



# RESEARCH

## Using Aerial Photographs to Study the Urban Past

This guide has been created by Scotland's Urban Past (SUP), a five-year community-engagement project from Historic Environment Scotland.

We support communities to record, research and celebrate the history on their doorsteps.

Through our free training and resources, people of all ages can discover and share the fascinating stories of Scotland's towns and cities.

[www.scotlandsurbanpast.org.uk](http://www.scotlandsurbanpast.org.uk)

# Using Aerial Photographs to Study the Urban Past

Aerial photography is, as you may expect, the tradition of taking photographs from the air, and is a method of landscape analysis that has been used since the First World War. Aerial photographs can provide unique information on features not obviously apparent from the ground while also allowing us to explore said features in their wider landscape context. And as they have been captured for over a century, we can use historical aerial photographs to analyse changes over time. They are one of the key resources when studying the past, especially in archaeology where they are often used in conjunction with other sources (e.g. maps, plans) and technological applications such as GIS (geographic information systems).



The following guide concentrates on using aerial photographs in urban contexts but they have broader uses. These include:

- **A different viewpoint, even on well-known sites or areas.** In particular the wider view can help you get an idea of the layout and composition of large sites or areas.

- **Tracking landscape change in rural and urban landscapes.** Over 100 years of aerial photography means that we have a record taken at intervals of virtually all of Scotland. These help us track some of the big changes in our towns and countryside through the 20<sup>th</sup> and 21<sup>st</sup> centuries. They show changes and details not marked on maps.

- **Discovery.** A special aspect of the aerial view is that it allows us to see buried archaeological sites revealed as patterns in crops – called cropmarks.

Thousands of funerary and ceremonial monuments, settlements and other evidence of past activity have been discovered this way. Aerial reconnaissance can cover large areas quickly and so even remains visible on the ground, such as earthen banks or stone walls, may only be first recognised when seen from the air. Even in well surveyed areas, the aerial view can provide a fresh perspective and the pattern of past land use may be better identified and understood.



- **Archaeological mapping and landscape analysis.** No single photograph will cover all the information on an area. We map features seen on multiple photographs, taken at different times, so we can build up a picture of past land use over large areas.

- **Conservation and heritage management.** Archaeological maps based on information from aerial photographs can be used, alongside other information, to help planners avoid or lessen the loss of archaeological remains. Aerial photography can also be used to take ‘point in time’ shots of key sites or buildings and to identify any potential issues that require a ground visit.

## Why use Aerial Photographs of Urban Areas?

The history of urbanism is a quickly expanding field in landscape studies, especially in regard to the history of cartography, commerce, sociology and even modern urban planning. To those researching this history, aerial photographs are a crucial resource because of their ability to record change and to review elements of the townscape.

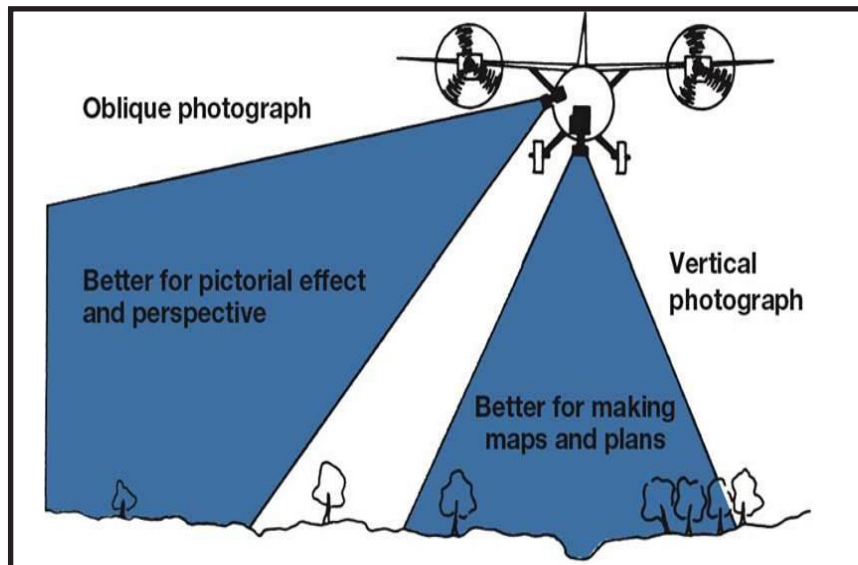


For example, the bird's eye view – i.e. a straight down view – offers a good opportunity to look at buildings from a different perspective and to investigate their wider setting. They may show things not visible from the street, such as the top and rear. They can also provide plan-like views over large areas showing the layout of streets and the changing character of different building types across the town. They may show things not visible from the street, such as the top and rear of buildings. They can also provide plan-like views over large areas showing the layout of streets and the changing character of different building types across the town.

Few of us have the opportunity to get in the air over our area of interest but we are fortunate that Britain has tremendous collections of aerial photographs taken over the last 100 years.

## Different viewpoints: Oblique and vertical

Generally speaking, there are two types of aerial photograph: oblique and vertical.



**Vertical photographs** are often taken at high-level (upwards of 1000 feet), continuously with machine cameras mounted on the underside of aeroplanes flying in straight regular patterns. Many of these were taken in the 1940's for military purposes.



**Oblique photographs** are usually taken closer to the ground, at an angle and with a hand-held camera, with the photographer taking the shots from an open aircraft window. Oblique photographs are taken 'actively' when the photographer has identified a subject; whereas vertical photographs are usually more 'passive', aiming to produce blanket coverage with analysis and interpretation occurring later.



**Oblique View of Market Street and Trinity Quay, Aberdeen in 1949. Aerofilms SAWo22552 ©Historic Environment Scotland.**

This aerial photograph provides an oblique view, meaning you can see the sides of some of the buildings. But it also means there is a varying scale from the foreground to the background – so objects are smaller the further away they are. The oblique view isn't 'map-like' so may not be as useful if you want to make a plan or take measurements.

The L-shaped marking on the photograph isn't damage – it's marking where the photograph was intended to be cropped. The photograph contains lots of information. It shows part of the town's 'roofscape', including the large structure bottom right. This was the market building that was demolished in the early 1970s. The aerial photograph also provides a view behind the tall street frontages, showing a complex arrangement of buildings in the area bounded by Market Street (centre of the photo), Union Street (bottom left) and Trinity Quay (top). Can you see the large 20th century building with a flat roof behind the corner of Market Street and Union Street?

Further up the photograph you can see the rear of the buildings on 'Adelphi', a street hidden in the middle of this area. This includes a curved projection from the rear of one of the buildings – what might that be? A little up from this is a rear view of a church – this is next to the site of the Maritime Museum on Ship Row. Note the older looking buildings opposite the church – are they still there?

You can use Pastmap <https://pastmap.org.uk/> for resources on some of the historic buildings. The National Library of Scotland also provides a useful series of maps, some with information on buildings, such as the 25 inch to the mile 1st edition 1869. <https://maps.nls.uk/>



**View of Market Street and Trinity Quay, Aberdeen in 2008 – image from Google Earth.**

This aerial photograph provides a vertical view of the same area – here the photograph was taken from a camera fixed to the aircraft, pointing straight down at the ground. North is to the top in the vertical photograph so you may need to identify some key landmarks to relate it to the oblique view. The curved end of the replacement market hall may help you to orientate yourself – or the edge of the quay (hint – there are very large vessels moored on the quay). How many buildings can you identify on both photos? How much has the area changed?

This vertical photograph presents an almost plan view with a similar scale across the whole photograph. But we also see much less, if anything at all of the sides of the buildings. However, sometimes tall buildings appear to lean backwards. You can just see this in the centre-right of the frame – the face of the curved projection



on the rear of the building on 'Adelphi' in the area bounded by Market Street and Union Street. This distortion is caused by the curvature of the camera lens and increases outward towards the edge of the frame. Google Earth layers comprise combined frames so it is not easy to tell where the edges of each frame are.

The colour image also gives us more information – for example, we can see that the roofs are mainly made from dark grey materials – can you see any other colours in the image that would suggest the use of different materials?

### Landscape Change and Aspects not seen on Maps



**The centre of Ayr in 1927, looking east from St Andrew's Church and Park Circus towards Burns Square and the railway station. Aerofilms SPW019509 ©Historic Environment Scotland**

As well as recording lost buildings and structures, aerial photographs can capture lost aspects of our towns. The above 1927 view of Ayr includes a steam train approaching the station – visible as a plume of white smoke from the engine funnel (top centre of frame). The large building with multiple windows (top left of frame) was the Templeton's worsted spinning mill, built in 1878 for the carpet industry.

This was an industrial part of the town in the later 19th century and included a tannery, ice factory and an abattoir.

This information came from maps, but the aerial photograph shows the character of the buildings in this area compared to the rest of the town. It is now mainly covered by a shopping centre, showing how society has changed in a century.

Can you see the large area to centre-right of the frame? Note the goal posts at either end and the small stand half way up the pitch. This was home to Ayr United in 1886, and then Ayr Parkhouse FC from 1888-1910, after which the two teams merged. An interesting detail captured on the 1927 photograph are the white dots seen at the northern end of the pitch. These aren't football players crowding towards the goal – but sheep, probably being used to keep the grass short. Air photo interpretation skills are required to understand some of these details – the scale, form and context all help us to interpret these as sheep. This area was developed from the 1930s, including construction of the first purpose built Odeon cinema in Scotland facing on to Burns Square which is still in use.

The two views of the Clyde below are a striking example of how aerial photographs can show major changes. The docks have been partially filled in and ship building replaced with other activities requiring different architecture.



**Looking east along the River Clyde in 1934 towards Prince's Dock (right hand side) and Queen's Dock (left hand side). Aerofilms SPW045884 ©Historic Environment Scotland**



**Looking west along the River Clyde in 2012 from the site of the SECC (formerly Queen's Dock) towards Prince's Dock (left hand side). RCAHMS DP 141783 ©RCAHMS**

## Photo Reading Tips

Look at all of the available aerial photographs. This should provide views of the site from different angles, over a period of several years. Also looking at a wide range of photographs (verticals and oblique photographs) from different years will give you a perspective on the changing landscape and condition of sites over time. You might want to use other sources to help you, such as maps and plans.

It's also a good idea to take a structured approach to photo reading to enable you to better understand a site, or landscape, and avoid missing details that can lead to mistakes in interpretation.

### **Look for differences in:**

Colour/ Tone  
Shape

Texture  
Pattern

Shadow  
Scale

**Ask these questions:**

*What sort of photograph is it?*

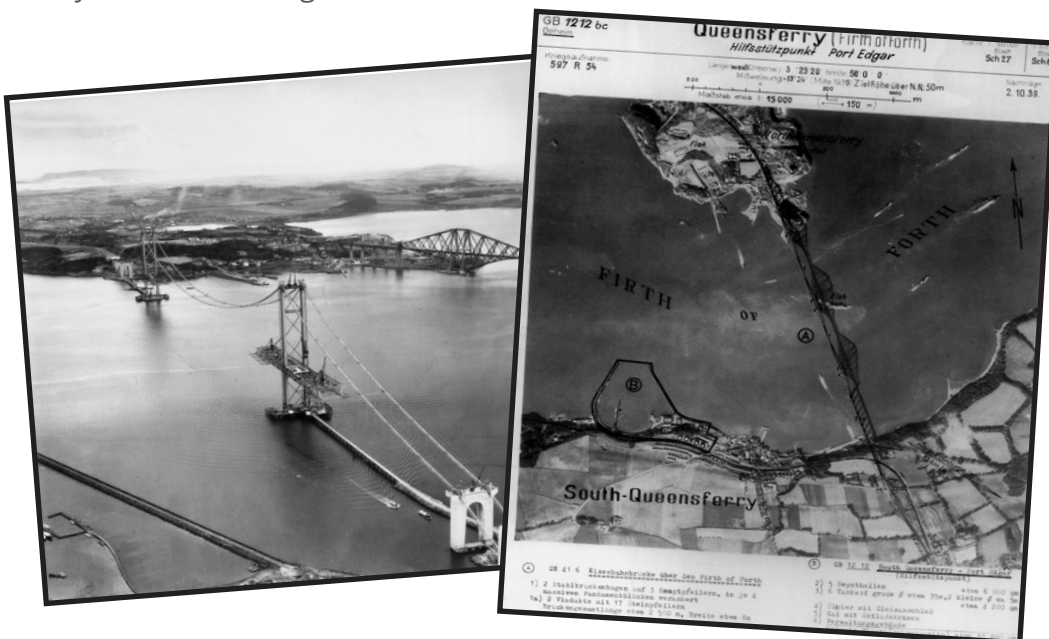
- Is it taken at an oblique or a vertical angle?
- How is this affecting your view?

*What can you see?*

- Look for familiar objects (roads, buildings, trees). These will help you with scale of features.
- Look for shadows – this will help you determine the relative height of features. This may be difficult in densely packed urban areas, but more helpful in open areas. This will help you tell the difference between a bush and a tree (helpful if studying parks and gardens) or a person or some other feature (to distinguish sheep from football players perhaps).
- Sometimes you won't be able to see the features you are looking for clearly – a long shadow may indicate a tree or other feature. A plume of smoke may indicate a train or chimney.

*What type of landscape is it?*

- Thinking about topography, size and type of buildings, materials and context will help you to understand the character of your area. Use the same 'building reading' skills you would on the ground.



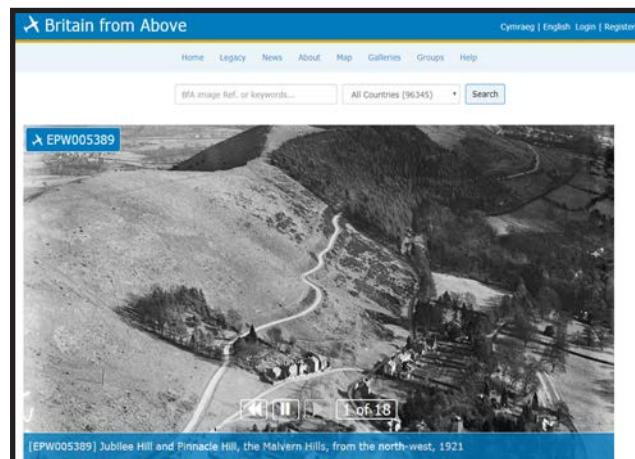
## Sources

There are thousands of photographs in the collections curated by Historic Environment Scotland – many of which are available online. Using online sources can allow a certain amount of ‘armchair’ survey. They can help you to plan your research and site visits or allow you to have a virtual site visit. Though where possible you should also try to visit your building or area of interest.

### Britain from Above

[www.britainfromabove.org.uk](http://www.britainfromabove.org.uk)

Dating from 1919 to 2006, the Aerofilms collection includes photos taken for commercial purposes of urban, suburban, rural, coastal and industrial scenes. It arguably has the largest and most significant number of air photographs of Britain taken before 1939.



### Google Earth

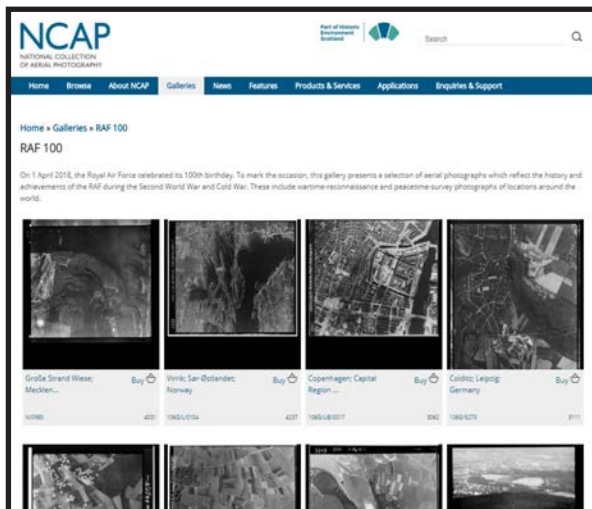
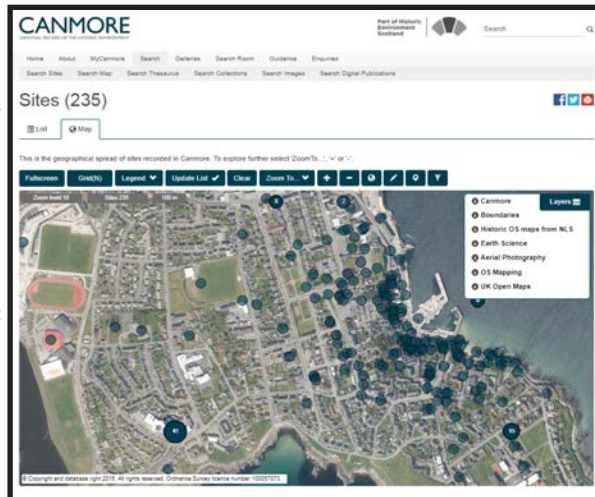
<http://earth.google.com>

Recent aerial views of Scotland are readily available online through Google Earth. Seamless vertical aerial photographic cover including some satellite (e.g. the ‘fuzzy’ layer when zoomed out). These provide relatively up to date colour photographs taken at intervals over the last couple of decades. Note the ‘Historic Imagery’ toolbar (a little clock with a green arrow) offers a range of photographs – beware that the dates are sometimes approximate. There are 1940s layers in some areas, compiled from various sources but beware the accuracy of the dates and that some military sites were censored and replaced with the pre-war field pattern. Using up to date sources like Google Earth and its Street View function can help with planning a site visit.

## Canmore

[www.canmore.org.uk](http://www.canmore.org.uk)

Canmore is the National Record of the Historic Environment for Scotland and contains thousands of descriptions of archaeological and architectural sites. Many of these have accompanying images, some of which are aerial photographs taken from various sources. Historic Environment Scotland have an aerial survey team who carry out a programme of photography of archaeological and architectural sites.



## The National Collection of Aerial Photography

<https://ncap.org.uk/>

The National Collection of Aerial Photography is hosted by Historic Environment Scotland and has images from around the world, including collections that cover Scotland. These are mainly vertical aerial photographs but include some oblique views. You can search using a map and see

thumbnails of many of the photographs which provides a rough idea of whether the photos will be of use.

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