



INDUSTRIAL HISTORY TRAIL

The site of the old lime workings and now a Local Nature Reserve

BURITON





Chalk and Lime

Chalk has been quarried from the South Downs for generations for use as a building material and for the manufacture of lime. There were three main uses of lime: in the building industry, as a soil improver in agriculture and to help improve drinking water.

To make lime, chalk must be burnt at high temperatures. Chalk would be loaded into large kilns along with coal. The kilns were then lit and the skill was to raise the heat to a sufficient level in the whole kiln to successfully turn the chalk (calcium carbonate) into quicklime (calcium oxide).

After being drawn off from the kilns the lime would be kept dry and sent to where it was needed. For building use, water was added to create a lime putty which was the main ingredient of mortars and plasters.



The Lime Cycle

CaCO₃ – Calcium Carbonate

Carbonation – adding carbon dioxide
 $\text{Ca(OH)}_2 + \text{CO}_2 = \text{CaCO}_3$

Calcination or burning at high temperature – 1100°C
 $\text{CaCO}_3 + \text{HEAT} = \text{CaO} + \text{CO}_2$

Ca(OH)₂ Calcium Hydroxide

CaO Calcium Oxide

Hydration or slaking – adding water – $\text{CaCO}_3 + \text{HEAT} = \text{CaO} + \text{H}_2\text{O} = \text{Ca(OH)}_2 + \text{HEAT}$

The Buriton Chalk Pits and Limeworks: a Brief History of the Site

Although there are references to chalk being raised from the Buriton hills and transported to Portsmouth early in the nineteenth century, it is believed that Benjamin Joseph Forder started the limeworks here in about 1860, soon after the opening of the Portsmouth to London railway line. The railway enabled coal to be brought to the area as well as taking away the processed lime.

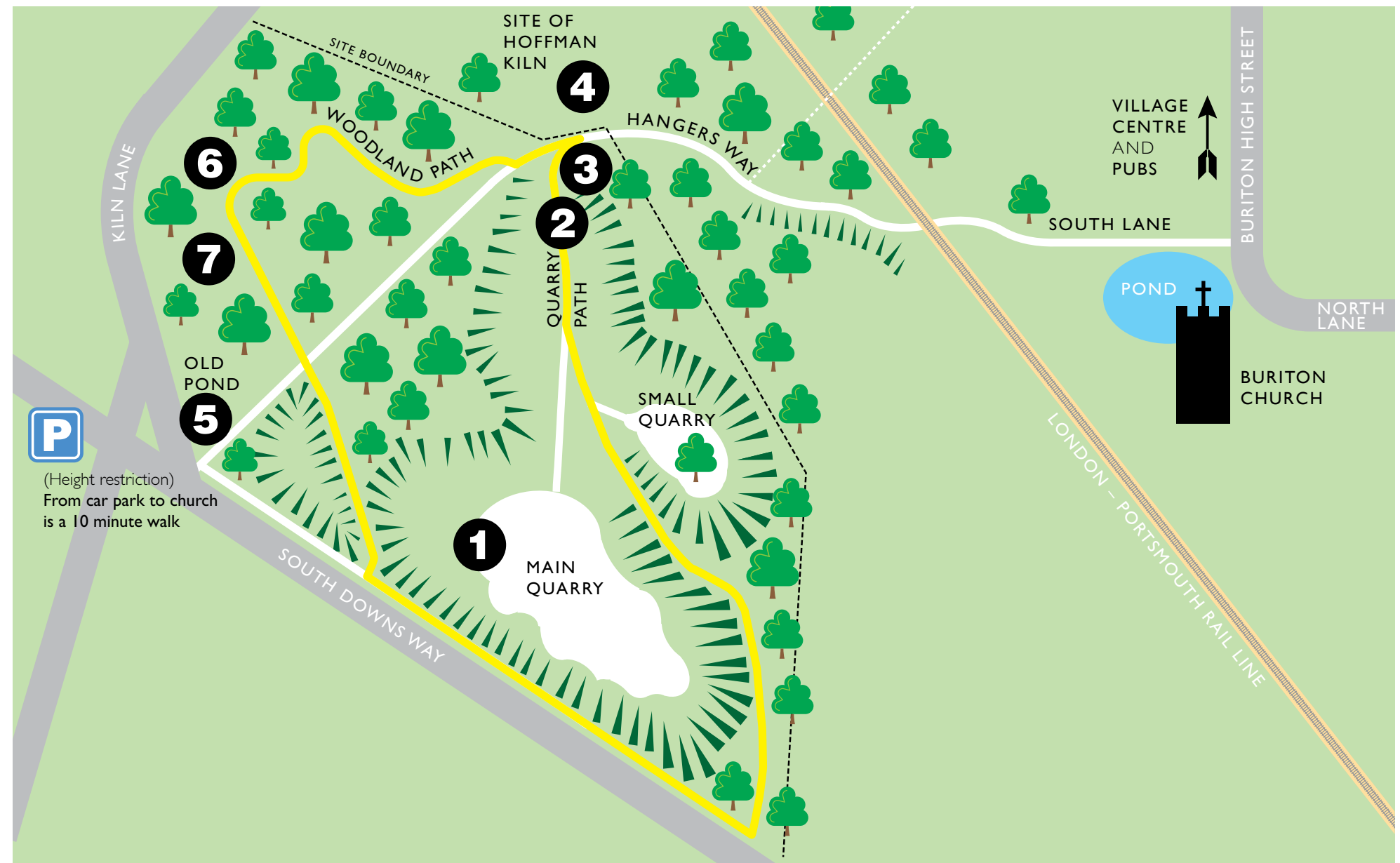
The site was leased from the Bonham Carter family and by the time of the 1871 census the lime workings were employing 20 men and 4 boys. By 1901 this had risen to 33 men, a substantial proportion of the working population of the village.

Following the death of Lothian Bonham Carter in 1927, the British Portland Cement Company bought the site, apparently

hoping to convert it to a cement works. This did not prove to be possible and by 1939 the works were closed.

During the Second World War the site was used by the Admiralty as a safe place to examine unexploded enemy mines. Mines were brought here from many parts of Southern England with as many as 150 on site at any one time. Experts would cautiously take them apart to try to discover any new detonating systems.

After 1945 the building complex was occupied by Winsor's Country Foods until 1975 when the site was taken over by the current owners. Some of the quarry sites have been filled in as refuse tips but the rest have been abandoned and are being re-colonised by chalk-loving plants.





Quarrymen at work

Quarrying

As you stand in the Chalk Pits today you can see the remains of the quarrying **1** activity all around you. Three main quarries (known as France, Germany and the White Pit) developed over the years as well as another large site, the Butser Hill Lime Works, alongside the A3.

Maps of 1870 show only a relatively small area of quarrying but by 1897 both France and Germany pits were well developed and by the 1930s the workings had been extended into the White Pit – so called because the chalk had less clay impurities and produced the finest chalk.

Excavating the chalk could be a hazardous process, with cliff faces 60 feet high. The men who worked in the quarries extracted the chalk using a mixture of hard work and explosives. The chalk face was undermined by prising out sections with iron bars, making use of natural cracks. Shot holes were drilled into the chalk and explosives used to bring down large chunks of the stone. When they were ready to blast the nearby road had to be closed as the chalk would be blasted sky high! It is hard to imagine now but the whole place must have been white with dust.

Once out of the hillside, the large pieces of chalk were broken down further by hand and loaded into small railway trucks to be transported to the nearby kilns.



The workforce



Narrow Gauge Railway Lines

The site had a complex internal network of narrow gauge railway lines that changed over time according to the quarrying activities and which kilns were in use. When a truck was full of chalk it would be horse-drawn to the edge of an incline but from there it would run down to the kilns propelled by gravity alone. A man would stand on the back of each truck with a crude foot-brake system. Speeds allegedly reached 50-60 mph and spills were not uncommon. Horses were used to pull empty trucks back to the chalk face until small locomotives took over in 1923.



Hauling empty trucks

The routes of some of the old railway lines have been used to form the base of the quarry path **2** which takes you into the quarry and also around the top edge.

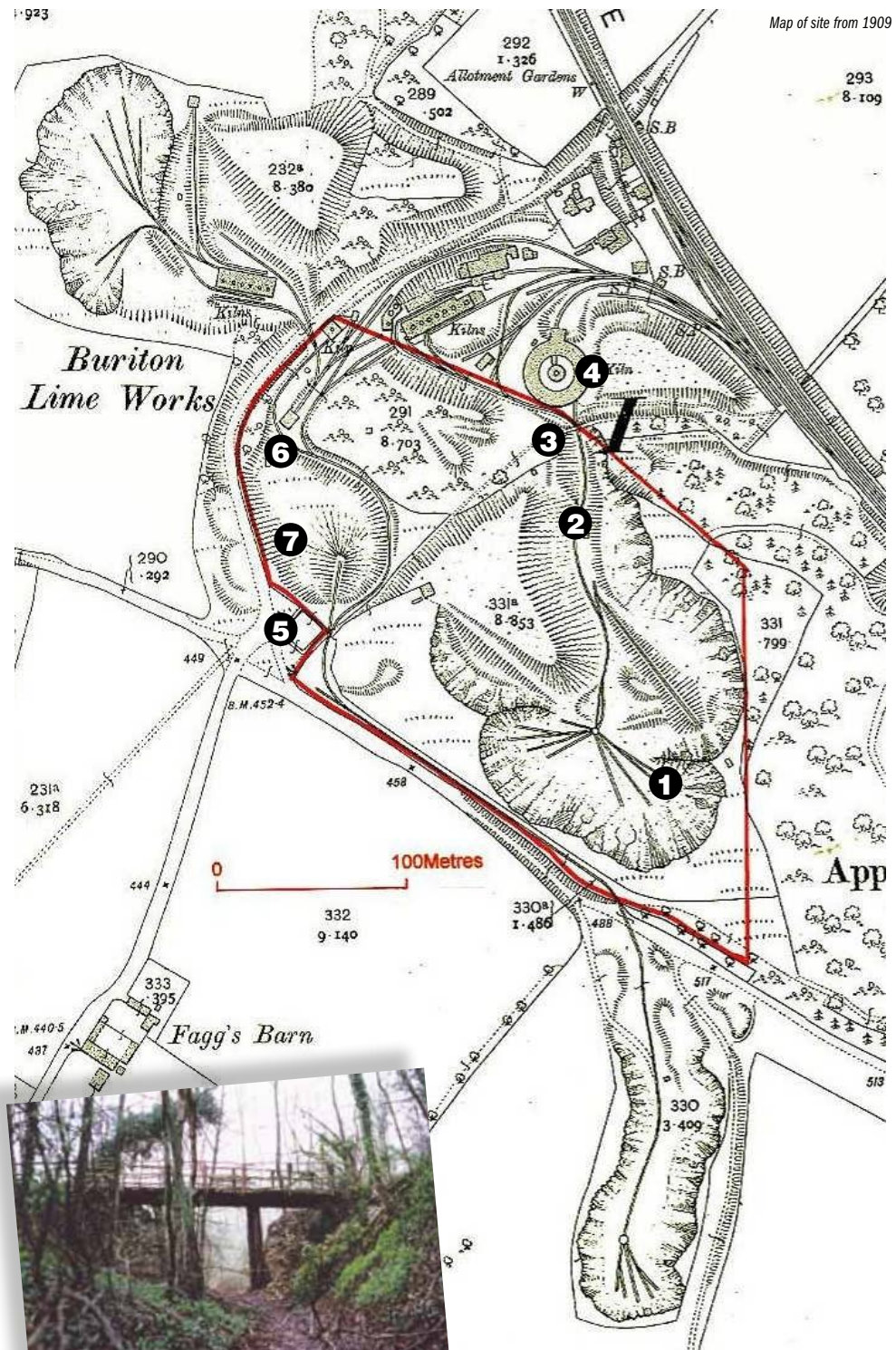
There is an interpretation board at the site of what used to be 'Black Bridge' **3**. This was a pedestrian bridge over one of the narrow gauge rail lines. Standing there today you can see the route of the line on both sides, up into the quarry on one side and down towards the kilns on the other.

When walking along the top edge of the quarry you are following the route of another rail track which brought chalk from the White Pit across the road.

Burning the Chalk

A number of different burning processes were used in the Buriton pits over the years: 'flare kilns', 'continuous draw kilns' and an unusual 'Hoffman Kiln'.

Firing any of the lime kilns was a specialist trade and took skill to ensure that the chalk reached the necessary temperature for long enough for the chemical reaction to take place, turning it into lime.



Black Bridge

The kiln of special interest on this site is the Hoffman Kiln. **4** The photograph, (top right) taken in the 1880s, shows this kiln in the foreground with its large chimney. Surrounding the chimney was a circle of 13 or 14 firing chambers, each filled with a mixture of chalk and coal. One would be fired to produce lime and then a damper opened to heat and ignite the next chamber. This process would continue round the circle with lime being removed when cool and new chalk and fuel put inside.

The chambers of this kiln are still in place but buried under the garden of the private house adjacent to the site. As you look at the site from 'Black Bridge', the flat area of grass would have been the top of



Main kiln block



Whole site - Hoffman kiln to fore

the chambers. The diagram shows how the kiln worked.

The chimney, which had become a local landmark, was demolished in 1948 leaving only some of the large iron bands in the undergrowth. At the time there was little experience of demolishing such structures and there was much trepidation that it might fall onto the mainline railway. But all went well, with the only adverse effect being a delay in a village cricket match whilst the players watched!

A Range of Crafts and Skills

The site employed over forty local people with a wide range of crafts and skills. From village records we know that Jack Nicholson used to look after the horses and that the works had its own granary to store oats for their feed. At the end of each day the horses would be ridden, bare-back, down Kiln Lane and through the village to be washed at the pond. Afterwards they would race back through the High Street and up to the stables – an exciting sight for the village children.

Underneath the granary was Charlie Morris's carpenter's workshop where all the wooden 3ft gauge trucks for the internal railway were built and repaired. Beyond this workshop was Freddie Tussler's blacksmith's shop. The works also had their own bricklayer, Tipney Welch, and even a sail-maker to make tarpaulins to cover the lime in the railway wagons – slaked lime must not get wet!

From quite early on the site had its own set of sidings on the main Portsmouth to London railway line alongside a signal box and some workmen's cottages. The footpath crossing point is now almost the only remaining sign of these facilities.

Other remains visible on our site

5 The Pond – right at the top entrance of the site there was a rectangular pond. This first appears in 1868 and is almost certainly a dew pond that stored water for use in the lime works.

6 Engine House – A rectangular building dating back to some time between 1868 and 1895 which housed one of the engines that hauled a standard gauge truck leading from the France Pit over the road down to the main railway sidings. Only the brick footings and a rectangular water tank can be seen today.

7 HMS Mirtle – It is believed that the X-ray machine used by HMS Mirtle was located in this area. The bombs, once on site, were carefully taken apart to try to discover any new detonating systems. The X-ray tube was used to try to spot any booby-traps. The secrets of a number of new types of enemy mine were revealed here, making some important contributions to the nation's war efforts. Once made safe all the explosives could be steamed out for disposal.



How to get to Buriton Chalk Pits

Access to the site

Car parking can be found at the Halls Hill car park adjacent to the site, grid reference: SU733197. There is very limited parking in the village of Buriton (half a mile to the north of the site) except for customers of the Five Bells or the Maple Inn.

Public transport to the village is via bus 94 from Petersfield. There is a regular bus service that runs every day except Sundays. Details can be found on www.countryliner-coaches.co.uk

Cycling routes exist from Petersfield and Queen Elizabeth Country Park. From Petersfield, travel along the Causeway and take the old Petersfield Road to Buriton. This is a narrow road so please take care. Buriton is approximately 3 miles from Petersfield. This is part of the new Shipwright's Way.

From QECP take the South Downs Way path to the Halls Hill car park, the entrance to the site is across the road and well signposted. Buriton village pond is a little over 2 miles from QECP.

As well as the new Shipwright's Way, two long distance paths pass through or adjacent to the site. The Hangers Way path is a 21 mile walk from Alton to Queen Elizabeth Country Park, Petersfield. A section of the walk is a bridleway that runs through the middle of the Chalk Pits site and forms the main access. The South Downs Way is a 100 mile bridleway that runs the length of the South Downs from Eastbourne to Winchester. The path runs along the southern edge of the site.

Food and Accommodation

There are two pubs in the village of Buriton:

The Maple Inn **01730 267275**

The Five Bells **01730 263584**

There is a café and shop in the *Queen Elizabeth Country Park* open daily. **02392 595040**

www.hants.gov.uk/countryside/qecp

Local B&Bs can be found via the Tourist Information Office in Petersfield.

Further information

Industrial History

A complete survey of the site was undertaken as part of a Heritage Lottery project and details are kept by Buriton Parish Council. Further information can be also obtained from Buriton Village Association's Heritage Bank project: <http://www.buriton.org.uk>

Buriton Parish Council website:
www.buriton.info

Other chalk based industrial sites based along the South Downs can be found at the Amberley Museum & Heritage Centre and at the Twyford Waterworks.
<http://www.amberleymuseum.co.uk>
<http://www.twt.hampshire.org.uk>

General

A natural history trail round Buriton Chalk Pits is also available. Leaflets are to be found at the Queen Elizabeth Country Park and at each of the two pubs in Buriton: the Five Bells and the Maple Inn.

More information on the two long distance paths, the Hangers Way and the South Downs Way, can be found at:
<http://www3.hants.gov.uk/longdistance/hangers-way.htm>
<http://www.nationaltrail.co.uk/Southdowns/>

There is a Tourist Information Centre in Petersfield for further information about the surrounding area
Tel: **01730 268829**
www.visit-easthampshire.org.uk

This information leaflet has been produced as part of the Buriton Chalk Pits Project. The project was established in 2007 by Buriton Parish Council to help secure and protect the heritage and natural history of the Chalk Pits area for the benefit of parishioners and visitors. In 2010 the project was awarded a Heritage Lottery Grant to fund development works. Information for this leaflet has been kindly provided by the Buriton Heritage Bank.

