

GEOSITE: 4

SALTWELLS

The geology of
Saltwells Local Nature Reserve



Black Country
UNESCO Global Geopark Project

Dudley
Metropolitan Borough Council

SALTWELLS

SALTWELLS LOCAL NATURE RESERVE IS A GEOLOGICAL SITE HOSTING TWO NATIONALLY IMPORTANT SSSI'S (SITES OF SPECIAL SCIENTIFIC IMPORTANCE FOR GEOLOGY).

The site shows two distinctly different periods of earth history, when very different conditions were present. The first and oldest rocks contain evidence of the change from ancient seabed to dry land. The second series of layers show how this land was covered by huge swampy forests with trees growing up to 45m in height that created the coal seams.

SILURIAN TIMES

The oldest rocks exposed at the site are of Silurian age dating between 420 and 417 million years ago. During this time an ancient shallow, tropical sea was squeezed by earth movements and slowly rose out of the waters to become dry land. Muddy shelly rocks exposed in the tramway section (Geopoint **3**) pass upwards into layers with more sand. As these rocks are traced up layer by layer at Brewin's Bridge (Geopoint **6**) canal section they change to a reddish colour. This indicates they were above water and iron minerals were exposed to the air.

The remains of sea creatures shells can still be found in the tramway cutting.



SALTWELLS SHOWS TWO DISTINCTLY DIFFERENT PERIODS OF EARTH HISTORY, WHEN VERY DIFFERENT CONDITIONS WERE PRESENT



Heathen Coal. At the top of the rock face there are no trees as this is where the famous thick layers of South Staffordshire Thick Coal were once extracted from the site. The rock layers in front of you formed when the area was covered by huge flooded tropical forests. The grey muddy rocks you see are the ancient soils of those forests which produced the clays and ironstones so valuable to the Industrial Revolution.

Wander down into the Claypit to have a closer look at the rocks and the special plants and animals that now occupy it.

Return to the main path. Rising up in front of you is a large mound now covered in trees. This manmade mound is the waste minerals/materials from the Claypit. Turn right and continue uphill. After a short distance you will notice that the left hand side of the path drops away into a steep valley and on the right hand side there is a rock cutting.

Geopoint 3

This cutting is all that remains of an old inclined tramway line which was used to carry minerals from Doulton's Claypit up to the Dudley No.2 Canal located further up the slope. Have a look at the rocks exposed here. These rocks are about 420 million years old. These layers are underneath those you saw in Doulton's Claypit and are about 100 million years older.

You will come to a road called Highbridge Road. Cross over and continue uphill where you will see a gate to your left and the continuation of a footpath. After a short walk you will arrive at Geopoint **4**.

Geopoint 4

If you ascend the steps to your right you will come back to Highbridge Road at which point you get a view east across an infilled canal arm leading off the main line of Dudley No.2 Canal. and the wider Stour Valley beyond. Back at Geopoint **4**.

Take a look at the rocks adjacent to the steps. You will note that they are sandstones and yellowish in colour, if you look closely you can see circular holes in some of the

sandstone layers. Geologists believe that these are gas bubbles that were created when hot magma was injected into cracks into the hill 307 million years ago. This magma boiled the water sitting within the rocks and bubbles of steam created these circular hollows.

At Geopoint **4**, with the steps behind you, turn right and walk 50m to the canal. This is the Dudley No.2 Canal and connects the limestone mines of Dudley two miles to your left, to the coalfields of Netherton two miles to your right. This is the point at which the minerals from Doulton's Claypit were loaded onto boats and taken to be sold elsewhere. Turn right along the canal towpath and walk for just 10m to Geopoint **5**.

Geopoint 5

The rocks to your right are a dark black/green and have no layers. This is a body of microgabbro, an igneous rock similar to basalt that was injected as molten rock into the rock layers 307 million years ago. This is the cause of the gas bubbles seen at Geopoint **4**. Continue along the canal towpath and you will see a high bridge over the canal that carries Highbridge Road. This bridge stands where there was once a canal tunnel (Brewin's Tunnel). It was built when the tunnel was dug out in 1858 creating the steep sided canal cutting that you now see. Continue along the towpath to the other side of the bridge to Geopoint **6**.

Geopoint 6

This is a very important rock face called the Brewin's Canal Section. It is a SSSI because in the rock face you can see the contact between the old landscape of Silurian rocks and the base of the Black Country coalfield. The lowest layers of rock you see are the greenish-grey shales of the Silurian above which rest distinctly pebbly and gritty yellow layers. If you look closely, these contain shiny black coal streaks (these are actually the remains of flattened trees lying within the pebbles of an old river channel). There is very little difference in the direction and angle at which the pebbly beds and the underlying shaley

CARBONIFEROUS TIMES

The rocks that follow on from the Silurian layers are quite different. This is a time geologists call the Carboniferous Period after the coal seams. Most beds of Carboniferous age rock are seen at Brewin's Bridge on the canalside.



Calamites

Here, they are a series of pebbly and gritty sandstones with occasional flattened tree trunks. These layers formed in a fast flowing river channel. The next layers are seen in Doulton's Claypit (Geopoint **2**) where they are typically grey in colour, muddy and contain a coal seam and ironstone layers.

At the end of these times great earth movements folded and faulted the landscape and hot molten magma forced its way into the cracks, cooling to form vertical intrusions that cut across the other rocks. This happened 307 million years ago.

INDUSTRIAL TIMES

The Saltwells area has a unique history within the Black Country. The rocks contained rich seams of coal, fireclay and ironstone. Within the coalfield rich smooth fireclays were abundant and were taken out of the ground to make many clay products. Salty waters (brine) were discovered here and attempts were made to use this brine as a spa. As you walk around the woods you will see claypits and bellpit remains, as well as raised embankments cut into



beds can be seen despite the fact that there is a time gap of about 100 million years between the two. This is extremely rare in geology and makes this a very special site indeed.

Retrace your steps along the towpath and continue for a further 500m, where you will come to a cast iron canal bridge that crosses an arm of the canal leading off to the left. This is Geopoint **7**.

Geopoint 7

At this point, there is a footbridge over the two locks line canal arm along the canalside to your left. These were walk-down coal mine entrances known as adits. Climb to the crest of the bridge and look around you. Across to your left you can see across the valley to Brierley Hill and The Waterfront in line with the short canal arm below you. This canal arm once extended across the valley on an aqueduct. In the late 1800's mining in the valley caused the collapse of the aqueduct and now all that remains is the short length of canal below you. If you turn around and look up to the hill you see St Andrews Church (Netherton Church). This church stands on a patch of the South Staffordshire thick coal.

Go back down to the towpath and follow the path to the right, round the canal arm following the path to your left, heading downhill. As you walk down the footpath and to your left hand side you will pass an open area called 'Tailings Tip'. This is one of the best places to see butterflies. Just below you flows the Blackbrook. On the right hand side are a number of small ponds and reedbeds.



Comma butterfly

Continue along the path, with the Blackbrook to your left, until you come to a road, crossover and head through the metal kissing gate following the path into the woods opposite.

At the first path junction turn right heading uphill, once at the top continue right and follow the path to Geopoint **8**.

the hillsides and canals, marking the old routes used to transport the materials off site. All of these show how intense industry was in these parts and how much the landscape has been changed by those efforts to get minerals out of the ground and transported away in centuries past.

NATURE CONSERVATION

Today, Saltwells is also known for its wildlife and supports a diversity of locally rare flora and fauna.

The woodland has a beautiful display of bluebells in the late spring, with heathers colonising the poor soils left over from the industrial activity in the area. It is also a prime site for butterflies and dragonflies in the summer months.

THE GEOPARK TRAIL

Begin your visit at the car park for the reserve near the Saltwells Inn, situated on Saltwells Lane off Saltwells Road/ Coppice Lane, DY5 1AX. (National Grid Reference SO 933868).

Geopoint 1

Begin at the car park entrance and take the footpath on your left hand side, through a metal kissing gate. Here you will see a Black Country Global Geopark interpretation panel. Continue past the interpretation panel uphill for 200m. At the start of the tree line you will see a view into a large excavation/quarry on your right hand side. This is Doulton's Claypit. Continue a further 100m along the path and you will see a smaller path leading to the right where there is a large viewing platform overlooking Doulton's Claypit, a SSSI protected under national nature conservation law.

Geopoint 2

Look out from the viewing platform at the long, high rock face opposite you, it has a distinctive dark layer about two thirds of the way up. It is a coal seam called The

Geopoint 8

Stop by the fenced off area at Geopoint **8**. This is the site of collapsed mines called bellpits. This area of the woodland is now a scheduled ancient monument due to the remains of the bellpits. These date from the medieval period through to the industrial revolution.

Continue past the interpretation panel and turn left onto the road. After 50m take the right hand pathway past the small animal sculpture and continue straight on. You will eventually find yourself heading downhill to a small flight of steps. At the bottom of these steps you will find yourself at Geopoint **9**.

Geopoint 9

You will see the car park to your left. This is the former route of a mineral railway that carried steam locomotives between the coalmines and other industries of the Saltwells area.

Walk back to the car park to return to the start of the walk.

The Saltwells Spa

There was once a small cluster of buildings in this area that included a borehole, a stables, a hotel and a bath house. These used the warm salty water extracted from the borehole for baths and medicinal treatments during the 1800's. The brine from this well was tested by eminent Birmingham chemists and found to be of equal quality to that of Cheltenham Spa and Harrogate Spa. It was therefore used for medicinal purposes. There was even a plan considered by the Earl of Dudley to create a pipeline to take these waters to the little town of Netherton and to turn it into a Black Country Spa town.

However, mining activity and pumping in the mines meant these waters became polluted and their flow diminished.

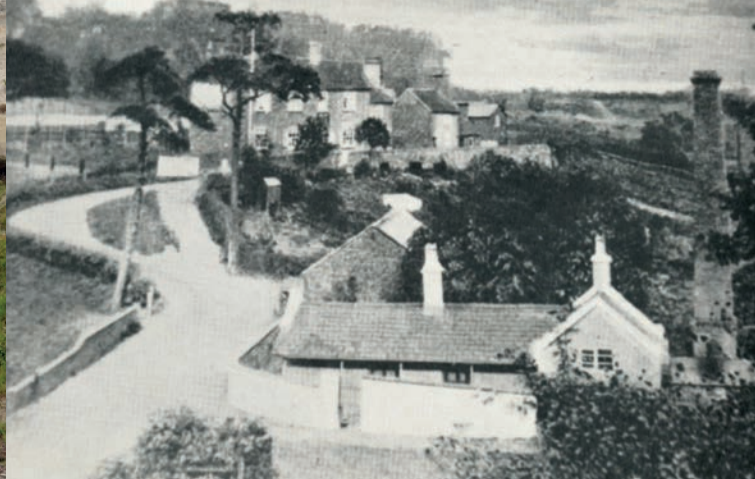


SALTWELLS IS HOME TO TWO SITES OF SPECIAL SCIENTIFIC IMPORTANCE FOR GEOLOGY (SSSI'S)

Black Country
UNESCO Global Geopark Project



GEOPOINT 2 DOULTON'S CLAYPIT



SALTWELLS SPA



GEOPOINT 4 LODGE FARM RESERVOIR



GEOPOINT 2 DRAGONFLY

Black Country

UNESCO Global Geopark Project

Geoparks are a unique collection of special landscapes around the world, recognised for their geology, all of which are internationally important.

The Black Country is a place where coral seas, steamy swamps, scorching deserts, icy wastelands, mines and furnaces created unique and wonderful landscapes over 430 million years of geological time.

Between 1600 and the 1960s intensive heavy industry covered most of the area and earned this region international recognition as 'The Workshop of the World', where anything could be designed and made.

This industrialisation saw much of the landscape 'black by day and red by night' due to the coal mining wastes, furnace slag heaps and glow of the furnaces at night.

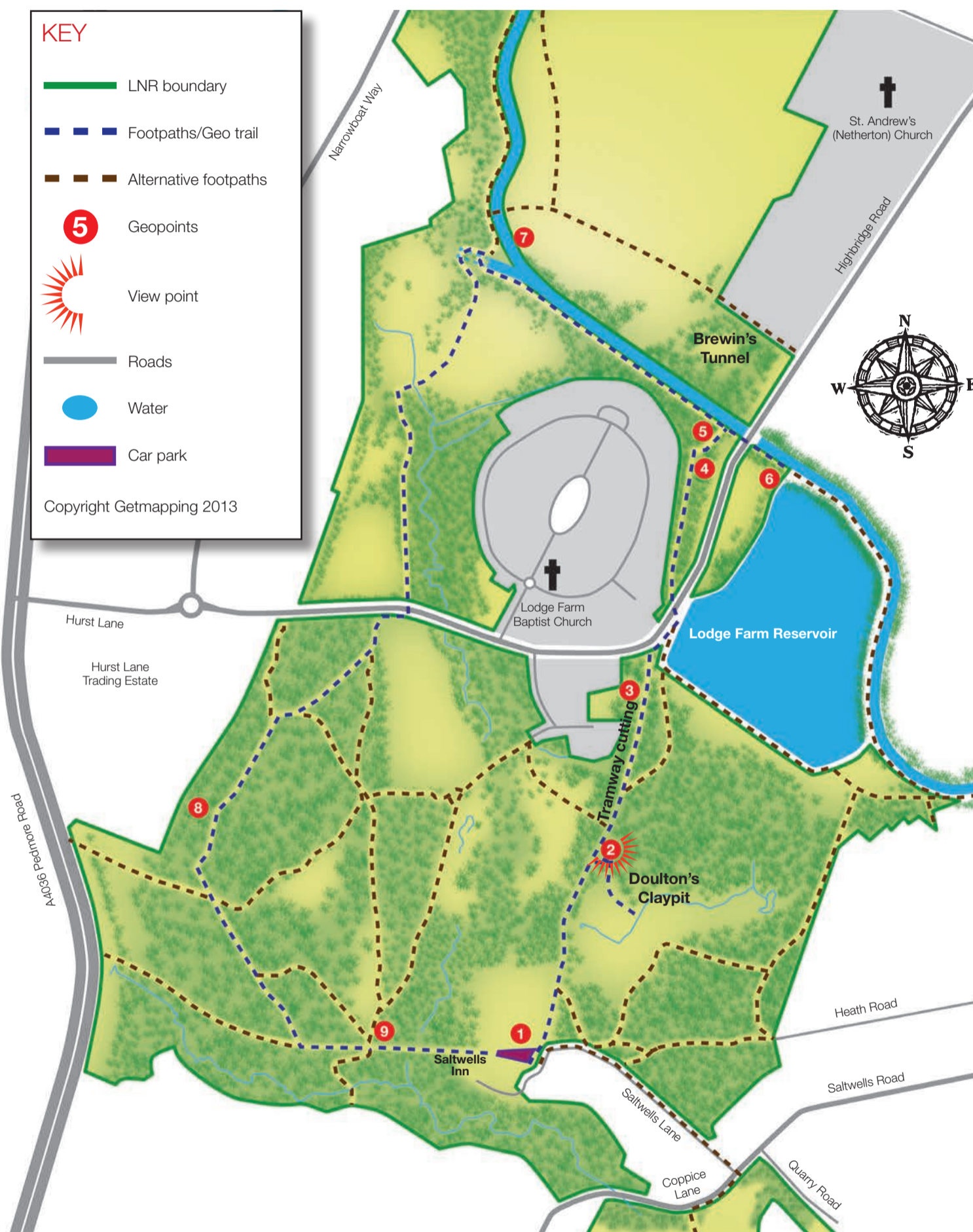
Today it is an amazing place to explore with many 'hidden gems' of world class natural and man-made wonders. These are classed as individual geosites such as Saltwells Local Nature Reserve within the aspiring Black Country Global Geopark.

If you are looking for more information on the Black Country UNESCO Global Geopark Project or wish to become an ambassador to support our work visit www.blackcountrygeopark.org.uk

GEOPOINTS

- Geopoint 1 Car park
- Geopoint 2 Douilton's Claypit
- Geopoint 3 Tramway cutting
- Geopoint 4 Infilled canal arm steps
- Geopoint 5 Igneous intrusion
- Geopoint 6 Brewin's Tunnel
- Geopoint 7 Open mine entrances
- Geopoint 8 Bell pits
- Geopoint 9 Mineral railway route

GEOSITE: 4 SALTWELLS



SAFETY INFORMATION

Visitors are requested to remain on designated footpaths and not enter safety fenced areas. The geological trail route provides good access to all the main features of interest. Please refrain from climbing rock faces. The use of tools is strictly prohibited - under law it is an offence to damage a SSSI site and any damage of the site could harm wildlife value and a general enjoyment of visitors.

Geological Society - The Black Country Geological Society is based in Dudley and meetings usually take place once a month, lectures being held at The Archives and Local History Service, Tipton Road, Dudley DY1 4SQ Telephone: **01384 812770**

For more information please visit www.bcgs.info

VISITOR INFORMATION

The reserve has a team of full-time wardens who maintain and care for the site's geology, wildlife and archaeological features. To book a guided walk, group visit or to enquire about volunteering, call **01384 812795**.

There is free car parking on site, open daily. There are no refreshment or toilet facilities at the reserve. However, The Saltwells Inn adjacent to the reserve offers a wide range of food and drink with toilet facilities available from lunchtime onwards.

Visit www.saltwellsinn.co.uk for details.

For further information and ideas on places to visit and things to see and do in the borough of Dudley visit www.discoverdudley.org.uk

CONTACT DETAILS

Saltwells Local Nature Reserve
off Saltwells Lane, Brierley Hill DY5 1AX

More information can be found at www.dudley.gov.uk/resident/environment/countryside/nature

To speak to a warden call **01384 812795** or e-mail saltwells.country@dudley.gov.uk

Further information on geology can be found at Dudley Archives and Local History Service www.dudley.gov.uk/archives



GEOPOINT 9 BLUEBELLS



GEOPOINT 5 PLANT FOSSIL - 'ASTEROPHYLLITES'



GEOPOINT 8 BELL PITS



GEOPOINT 7 BLACKBROOK JUNCTION

