Archaeology Detectives –
B. Using Aerial Photographs

Activity plan

Curriculum Links

I can describe the major characteristic features of Scotland's landscape and explain how these were formed.
SOC 2-07a

Heritage Hero Award

Investigate Activity

Learning Intention

To be able to interpret both vertical and oblique aerial photographs to identify key features in a landscape or townscape.

Pupils will learn how aerial photographs show a 'bird's-eye' view of landscape in plan (vertical aerial photographs)
and in 'three-quarter view' (oblique aerial photographs).

Pupils will learn that landscapes and townscapes as we see them in the present are not fixed and static, but are dynamic and active - evolving and changing through time as people develop different uses for a place, and as environmental changes have an impact.

This lesson will introduce aerial photograph interpretation skills and reinforce the analysis of evidence. The group will have the opportunity to use a variety of historic and modern aerial photographs, identify currently existing and lost landscape features and develop their understanding of how their site has been impacted on through time.

Resource List

- Digital / paper copies of aerial photographs to review (you will need to prepare)
- Starter activity (in **Learning Resource B**)
- Set of questions to answer (ideas in **Learning Resource B**)

Research needed before session

Allow **1 ½ hours** for preparation time.
There are 3 items to prepare before this session.

1. Identify and duplicate aerial photographs of your site / building

You can look at either historic or modern aerial photographs to investigate the features and landscape around your site. Aerial photographs of varying ages are available from a range of different websites, and there is a lot of value to be gained from comparing older, historic photos with views from the present day. Digitised aerial photographs can be found on a variety of websites, listed below.

About Obliques

Oblique aerial photographs are taken at an angle to the ground by a photographer pointing his or her camera out of the side of a plane. They provide detail of the sides of buildings and structures, and offer a recognisable view of a landscape. However, the representation of distances between the foreground and the background can be deceiving due to foreshortening (an optical illusion affecting perspective).

An oblique aerial photograph of Linlithgow.

Sources for Obliques

Historic and modern obliques can be found at:

- **Britain from Above** (free, registration needed, historic obliques only)
- **Canmore** (free, registration needed, historic and modern obliques)
- **The National Collection of Aerial Photography** (free for educational use, historic and modern obliques)
- **SCRAN** (subscription needed, historic and modern obliques)
  All of the above can be found on our links page.

About Verticals

Vertical aerial photographs are taken using a camera attached to the underside of a plane. The plane flies parallel to the ground surface, automatically taking photographs. These vertical images show the landscape in plan like a map (indeed, vertical aerial photographs are used by the Ordnance Survey to make maps). Viewing the landscape in plan is a very unfamiliar view for many people. As most features look very different when viewed from directly above, it can be a challenge to recognise even familiar structures.


Vertical satellite image of Linlithgow.
Google Earth. Image © 2016 Getmapping plc

Satellite images are vertical photographs taken from satellites orbiting the earth in space. They are usually very detailed, in colour, and viewable at a high scale.

Sources for Verticals

Historic and modern vertical can be found at:

- **The National Collection of Aerial Photography** (free for educational use, historic and modern verticals)
- **SCRAN** (subscription needed, historic and modern verticals)
- **Google Earth** (freely downloadable computer program, historic vertical aerial photographs and modern vertical satellite photographs – in the drop-down menu select View / Historical Imagery, and use the slider to see historic views of the landscape)
- **Google Maps** (modern vertical satellite photographs)
- **National Library of Scotland** digital map library (historic verticals – within the geo-referenced maps viewer select the category 'Scotland', then select the map/map series 'Air photos 1944-1950').

For this activity we are going to suggest using **SCRAN** and **Canmore** to find vertical and oblique images respectively. Up-to date vertical images to use as modern comparisons can be sourced using **Google Earth** or **Google Maps**. All of the above resources can be found on our links page.

SCRAN

Find the link to **SCRAN** on our links page. Many local authorities provide access to **SCRAN** for schools; however a subscription is also available for a modest fee, as well as free home access for teachers. The easiest way to get vertical aerial photographs of your site / building is as follows:

I. Type in the place name in the Search box on the top right, and click on Go.
II. The results of your search will be displayed. Many vertical aerial photographs have been collated as 'stacks'. Any collections of aerial photography for the place you have searched for will be displayed at the top of your search results.
III. Click on the image to open the stack.
IV. Select an image to view. Click on it to see it enlarged. Click on it again to be able to zoom in on the image.
V. Copy the image by clicking on Save beneath the photograph. **SCRAN** license images for educational purposes – the correct attribution and licensing information is shown beneath each enlarged photograph.
VI. As an advanced means of searching your results you can use the tools at the right of the screen.
VII. Search for a place name and click Go.
VIII. In the Stacks drop down box select Aerial Photos
IX. In the View drop down box select Map
X. Your search results will be shown as dots on a map background. You can click on the dots nearest to your chosen location to find useable photographs.

Canmore

Find the link to **Canmore** on our links page. The easiest way to get oblique aerial photographs of your site / building is as follows:

I. Type in the place name in the Search box on the top right.
II. Select Images in the drop down box, and click on the blue search button (it has a picture of a magnifying glass on it).
III. The results of your search will be displayed. It may be easier to find useful images if you chose to show 96 images per page.
IV. The results will show historic, as well as more recent oblique aerial photographs, alongside other images.
V. Click on an image to view it.
VI. Copy the image by clicking on Download beneath the photograph.
VII. This takes you to a page with licensing information. **Canmore** license images for educational purposes – the correct attribution and licensing information is shown above each enlarged photograph. The larger 800px images are for educational use.
VIII. Click on Download to save the image.

2. Preparing a suitable set of questions about your site

Learning Resource B has a generic list of ideas relevant to investigating aerial photographs. We recommend you adapt these ideas to your chosen place of study.

3. General overview of resources

We suggest you always review our resources and amend as necessary before running the session.

Timings

Activity	Summary	Time
Starter – identifying key landmarks	Using **Learning Resource B** ask the group to spot the differences between the historic and modern aerial photographs of the example site - Linlithgow. Ask the group to list reasons why things may have changed between the different dates when the photographs were taken.	**15 mins**
Introduction	Explain to the group that you are going to look at different aerial photographs of your site, and that they will need to try to spot the differences between the older and newer images, and think of reasons why they might have changed over time.	**10 mins**
Main activity	In pairs / groups or individually study the aerial photographs of the site and identify as many differences as possible. You can extend the session by asking the group to look at the historic images to identify buildings or sites which have remained the same. Alternatively, use some of the suggested ideas to develop the activity to suit your site.	**20 mins**
Plenary	Groups share information.	**15mins**

Extra Activities / suggestions on scaling up and down

You can compare aerial photographs with historic ordnance survey maps in order to capture detail and information about a place. By using the **National Library of Scotland**'s georeferenced digital maps you can see how the mapmakers recorded the landscape, towns and villages from the mid-1800s. The digital maps can be an effective tool to identify buildings and structures which are now long gone.

Try to compare the differences between vertical and oblique aerial photographs:

- Make your own oblique and vertical photos of pupils' desks to investigate the differences between the two formats.
- Which is better for identifying detail on the sides of buildings? Oblique aerial photos give more of a side-on view with greater depth, allowing fine detail to be identified.
- Which is more like a map? Vertical aerial photos show the landscape in plan, like a map.

To go into even more detail with your investigation you can:

- Identify features that have obviously stayed the same. Look for well-known landmarks.
- Identify features that are markedly different – how do they differ, and when did these changes happen?
- Look at the surrounding landscape – what features can you spot which make it a good location for our site?
- Find out if the way people have used the landscape has changed much over time? How?
- Compare historic aerial photographs with historic maps to see if you can identify long lost buildings or sites and their functions.

If your group have not worked with aerial photographs before you might want to start with a simple exercise of looking at different geometric shapes and familiar objects from above and from different angles. Use this activity to see how the position from which we view something affects whether we can identify what it is. You could use digital cameras to make your own 'aerial photographs' of classroom items.