

Map Reading

at Mill Waters heritage site

TN
TEACHER'S NOTES

TITLE SLIDE

In this lesson you will find out about the history of maps and some of the common symbols on maps.

You will learn how maps provide lots of different information about an area of land (in our case, the land around Mill Waters heritage centre), and not just what you can physically see now, but if there are any important historic monuments that once stood there.

We will find out which symbols to look for to help understand how to read a map, as well as some different uses for maps.



Map Reading

at Mill Waters heritage site

TN
TEACHER'S NOTES

SLIDE 2 EARLY MAPS

Maps have been part of history for centuries. The first maps are preserved on clay tablets dating back to 2300 BC.

As far back as 5th century BC the ancient Greeks said that the Earth was round. By the early 16th century, world maps were starting to appear. In the 17th and 18th centuries, explorers mapped trails and army engineers surveyed government lands.

Between 1870 and 1920 some people argued that the world was flat, but most educated Europeans knew this was not the case.

To begin with early maps were more artistic than realistic. One of the earliest known maps of England was created by Brother Matthew of Paris (1200 - 1259), a Benedictine monk at St Albans Abbey. The map is held by the British Library and can be viewed <https://www.bl.uk/collection-items/matthew-paris-map-of-britain#>

Until the 16th century there were very few plans of towns as they were much smaller than they are today. Buildings were shown in elevation (drawn to appear 3D, rather than 2D).

Between 1573 and 1577 Christopher Saxton surveyed 34 counties which were published in a bound volume in 1579.

Other early maps were essentially diagrams showing the areas of communal land and the strips of land which were worked by tenant farmers. Many large landowners had maps produced to show what land they owned, such as the Welbeck Atlas of 1629, which shows all of the property owned by the Earl of Newcastle (predecessor of the Dukes of Portland).

Roads were not shown on maps to begin with, although early maps did show the journey time between major cities. It was John Ogilby from Dundee (1600 - 1676) who developed the first set of strip maps detailing the post roads of England and Wales. These were published in Britannia in 1675.

Oxfordshire land surveyor, William Smith, produced the first geological map of the whole of England based on maps engraved by John Cary in 1815. Water coloured detailing provided information about the land formation. In the slides we see an updated version of his 'New Geological Map of England and Wales' published in 1820.

Map Reading

at Mill Waters heritage site

TN
TEACHER'S NOTES

SLIDE 3 TITHE MAPS

In 1836 the government introduced a new law - the Tithe Commutation Act - which required farmers to pay a proportion of their income to the landowner. Before the Reformation (which got rid of the monasteries and all their benefits) farmers had paid a tenth of what they produced in kind (for example a tenth of the crops they grew or lambs that they reared) to the Church. After the Reformation, the appointed landowners received the tithe as a form of rent instead.

Tithes were complicated - you did not have to pay a tithe on wild ducks, but you did have to pay a tithe on the eggs laid by tame ducks!

As the amount of rent payable was based on the value and type of land farmed, accurate boundary maps were needed. Tithe commissioners were appointed to create tithe maps for each Parish showing the boundaries of fields, woods, roads, and streams, and the position of buildings, together with a list of names of landowners and occupiers and a description of the state of the land and what rent charge was due on each plot.

The commissioners started by listing all the places listed as Parishes on census forms. There were often disputes about the boundary of a Parish (especially if a landowner also paid a tithe in another Parish).

Land was originally measured in chains - a length equal to 66 feet or 20 metres. One chain was also called an 'acre's breadth' because it was the width of an acre, while a furlong was the length.

A map (or plan) was usually drawn at a scale of three chains to an inch, approximately 26.7 inches to a mile, or at six chains to an inch, approximately 13.3 inches to a mile.

Many of the plans were drawn from original surveys, but an earlier map that was accurate enough, such as an Inclosure map, was sometimes used instead.

Almost all the 11,800 surveys in England and Wales were made before 1851, and the majority of that before 1841. Tithe maps can be researched and purchased from the National Archives, County Archives and sometimes from Local Studies libraries.

Tithe maps were consulted by the Ordnance Survey when drawing the Parish boundaries on the first 25 inch plans.

There is no known tithe map for Sutton-in-Ashfield but if you attend a school, or are visiting, from outside the local area then you could see if there are any tithe maps for the area where you go to school, or live.

SLIDE 4 COMMON MAP SYMBOLS

The early maps recorded every field, track, copse and hamlet, at a time when the country was largely made of forest and farmland. The symbols on a map are known as the 'legend'.

Although there were variations in symbols used on the early maps, some were consistently used such as the ones shown on this slide. Handout 3 provides details of the common symbols used on a modern Ordnance Survey map.

Map Reading

at Mill Waters heritage site

TN
TEACHER'S NOTES

SLIDE 5 SCALE

Map scale refers to the relationship (or ratio) between distance on a **map** and the corresponding distance on the ground.

For example, on a 1:100,000 **scale map**, 1cm on the **map** equals 1km on the ground.

On this slide we can see that 1cm covers 6km – so there's a scale of 1:600,000.

The scales on maps may vary, so be sure to check before making comparisons.

SLIDE 6 COMPASS POINT

On a **compass** the magnet points north because all magnets have two poles, a **north** pole and a **south** pole, and the **north** pole of one magnet is attracted to the **south** pole of another magnet.

It is important to know where the direction of north is on your map – so you know you have your map the right way around.

Modern maps have 'North' at the top but on old maps you may need to look for the 'North' symbol.

If you don't have a compass, the sun is an alternative way of finding South, particularly during the middle of the day.

There is a good film on using a compass and map reading on BBC Bitesize <https://www.bbc.co.uk/teach/class-clips-video/maths-ks2-using-compass-and-reading-maps/z77tf4j>.

SLIDE 7 SANDERSON'S 1835 MAP

In this slide we can see the earliest map of Sutton in Ashfield entitled 'The country 20 miles around Mansfield' in 1835. It was created by the surveyor, George Sanderson, a Yorkshireman born in 1798 who took over a Mansfield firm in 1828.

The map details the plots of land which were farmed (known as Inclosures), as well as developing industrialisation and transport systems – turnpike roads and canals.

Sanderson carried out his survey between 1830 and 1834, at the end of the Georgian era and as the Victorian expansion was about to take off.

The map was drawn at a scale of half a mile to 1 - 2 inches to the mile, and the printed version (there is a colour washed copy at Mansfield Library) measures about 7' 6" square.

You can study the area of Mill Waters on Sanderson's 1834 map more closely in Handout 1 – a collection of old and modern maps.

Map Reading

at Mill Waters heritage site

TN
TEACHER'S NOTES

SLIDE 8

ORDNANCE SURVEY

Ordnance Survey is the national mapping agency for Great Britain. The organisation's origins go back as far as 1774, when the British Army commissioned a detailed map of Scotland for military purposes. The military maps were at a scale of six inches to 1 mile (1:10,560).

In 1790 the Ordnance Survey began mapping the south coast of England and by 1801 the first 1 inch to the mile (1:63,360 scale) map was published detailing the county of Kent, with Essex following shortly afterwards.

After the Ordnance Survey published its first large-scale maps of Ireland in the mid-1830s, the Tithe Commutation Act 1836 led to calls for a similar 6 inch to the mile survey in England and Wales.

The development of the railways added to pressure and resulted in the Ordnance Survey Act 1841. From the 1840s, the Ordnance Survey concentrated on the Great Britain County Series.

Between 1841 and 1952 the Ordnance Survey published a series of detailed County maps to the scale of 25-inch-to-the-mile (1:2,500). It is the most detailed Ordnance Survey mapping for most parts of England and Wales. You can order copies of the maps here: <https://maps.nls.uk/os/25inch-england-and-wales/index.html>. These maps are really important to historians because they show every feature in the landscape including all buildings, streets, railways, industrial premises, parkland, farms, woodland and rivers.

Between 1842 and 1895, 400 towns including Mansfield were mapped at 1:500 (126 inches), 1:528 (120 inches, "10 foot scale") or 1:1056 (60 inches), with the remaining towns mapped at 1:2500 (-25 inches).

Following the recommendations of the Ordnance Survey Dorington Committee in 1893, all counties were to be revised every 20 years. This was largely followed in practice until the First World War. From 1892 to 1907 all English and Welsh counties were revised once, and a further fourteen were revised again up to 1914.

The image on the slide was created on the ARCHI UK MAPS website - www.archuk.com. Click this [link](#) to see the map. Use the slider on the screen to see the map change through the years between 1888 and 1913.

Map Reading

at Mill Waters heritage site

TN
TEACHER'S NOTES

SLIDE 9 THE NATIONAL GRID

After the First World War it was too expensive to regularly update the county maps, so rural areas were only updated every 40 years. In contrast, urban districts and areas undergoing considerable change were updated more regularly. Larger urban areas and towns often have three or more revisions from the 1890s until 1950.

The Ordnance Survey produced different maps during the World Wars. The military produced a few 1:20,000 maps at the time of the First World War and by the 1930s a set of maps at 1:25,000 had been produced.

Maps made during the wartime often miss out locations that might have been a target for enemy bombing, such as factories, gas works or power stations.

The British National Grid which is used today was devised in 1938 (the year before World War II started) it uses the international metre. Its point of origin is south west of the Scilly Isles.

The grid consists of boxes which have been given two letters and within that, co-ordinates (numbers) running across the top and bottom. The OS map also uses a Grid system to map co-ordinates. Each grid square is 100 km across. The vertical lines are called 'eastings' as they increase in value as you travel east on the map. The horizontal lines are called 'northings' as they go up as you go further north.

On this slide we can see the Grid reference for Royal Observatory Greenwich, London. this example can be found on Wikimedia here: <https://commons.wikimedia.org/w/index.php?curid=35301574>

Ordnance Survey today provides very advanced maps using modern technology which can tell us a lot about an area, not just its physical features, but about what human features there are in an area, such as farms, hospitals, quarries and transport routes.

Ordnance Survey has produced lots of resources for teachers about how to read OS maps: <https://www.ordnancesurvey.co.uk/education/teacher-resources>

Map Reading

at Mill Waters heritage site

TN
TEACHER'S NOTES

SLIDE 10 DIFFERENT PURPOSES FOR MAPS

We have learnt how maps have been created over the years to provide information about who owns land, to help the military plan their activities, and obviously, to help people find their way from one place to another – but can you think of any other uses for a map today?

Some of you will be familiar with **GPS maps** which are used in vehicles to help the driver navigate from one place to another. GPS stands for Global Positioning System, and is made up of around 30 satellites which orbit the earth and make it possible for people to detect where they are (their geographical location). Most people have GPS on their smart phones or built into their car, which can help them follow a route.

In 2016 countries in Europe invested £10 million in a shared GPS system called Gallileo. The service aims to help industry, transport and telecommunications as well enabling people who get lost to be more easily be rescued.

There are also **Lidar maps** – so called because they use **light** and **radar** - these create highly detailed images of an area of land (or an object). A laser light is projected at the ground and the reflection generated is used to create a 3D picture of the target. Lidar is used by surveyors, geographers and archaeologists who need to find out about the structure of the land beneath the ground (as well as under rivers and other water bodies).

You can use <https://www.lidarfinder.com/> to find Lidar coverage.

SLIDE 11 OTHER USES FOR MAPS

Maps are also used to match data about populations – this is known as social cartography. The researcher Charles Booth created a map of all the people living in poverty in London. The information was collected by representatives of school boards who visited households with police officers. He started by collecting data about the poor East End area of London but extended it to cover central London. The survey was published in four sheets in 1891, entitled *Descriptive Map of London Poverty 1889*. Different coloured areas highlight where there is most poverty and it showed that 35% of London was living in poverty.

Using the recognised grid developed by the Ordnance Survey, societies can map specific data of interest to their members and the public. A good example is the Botanical Society of Britain and Ireland which surveys native plants and plots their distribution (how many grow) in tetrads (measurement of 2km squares). You can see the latest data they make available to the public on their website at <https://bsbi.org/maps> - try typing in the common name of a flower, such as 'bluebell' (it will bring up the Latin name) to see where they are most prevalent.

HANDOUTS

- MR_HO1** Pack of old and modern maps
- MR_HO2** Mapping Mill Waters toolkit (A4 symbols pack)
- MR_HO3** Common OS symbols
- MR_HO4** Map of Mansfield to Pinxton Railway Line

Map Reading

at Mill Waters heritage site

TN
TEACHER'S NOTES

LEARNING ACTIVITIES

1. Comparing old and modern maps

Start a discussion with pupils about why we need maps – what they are, why we need them, how they can help us, how we can make them, what they show and so on.

The Ordnance Survey website has a plethora of fun interactive learning games on their website: <https://www.ordnancesurvey.co.uk/mapzone> which may be a helpful precursor to the practical activities focussing on Mill Waters.

Use the maps provided in Handout 1 to compare the historic maps of the site with the modern OS map. Ask pupils if they can find any important historic features and ways in which the modern map differs, using these prompts:

1. Look at the 1852 Inclosure Map. Can you see who the main landowner was at the time?

ANSWER:

Duke of Portland.

2. Who else owned land around the Mansfield area at that time?

ANSWER:

William Dickons and John Barber, Sir E S Walker Gent, and representatives of the late Richard Adlington.

3. Samuel Unwin created the first water powered mill on the grounds of what is now Sutton Pleasure Grounds, on Eastfield Side. His factory was known as Sutton Works. Can you find it on the Sanderson map of 1835?

4. Compare the 1852 map with the 1835 Sanderson map. What has changed?

ANSWER:

There is no Reservoir on the earlier map. The Forest Dam near King's Mill was dug out to create the Reservoir in 1839.

5. Look at the 1827 map. How many of the old cotton manufacturing mills can you spot?

ANSWER:

Three - Old Mill, Bleach Mill and Bark Mill.

6. Compare the 1852 Inclosure map at King's Mill with the 1856 Land Survey map. What differences can you find?

ANSWER:

The earlier map has a sharp bend straight after the viaduct, whereas the 1856 map makes a sweeping curve. It had to be straightened out to accommodate the new steam locomotive trains.

7. Compare the 1835 Sanderson map around the Portland Park area against the 1877 Ordnance Survey map to see how the 'dog-leg' on the railway was smoothed out. On the 1877 OS map you will still be able to see the original route, so they are both there together.

Map Reading

at Mill Waters heritage site

TN

TEACHER'S NOTES

LEARNING ACTIVITIES

1. Comparing old and modern maps (cont.)

8. Compare the modern OS map with the 1938 and 1898 OS maps of the Mill Waters site. What has changed? Look out for things that have long since gone and new developments.

ANSWER:

New	Gone	Same
King's Mill Hospital, opened in 1942	The King's Mill	Reservoir
Dobson's Mill, now houses	Old Dobson's Mill	King's Mill Cottages
Houses built where the mill and mill yard once stood	Swimming pool at Sutton Lawns	Hermitage Mill
Houses built along the old route of the railway (Kings Lodge Drive)	Engine House	
B&Q and other shops	LNER Railway	
Sailing club boat yard	The old boat house	

9. Why have there been all these changes over the last century?

ANSWER:

The changes on the map reflect the way in which the town has evolved. Industry has changed and people now do different jobs compared to the time which they would have worked in the mills. Most families also have cars now so can travel further to work. The hospital was built because of war casualties, which were brought to the hospital by trains that pulled in to a "Siding" at the old King's Mill. The hospital was built by the American Airforce.

Map Reading

at Mill Waters heritage site

TN
TEACHER'S NOTES

LEARNING ACTIVITIES

2. Mapping Mill Waters

Study the modern map of the Mill Waters heritage site. We have highlighted some of the key features. Now print off the large-scale map symbols (Handout 2) and ask pupils to find the location of the symbols on a field trip to Mill Waters. Pupils could be photographed holding up their symbols at the exact location that it is on the map e.g. Heritage Centre and Cycle Trail.

If you take your photos on a smart phone so that their location is automatically tagged, you can create your own map in Google Maps with the images embedded. Follow these instructions: <https://www.internetgeography.net/map-your-photos-using-google-maps/>

To avoid having to obtain parental permissions to take photographs you could photograph pupils with the symbol in front of their face so that they remain anonymous.

Map Reading

at Mill Waters heritage site

TN
TEACHER'S NOTES

LEARNING ACTIVITIES

3. Map your journey from school to Mill Waters

For this activity pupils are charged with mapping the route from their school to the Mill Waters heritage site. They should use a compass to show that they understand which direction they are heading (using the north, east, south and west points).

The pupils could plan their route to Mill Waters (on foot) using a roadmap. In addition to drawing their own map to the site, they could produce written instructions including landmarks, shops etc. for people to follow. They could also refer to Handout 3 and incorporate some of the OS symbols.

Map Reading

at Mill Waters heritage site

TN
TEACHER'S NOTES

LEARNING ACTIVITIES

4: Recreate the map of the old Mansfield and Pinxton Railway line

Using the old map provided (Handout 4) divide your class into groups of 3 or 4 pupils and allocate them a section of the track to draw, agreeing the scale that you are going to use.

When each team has created their square, stick them together to create your large-scale map.

References:

[A short history of English maps](#)

[Tithe map surveys of the mid-nineteenth century, H C Prince](#)

[Bingham Heritage Trails Association](#)