



BEWDLEY



Community Earth Heritage
CHAMPIONS
project

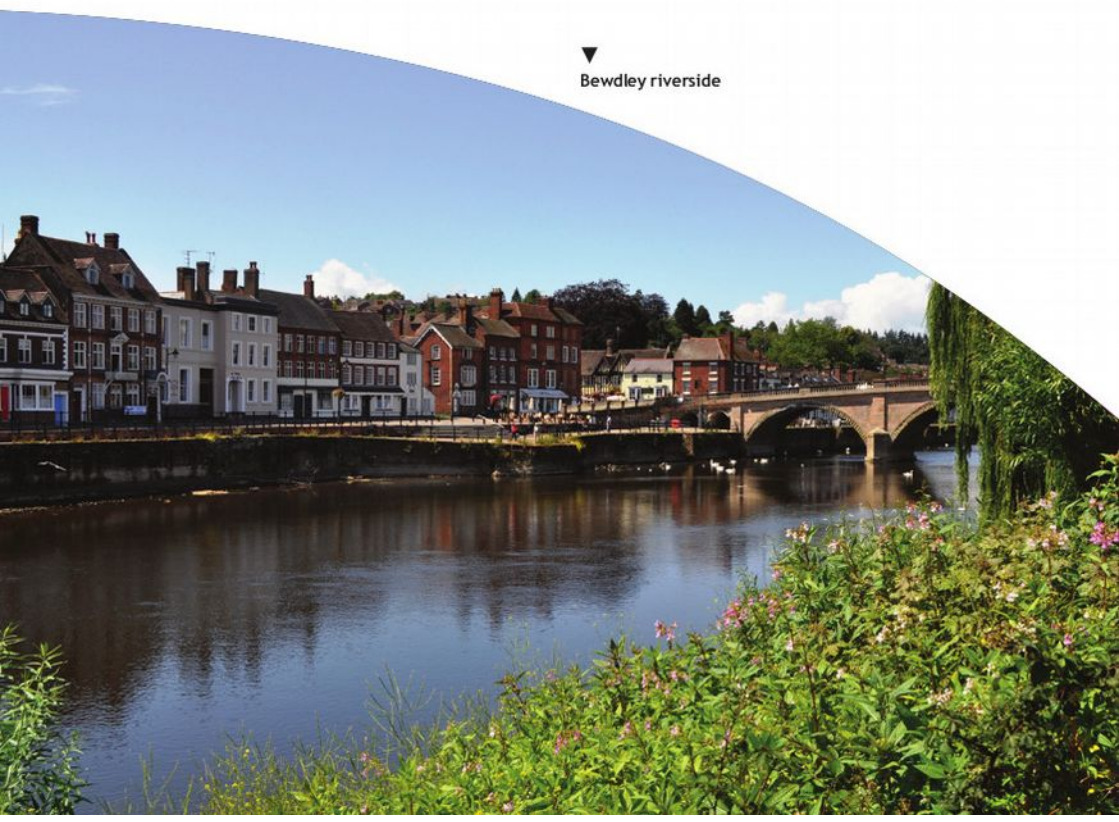
INTRODUCTION

Bewdley has been described as the "most perfect small Georgian Town in Worcestershire". In the 17th and 18th centuries it was a thriving port. Reminders of this busy past can be seen everywhere in the form of the Georgian architecture. The town also acts a gateway to the Abberley and Malvern Hills Geopark, one of a new generation of landscape designations that have been created specifically for the interest of the geology and landscape in a particular area. The Geopark extends all the way

from Bridgnorth in the north to Gloucester in the south, taking in over 700 million years of Earth's history. Part of this fascinating story is told in the rock outcrops and built heritage of Bewdley.

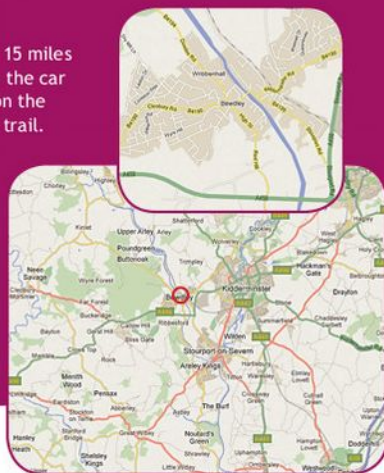


Bewdley riverside



Location of Bewdley

The town is situated on the A456, 3 miles west of Kidderminster and 15 miles north of Worcester. If you are driving to the town, make your way to the car park highlighted on the map below. Follow the green marked route on the map to Bewdley Museum and Tourist Information Centre to start the trail.



Key

-  Parking
-  Route to trail start
-  Trail
-  1 • Location of interest



Route map

Contains Ordnance Survey data

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GEOLOGICAL HISTORY OF THE AREA

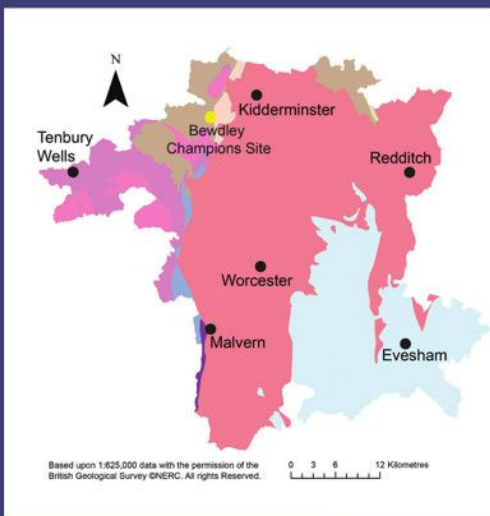
Ten geological systems are represented in Worcestershire:

1. Precambrian (4600 million years ago to 542 million years ago)
 - Igneous and metamorphic rocks making up the Malvern Hills and an area to the north. Here they are approximately 680 million years old and amongst the oldest in England.

2. Cambrian (542 million years ago to 488 million years ago)
 - Quartzite, sandstone and shale formed as the sea level began to rise. Found in small areas adjacent to the Malvern Hills and an area to the north.

3. Ordovician (488 million years ago to 444 million years ago)
 - Volcanic material was erupted and then deposited in water during this time. At a later stage, sand deposited in a warm, shallow sea formed quartzites. Rocks of this age are found in the Lickey Hills.

Geological Map of Worcestershire



Key to Geological Map of Worcestershire

Quaternary (2.6 million years ago to recent)	
Neogene (23 million years ago to 2.6 million years ago)	
Palaeogene (66 million years ago to 23 million years ago)	
Cretaceous (146 million years ago to 66 million years ago)	
Jurassic (199 million years ago to 146 million years ago)	
Triassic (251 million years ago to 199 million years ago)	
Permian (299 million years ago to 251 million years ago)	
Carboniferous (359 million years ago to 299 million years ago)	
Devonian (416 million years ago to 359 million years ago)	
Silurian (444 million years ago to 416 million years ago)	Pridoli stage (419 million years ago to 416 million years ago)
	Llandovery, Wenlock and Ludlow stages (444 million years ago to 419 million years ago)
Ordovician (488 million years ago to 444 million years ago)	
Cambrian (542 million years ago to 488 million years ago)	
Precambrian (4600 million years ago to 542 million years ago)	



4. Silurian (444 million years ago to 416 million years ago)
 - a. Pridoli stage (419 million years ago to 416 million years ago)
 - Mudstones, sandstones and calcretes (calcium-rich fossilised soil) deposited within a flat, arid landscape near the coast, crossed by seasonal streams.
 - b. Llandovery, Wenlock and Ludlow stages (444 million years ago to 419 million years ago)
 - At the start of the period, sandstones and conglomerates formed from the material brought down into a shallow sea during flash flood events. Then limestones and shales formed as the sea level rose.
5. Devonian (416 million years ago to 359 million years ago)
 - Sandstones deposited by streams in an otherwise flat arid landscape. These rocks are found in the west of the county around Tenbury Wells.
6. Carboniferous (359 million years ago to 299 million years ago)
 - Clays, coals, shales and sandstones formed in a flat, swampy delta which experienced frequent flooding as the sea level rose and fell. These rocks are found around the Wyre Forest Coalfield area. There are also igneous intrusions of this age found in the Teme Valley and near Kidderminster.
7. Permian (299 million years ago to 251 million years ago)
 - Red desert sandstones. At the start of the period, breccias formed during catastrophic events such as a flash floods or earthquakes. These rocks are found in small areas in the north and west of the county.
8. Triassic (251 million years ago to 199 million years ago)
 - Sandstones, conglomerates (sediments containing rounded pebbles), evaporites (salts), breccias (sediments containing angular fragments) and mudstones representing a change in environment from a flat, arid landscape covered in rivers and lakes, into oceanic conditions.
9. Jurassic (199 million years ago to 146 million years ago)
 - Limestones and mudstones deposited in a warm, shallow sea. These rocks are found in the east of the county from Redditch to the Cotswold Hills.
10. Quaternary (2.6 million years ago to recent)
 - Glacial deposits, river sands, gravels and alluvium, and chemical deposits such as tufa, overlying the hard rocks (but not shown on the geological map).

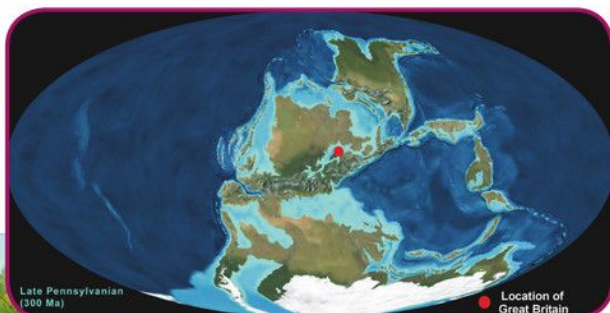
GEOLOGICAL HISTORY OF BEWDLEY

The rocks seen around Bewdley formed between 316 and 250 million years ago. During these times, the environment and layout of the continents and oceans was completely different from today.

Carboniferous Times

Britain was located close to the equator during the Carboniferous, which lasted from 359 to 299 million years ago. Throughout the Carboniferous, the world's continents were drifting together, forming an ever-increasing landmass. The earliest rocks from this period formed within an ancient ocean. As the continents continued to move together, this ocean disappeared

and was replaced by tropical rainforests and giant swamps. Rivers brought material down from surrounding mountains and giant insects and ferns thrived. As these organisms died, their remains fell into the swamps, forming layer upon layer of organic material. Over time, these layers were squashed together, eventually forming coal seams. In between these seams, layers of mudstone and sandstone formed from sediment laid down by rivers.

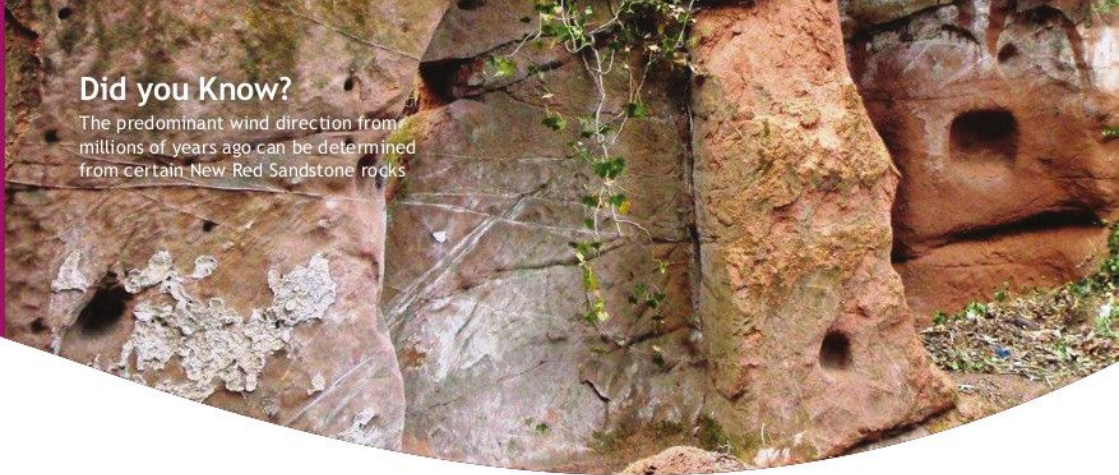


Reconstruction of a Carboniferous forest
Image courtesy of John Watson

▲ Distribution of the continents during the Carboniferous
© Ron Blakey, Colorado Plateau Geosystems, Inc.

Did you Know?

The predominant wind direction from millions of years ago can be determined from certain New Red Sandstone rocks

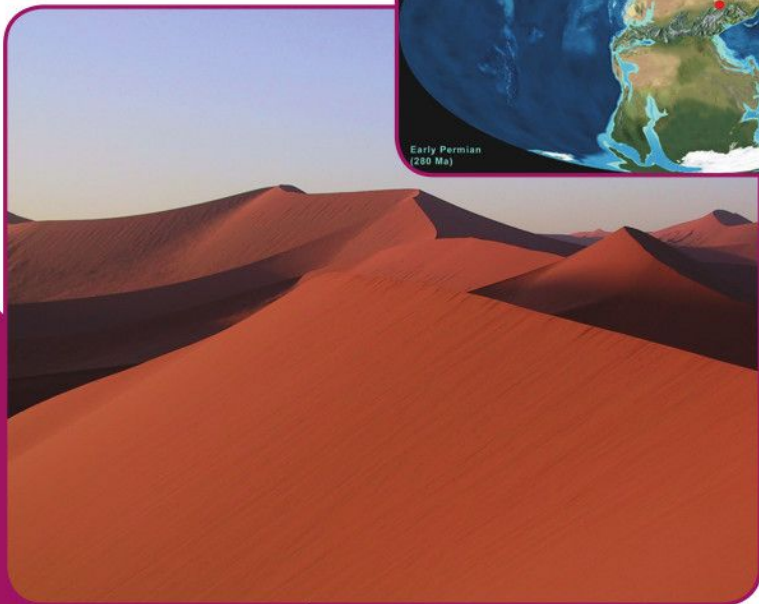
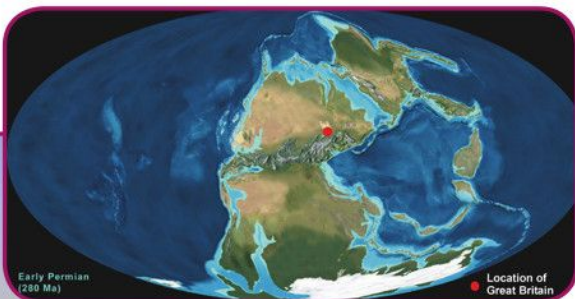


Permo-Triassic Times

During the 100 million years of Permian and Triassic times (from 299 to 199 million years ago), most of the world's continents had joined together, forming a 'supercontinent' called Pangaea. Britain was located some 20° north of the equator, in the middle of this huge continent.

Changing environmental conditions prevailed throughout these times; from ancient deserts to flat, arid landscapes covered in seasonal rivers and lakes. The presence of iron oxide in the rocks that formed during this time has resulted in them being predominantly red in colour and has led to the informal name 'New Red Sandstone'.

Distribution of the continents during the Permian
© Ron Blakey, Colorado Plateau Geosystems, Inc.



A modern version of the landscape of Bewdley 280 million years ago.
© Antoine Beyeler, Dreamstime.com

LOCATION ONE: ST ANNE'S CHURCH

Directions

Start outside Bewdley Museum and Tourist Information Centre. Turn left and walk along the pavement towards the church. Carefully cross the road and make your way to the church entrance.

Geology

The impressive tower of the church is made of Highley Sandstone, a green-grey coloured rock formed during Carboniferous times and extracted from quarries around Highley, some six miles up the River Severn. This particular stone was used in the construction of other buildings along the river, including Worcester Cathedral. If you look closely at some of the stone blocks, you will see rust coloured lines often inclined from the horizontal. These features are called cross-bedding.

Most of the surfaces of the stone blocks have a rough appearance. This is because they have been weathered away by water, wind and pollution. Compare these blocks

with the cornerstones (called quoins) of the tower. The surfaces to these blocks are smooth. This is because the original Highley Sandstone blocks have been replaced by a different stone.

Around the doorway of the church you will see another type of stone. This is a limestone, dug from quarries on the Cotswold Hills. This rock formed during a period of time known as the Jurassic, some 195 million years ago.

If you look at the wall opposite the church entrance, you can see yet another stone. This is a type of New Red Sandstone. On many of the surfaces there are yet more inclined features. These are man-made. They are pick marks, made by tools used in cutting the stone blocks.

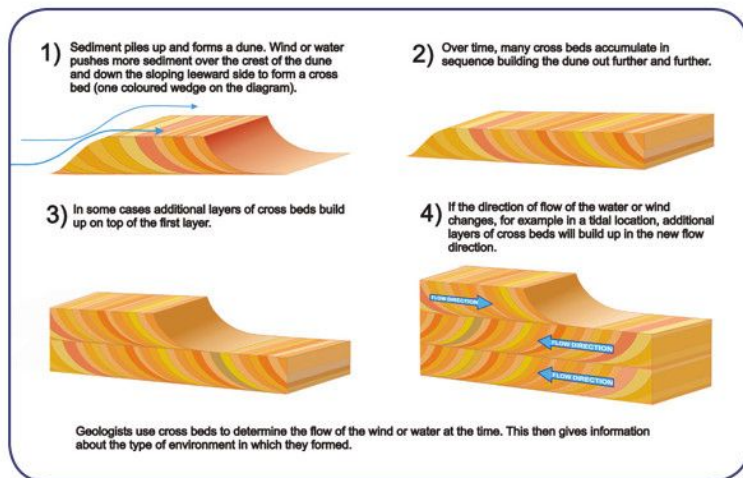


▲ Pick marks on stone wall outside entrance

◀ Replacement stone used in the quoins of the tower



Diagram showing the formation of cross-bedding



History

A wooden chapel dedicated to St Andrew is likely to have stood on this site as early as 1450. Bewdley itself was extra-parochial until an Act of Parliament during the reign of Henry VI made it part of the parish of Ribbesford.

The second chapel within the town was dedicated to St Anne. This was a small timber-framed structure, part of a range of buildings which ran northwest from the later medieval stone bridge to Load Street. The chapel was situated at the foot of the bridge, and is reputed to be identifiable as a small building shown on several 18th century illustrations of the bridge and its surroundings. It is likely that this second chapel and adjacent

buildings were built at the same time, or soon after, the construction of the

river bridge in 1483. The chapel was demolished in 1798 during the construction of Telford's Bridge although at this time it was no longer functioning as a chapel.

The medieval chapel continued to be used until the mid-18th century, with a stone tower being added in 1695-6. This tower was retained when the leading churchmen of the town decided that the time had come to replace the old chapel by a more spacious edifice of stone in 1745. The design of the new building is attributed to Thomas Woodward of Worcester and Richard Woodward of Chipping Campden. By 1748 the new church was complete, in the classical style of the 18th century. At some point in its history the dedication changed from St Andrew to St Anne but when is unclear. The chapel became a parish church in 1853.



◀ The Church Tower

LOCATION TWO: BARK HILL

Directions

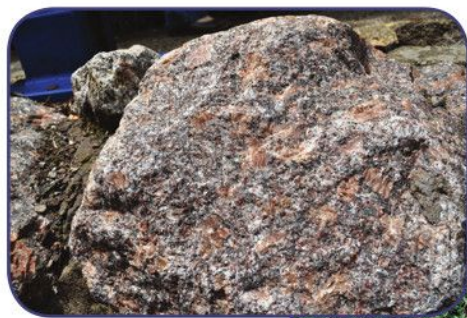
Stand outside the church, facing the wall opposite the entrance. Turn right and cross the road in front of you. Turn right again and follow the pavement, crossing Park Lane on your left. Continue to the next road junction. Turn left onto Welchgate, which is also signposted towards Tenbury. Continue along the road, following it as it veers right and uphill. When you reach the pub, cross over the road and walk up the one-way street until the road veers left.

Geology

Alongside the footpath that runs up the steps, you will see a rock exposure and stone wall. The rock is another Carboniferous sandstone, similar to that used in St Anne's church tower. The rock was formed when rivers brought down material from surrounding mountains that existed at this time

onto the low-lying areas, which were once occupied by the forests and swamps that gave rise to the Wyre Forest coalfield.

Look at the wall holding up the bank next to the footpath. The sandstone used here is exactly the same as the sandstone you can see in the natural rock exposure. This is a classic example of utilising the local material for construction, so ensuring that the walls perfectly fit in with the surrounding landscape. Look closely at the top of the wall at the base of the footpath. You will see a rock with extremely large pink crystals surrounded by smaller black and grey crystals. This rock is not local. This is an igneous rock called granite, and has been brought into the county, possibly from northern England. Granites form deep inside volcanoes as molten rock slowly cools and solidifies, allowing the formation of large crystals.



◀ Granite blocks with large pink crystals

▶ Stone wall built from adjacent rock exposure



Biodiversity

The rock face and wall along the roadside is partially covered in ivy and shaded by overhanging scrub and trees. It supports a number of crevice plants. These include ivy-leaved toadflax, honeysuckle and herb robert. The ground above the wall is entirely covered with scrub consisting largely of bramble with scattered sycamore, elder, butterfly bush and hawthorn. A number of lichens and mosses can be found growing on the rock.

History

Set into the southern end of the rock exposure are three World War II concrete anti-tank cylinders. Until research into this leaflet was undertaken, these historical features had not previously been recorded. They provide further evidence of what life was like in the town during the war. If you turn around and look back towards the town, you will see the top of the tower of St Anne's Church.



▲ St Anne's Church Tower
from Bark Hill



▶
Anti-Tank cylinders
partially hidden in
undergrowth

LOCATION THREE: BEWDLEY BRIDGE

Directions

Turn around and take the first left turning into Venus Bank. Follow the footpath that continues past the end of the cul-de-sac and down the hill. At the bottom, cross the main road. Turn right and then immediately left. Follow the road (Dog Lane), past the car park entrance and all the way down to the river. Turn right and walk along the riverside to Bewdley Bridge.

Geology

Look closely at the bridge. The stone used in the arches is the same as that used in the tower of St Anne's Church; the green-grey Highley Sandstone. On some of the blocks you may see intricate rust-coloured concentric rings. These are known as Liesegang rings. They may form as water, rich in dissolved minerals such as iron and moving around

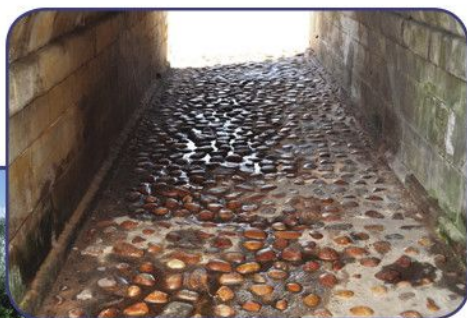
in the spaces between the sand grains, meets air. Iron oxide minerals form at this boundary and lead to the creation of the rings.

Walk through the pedestrian tunnel.

The cobbles lining the floor are known as 'Bunter Pebbles' and have been sourced from a type of New Red Sandstone found around Kidderminster. Some of the bridge has also been repaired using a pinkish coloured New Red Sandstone, sourced from northern England.



▲
Bewdley Bridge - built of New
Red Sandstone and Highley
Sandstone



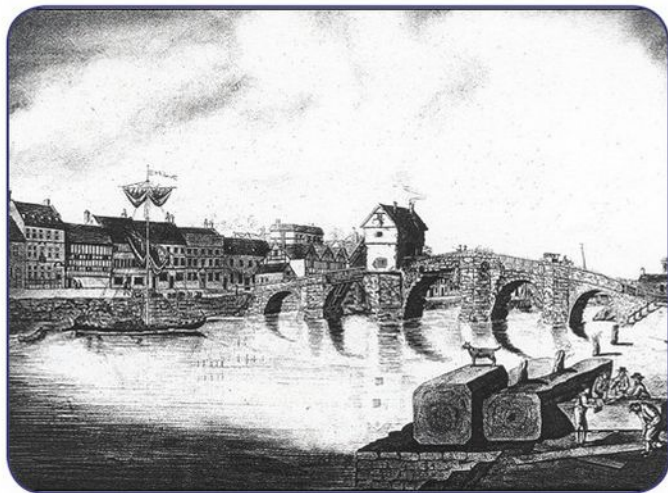
▲
Cobbled pedestrian
tunnel



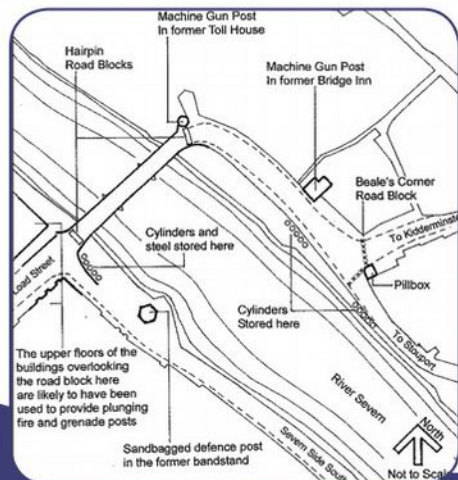
▶
Liesegang rings
above archway

Biodiversity

Aside from some locally abundant ivy, very few plants thrive on the bridge. The only plants that can be found cling to ledges, or grow in crevices. These include species such as thale cress, shepherd's purse, procumbent pearlwort, wall barley and black spleenwort.



▲
18th century print of the third bridge over the river



History

The present bridge is the third successive structure to have been built across the river. The earliest bridge, constructed of stone, was built about 1447 on the site of the modern-day bridge. It was destroyed in the War of the Roses and replaced by a timber bridge, which lasted until 1483. A second stone bridge was built, slightly down-stream of the timber bridge. This structure lasted over 100 years, until parts of it were washed away in 1795. The distinguished engineer, Thomas Telford, was called upon to design a new bridge. At first, a single span iron bridge was suggested, but the Coalbrookdale Iron Company refused to undertake the work, as they could not supply stone for the abutments. After a number of other set-backs, the present stone bridge was built and opened in 1800 at a cost of £11,000.

During World War II, the bridge became a tactical defensive point due to its location on the river. A number of defensive features were constructed on and around the bridge. The old tollhouse located on the east bank of the river was turned into a machine gun post. After the end of the war, cracks began to appear in the tollhouse. This was due to heavy wartime traffic and undermining by floods. Efforts were made to try and save the building, but it was demolished in 1960.

◀
WWII defences around Bewdley Bridge.
© Mick Wilkes.

LOCATION FOUR: THE HOLDING PENS

Directions

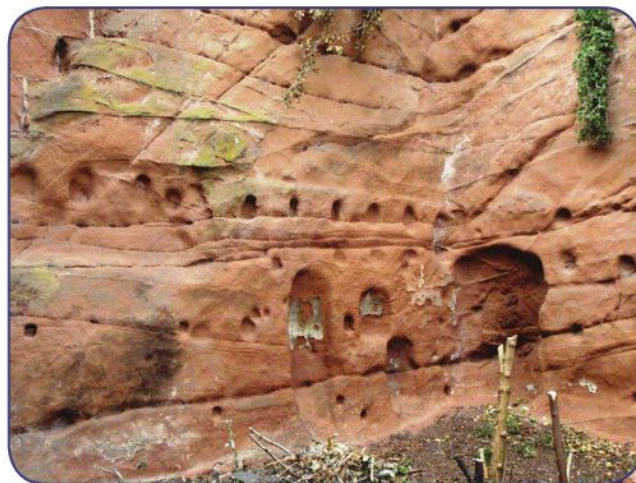
Ascend the ramp and cross the bridge. Follow the road as it heads away from the river and gently uphill. Cross the road and follow the stone wall of the viaduct. Head under the bridge and turn left immediately on the other side.

Geology

The red rock you can see in this exposure is a type of New Red Sandstone, formed around 280 million years ago, during Permian times. A vast hot, dry, shimmering desert covered the landscape at this time, with conditions similar to the Sahara desert today. The sandstones in the rock face are the fossilised remains of ancient sand dunes which

drifted across this large desert. The individual grains of sand within the rock are cemented together only very weakly, meaning that the rock can be easily cut. This may be one of the reasons why the railway navvies made use of this stone for constructing the adjacent viaduct.

Within the cliff there are also what appear to be some curious features including circular holes and a large shelter cut into the rock. These may be remnants of a former use of this site as an agricultural holding pen for the butcher in Westbourne Street.



◀
Man-made features
cut into rock face



▶
New Red Sandstone
used in viaduct with
brick repair

LOCATION FIVE: BEWDLEY RAILWAY STATION

Directions

Carefully cross the road and make your way down Castle Lane to the right of the pub. Do not enter the pub car park, but veer right and follow the footpath until it meets another road. Turn right and pass under the viaduct. Turn left and follow the road to the station entrance. Make your way onto the platform.

The features described below can be viewed safely from the platforms. For your own safety DO NOT venture onto the track at any time.

Geology

The red cliff forming the backdrop to the station is a larger exposure of the fossilised sand dunes. Within the cliff face you may see inclined layers of rock, sometimes in a criss-cross pattern. This is called dune-bedding and shows the internal structure of the ancient sand dunes. Dune-bedding forms in a similar way to cross-bedding (see

diagram in St Anne's Church section).

By studying these features, environmental conditions such as the predominant wind direction, can be worked out.

History

Bewdley Station was originally opened in 1862 as one of the main intermediate stations on the 40½ mile Severn Valley Railway line from Hartlebury to Shrewsbury. Passenger services ran on the line until 1963, when the Bewdley to Shrewsbury section was closed and the line from Shrewsbury to Bridgnorth lifted. However, passenger services continued to call at Bewdley until 1970. By then, the Severn Valley Railway Society had formed and was operating the line from Bridgnorth to Hampton Lode. By 1974, services had resumed at the station and have continued to this day.



◀ Cliff face behind station.

Image courtesy of John Stocks

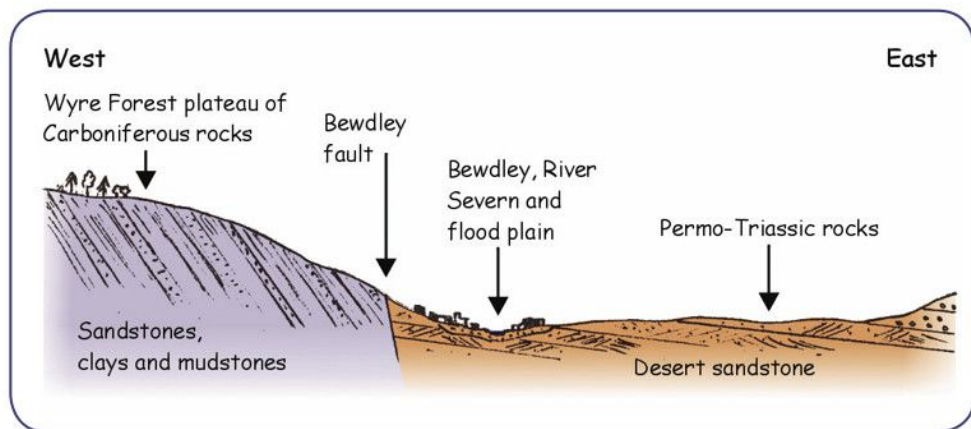
THE BEWDLEY FAULT

Directions

Retrace your steps to the bottom of the station drive. Turn left and follow the road downhill. At the T-junction, turn right and follow the road as it winds its way towards the river. Cross the road when you see the river and follow the riverside to the bridge. Staying on the left hand side of the road, head up and over the bridge, stopping halfway across.

Look towards the town centre. In the background there is an area of higher ground. This elevated piece of land is explained by the presence of a

major geological feature running through the town - the Bewdley Fault. A fault is a fracture in the Earth's crust, along which movement occurs. This movement has resulted in bringing rocks of Carboniferous age which you have seen in the Bark Hill exposure, alongside the Permo-Triassic New Red Sandstone rocks which you have seen at the railway station. The Carboniferous rocks are harder and more resistant to erosion, and therefore make up the higher ground in front of you. Conversely, the New Red Sandstones are softer and form the lower ground around you.



▲ The Bewdley Fault and its impact on the landscape

Continue along the bridge and into the town centre. Head uphill until Bewdley Museum and Tourist Information Centre appear on your left.

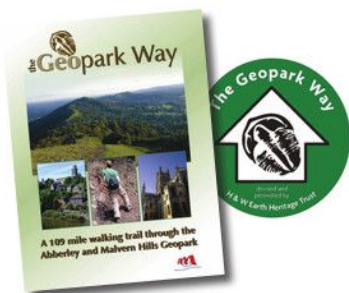
This is the end of the trail. We hope you have enjoyed it.

EXPLORING THE LOCAL AREA

There are a number of other interesting trails and leaflets around Bewdley. A selection of these is listed below and can be found, or ordered in, Bewdley Museum and Tourist Information Centre.

Other local trails published by the Herefordshire & Worcestershire Earth Heritage Trust:

- The Geopark Way. A 109-mile geology and landscape walk through the Abberley and Malvern Hills Geopark. Bridgnorth to Gloucester.



- Explore Bewdley Town Centre. A building stones and geology trail around the town centre.
- Explore Severn Valley Railway. A landscape and geology trail along the Severn Valley Railway.



Other Bewdley trails available:

- Bewdley Civic Society presents a Town Trail
- Bewdley - The Early Years
- Bewdley - Georgian Riverside Town
- Bewdley Heritage Trail
(www.bewdleyheritagetrail.com)
- Bewdley: A town trail for escorted wheelchair users
- Bewdley Walks
 - Walk 1 - Bewdley to Ribbesford
 - Walk 2 - Bewdley to Dowles Brook
 - Walk 3 - Dowles Brook & Beyond

Long distance walking trails passing through Bewdley:

- North Worcestershire Path. 35 miles. Bewdley to Birmingham.
- Severn Way. 224 miles. Plynlimon, Powys to Bristol.
- Worcestershire Way. 31 miles. Bewdley to Great Malvern.



what is the Community Earth Heritage CHAMPIONS project?

The Community Earth Heritage Champions Project, funded by the Heritage Lottery Fund, and Natural England through Defra's Aggregates Levy Sustainability Fund, has involved communities across Herefordshire and Worcestershire.

Each of the nineteen geological sites chosen for the project has a Champions community group carrying out conservation work, promoting the use of the site to other people in their parish and monitoring the site for any changes in condition.



The idea of the project is to take a holistic view of the environment and to understand the relationships between geology, ecology and archaeology.

The Champions have received training in a number of subjects in order to understand the features observed at their site; knowledge which they will now pass on to new volunteers. The conservation work being undertaken will help to ensure the protection of these important features and enable people to enjoy the natural world for years to come.



For more information about the project, or any aspect of the work carried out by the Herefordshire and Worcestershire Earth Heritage Trust, please contact us at:

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