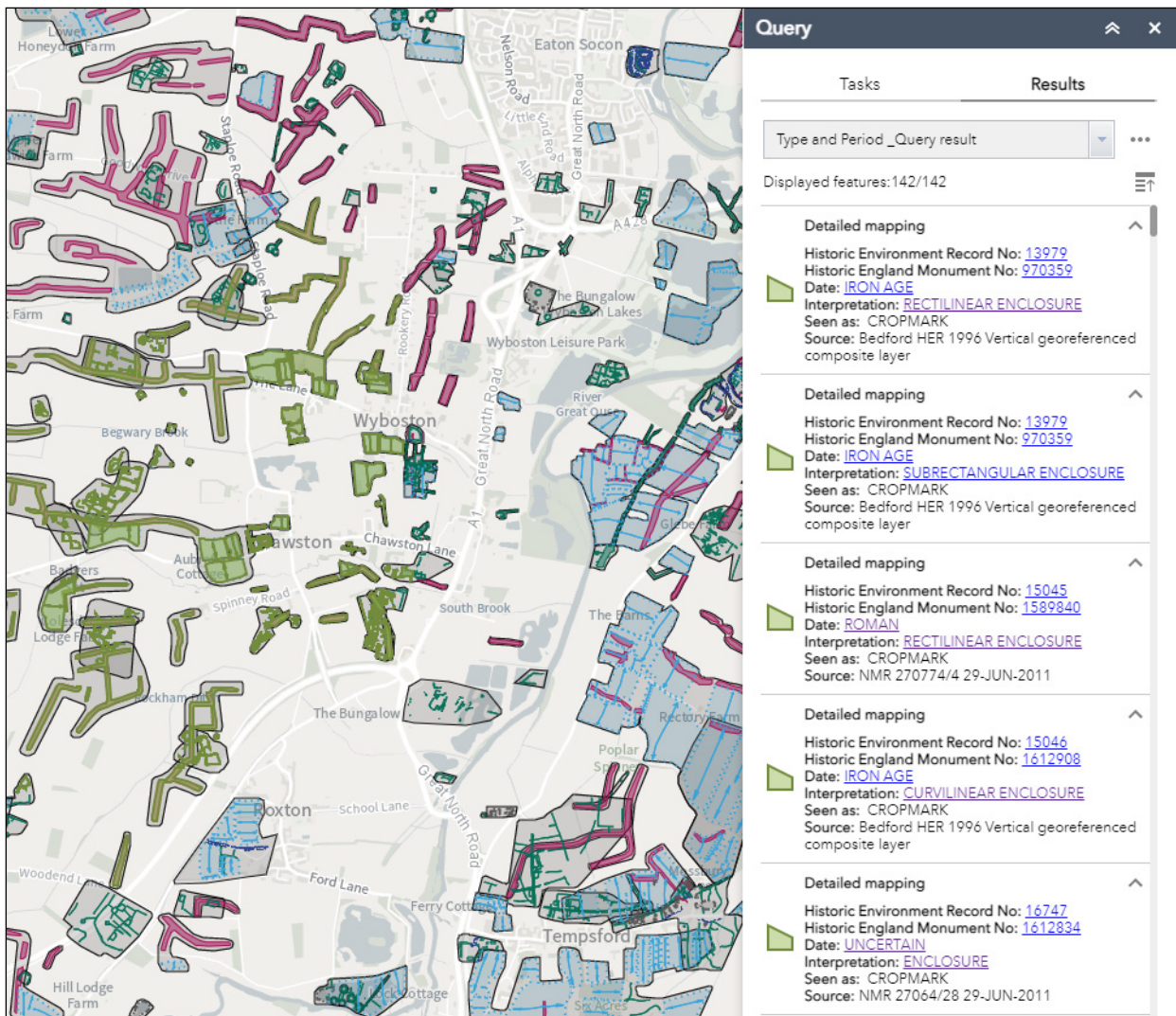
The screenshot shows a dropdown menu for 'Spatial filters'. The menu is open, showing several options: 'Only return features that intersect with the shape drawn on the map' (highlighted in blue), 'Only return features within current map extent', 'Only return features that have a spatial relationship with features in another layer', and 'Return features within full extent of the map'.


The 'Apply a search distance box' allows you to define a buffer around your search area.

If using the polygon, option follow the on screen instructions for how to close the polygon. Whichever method is used, after selecting, press '**Apply**' in the green box, the map will zoom to the selected features and a film strip will appear down the right-hand side of the map, displaying the relevant features, using the same information as appears in the pop-ups.




The screenshot shows the 'Spatial filter' widget. It has a dropdown menu for 'Spatial filter' with the option 'Only return features that intersect with the shape drawn on the map' selected. Below the dropdown are five icons: a location pin, a square, a circle, a polygon, and a red trash can. There is a checked checkbox for 'Apply a search distance' with a text input field containing '100' and a dropdown menu for 'Meters'.



(N.B. it is worth minimising the strip, using the minimise icon , as some of the images selected may lie behind it.)

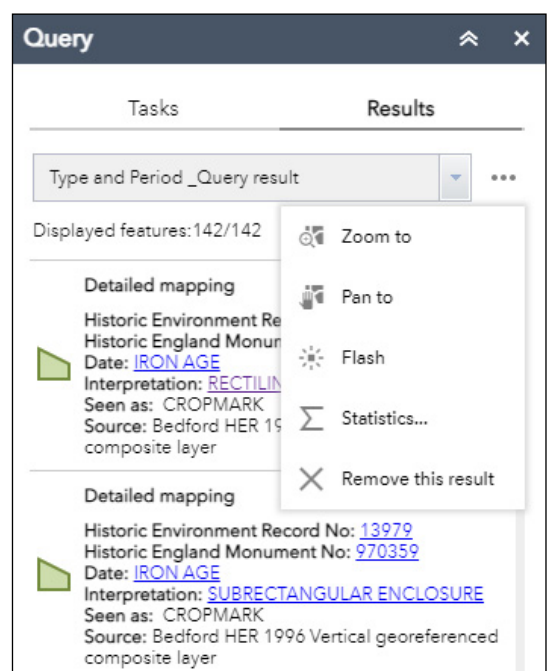
Clicking on any entry zooms to that feature.

Clicking on the menu bar  to the right of the query brings up a pull-down list with various options.

These include the ability to zoom to the results 'Zoom to', or centre them at the same scale 'Pan to' or make them flash to highlight them 'Flash'. Ignore the 'Statistics' option as this simply calculates the statistical value of any numeric fields in the database.

Whilst the 'Remove This Result' tab does purge the Results, it does not purge the 'Query Criteria'. There is currently no 'Reset' button, but in order to purge any given query it is simply necessary to go back to 'Tasks'.

For more information, see <https://doc.arcgis.com/en/web-appbuilder/create-apps/widget-query.htm>



## Swipe

The 'Swipe' widget enables you to easily compare the content of different layers in a map. It allows you to hide or reveal the content of another layer using the swipe tool.

The default layer to be swiped relates to the World Imagery, but it is possible to select alternatives that have been selected in the Layer List. N.B. a layer has to be on in order to appear in the options to set it to swipe.

For more information, see

<https://doc.arcgis.com/en/web-appbuilder/create-apps/widget-swipe.htm>

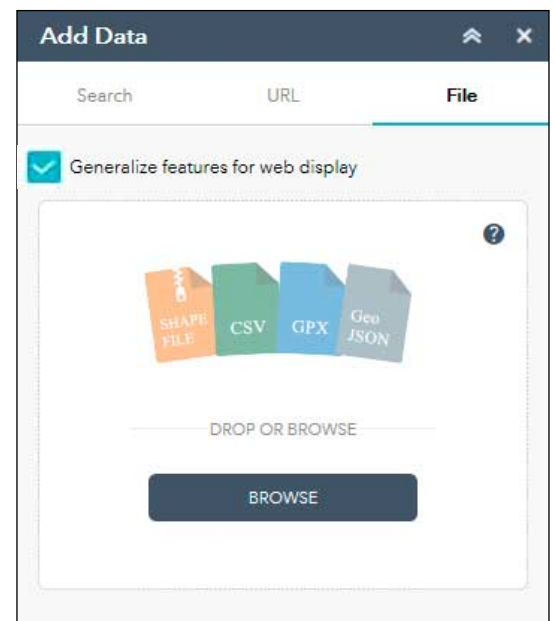












## Add Data

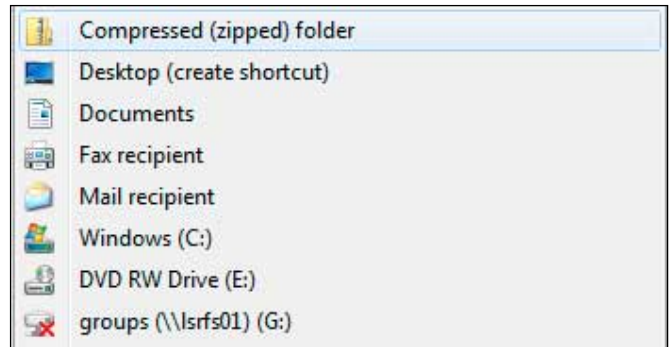
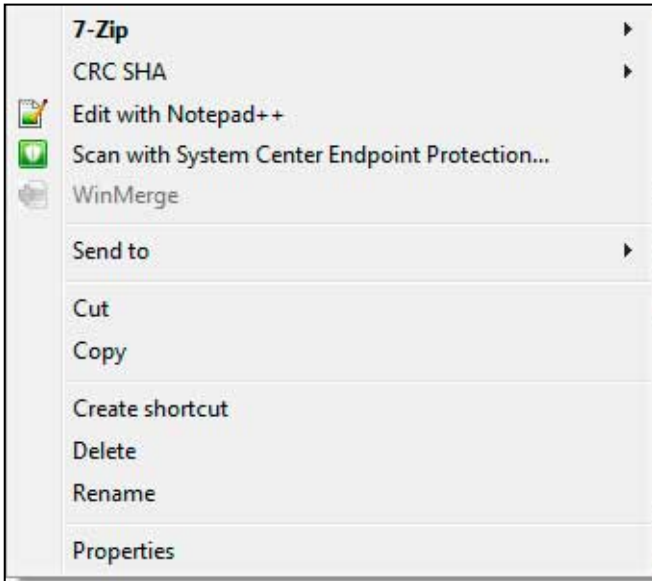
The 'Add Data' widget allows the user to add extra data.

The most common type of file to add will probably be a zipped shapefile; this is because people will generally have access to shapefiles as part of a given project, or from outside sources.

The first point to note is that only a zipped file will work, **not** the individual elements. It is therefore necessary to create a zipped file. This is a very easy process, simply a matter of finding the relevant elements in Explorer, and right clicking to select 'Send to' and then 'Compressed (zipped) folder'. The zipped file will pick up the name of the first element and add the suffix .zip.

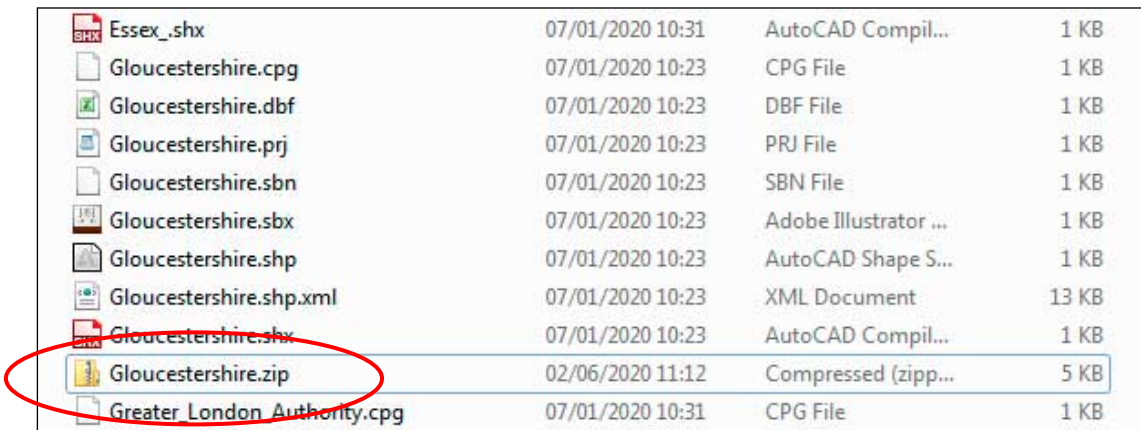


 Essex_.shx	07/01/2020 10:31	AutoCAD Compil...	1 KB
 Gloucestershire.cpg	07/01/2020 10:23	CPG File	1 KB
 Gloucestershire.dbf	07/01/2020 10:23	DBF File	1 KB
 Gloucestershire.prj	07/01/2020 10:23	PRJ File	1 KB
 Gloucestershire.sbn	07/01/2020 10:23	SBN File	1 KB
 Gloucestershire.sbx	07/01/2020 10:23	Adobe Illustrator ...	1 KB
 Gloucestershire.shp	07/01/2020 10:23	AutoCAD Shape S...	1 KB
 Gloucestershire.shp.xml	07/01/2020 10:23	XML Document	13 KB
 Gloucestershire.shx	07/01/2020 10:23	AutoCAD Compil...	1 KB
 Greater_London_Authority.cpg	07/01/2020 10:31	CPG File	1 KB

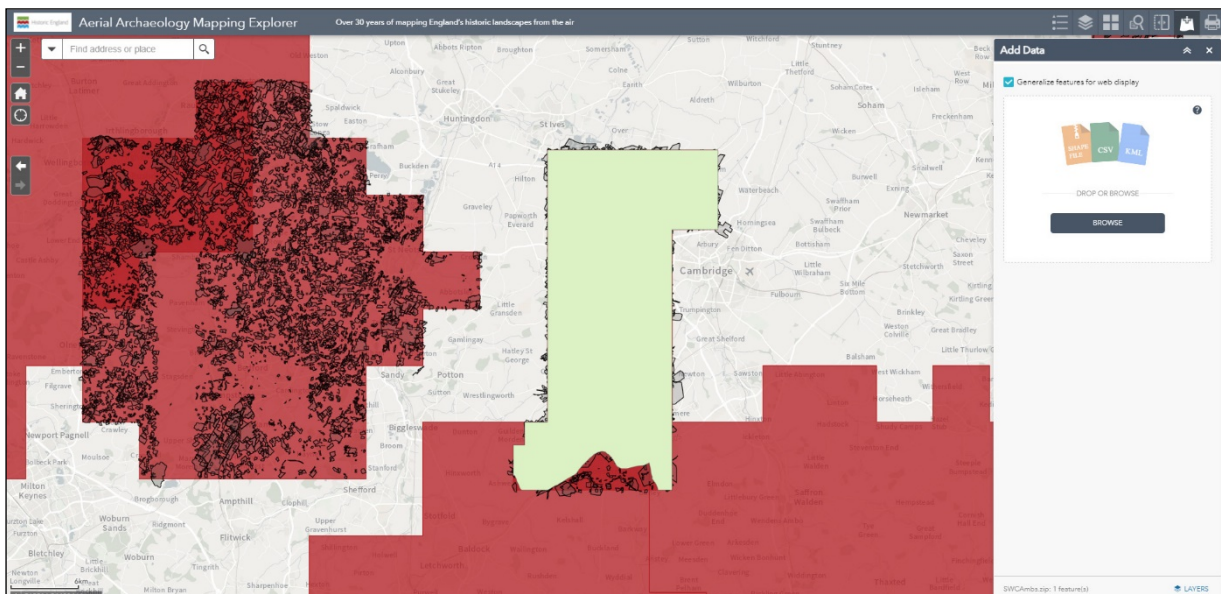


You must ensure that among the file elements is a .prj file; this holds the projection of the data and without it, the zipped file won't work.

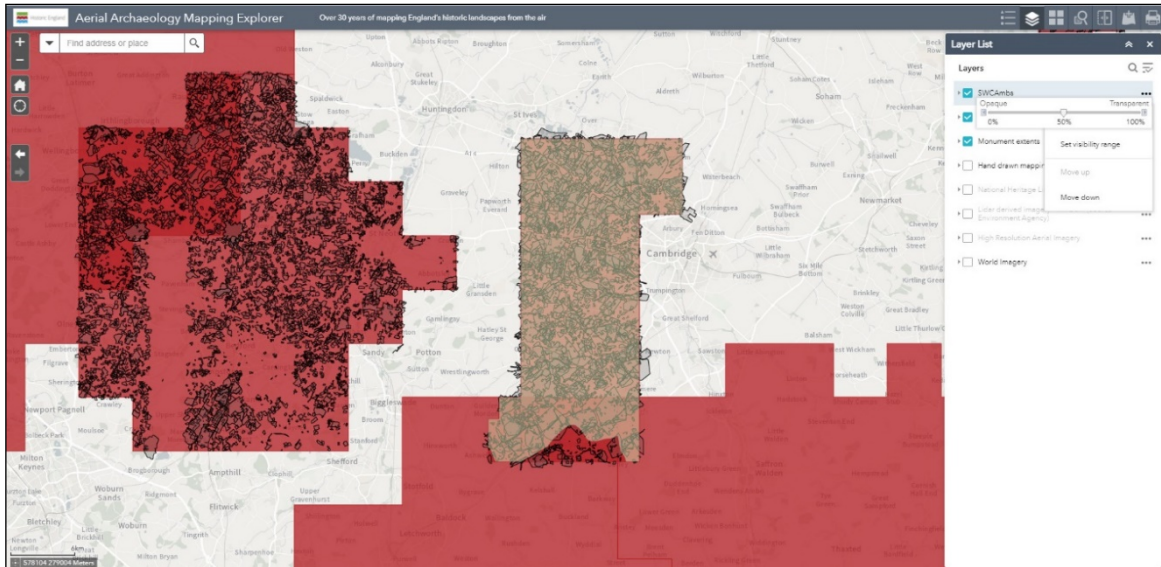
It is also important to note that only a **closed** polygon will work. Once the zipped file has been created it can be selected from the browse option in the 'Add data' widget. It is then simply a case of navigating to the zipped file and selecting it.



The app will zoom to the extents of the added layer.

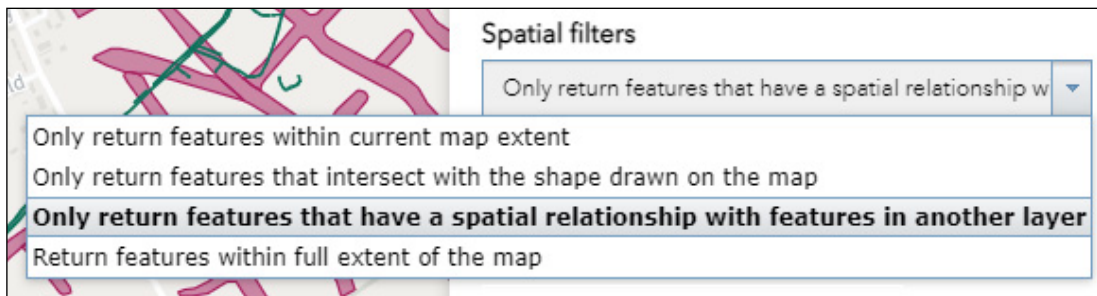


Unfortunately, the layer is created as a filled polygon and placed on top of map.



Whilst it is not possible to move the layer up or down, or change the symbology, it is possible, as with any other layers to control the transparency.

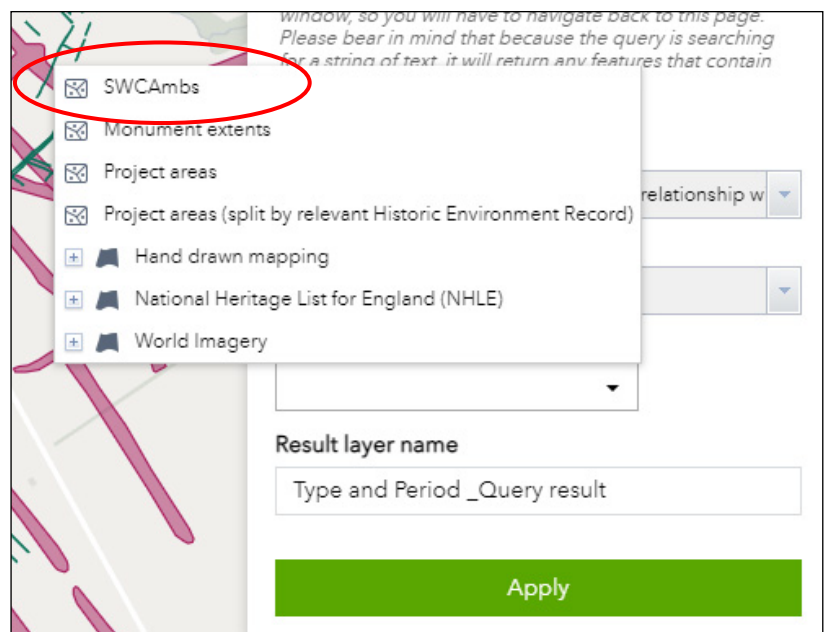
Once loaded, it is then possible to use this layer as the source for a 'Query' y, where the 'Spatial filter' option is 'Only return features that have a spatial relationship with features in another layer'

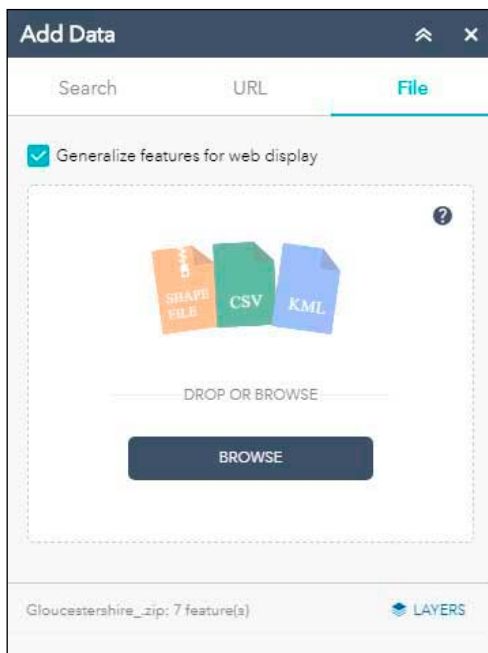


You then have the option to select the layer you wish to use as the overlap from a list; the newly added layer should be at the top.

It is possible to apply a buffer if required, the range of which can be changed. Click 'Apply' and the Query will run just like the others.

To remove any layers you have added, you need to return to the 'Add Data' widget. Click 'Layers' in the lower right corner of the widget and this will show which layers have been added. In the 'Layers' panel, click on the 'dustbin' icon layer next to the layer you wish to remove to remove it.





Each time the application is closed, it automatically resets and removes any added layers.

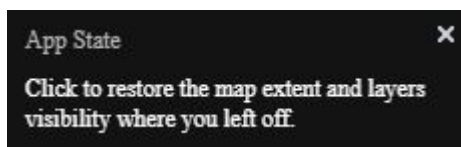
For more information, see <https://doc.arcgis.com/en/web-appbuilder/create-apps/widget-add-data.htm>

## LIST

This icon provides access to complete lists of the PERIODs (dates) and INTERPRETATIONS (feature types) used in the app. This is designed as an aide to using the Query widget (above)

## Logging Back in

When returning to the application, a black square will appear on the bottom right asking if you would like to return to the position you left on your previous visit.



## Problems

If you have difficulty working the map or you spot any errors, please contact [remotesensing@historicengland.org.uk](mailto:remotesensing@historicengland.org.uk)

It should be noted that by 'errors' we mean technical issues, such as features failing to appear, queries not working etc. This is also the place to report erroneous or missing links, although as noted [above](#), there are a number of features currently lacking a correct link, due to issues with the original data.

Please do not use this to make comments about the accuracy of the mapping or interpretation of features as this is a 'point in time' record based on the information that was available to staff at the time.

If you have any comments regarding this documentation or have suggestions about additions or alterations, clarifications or amendments please contact the same address.