

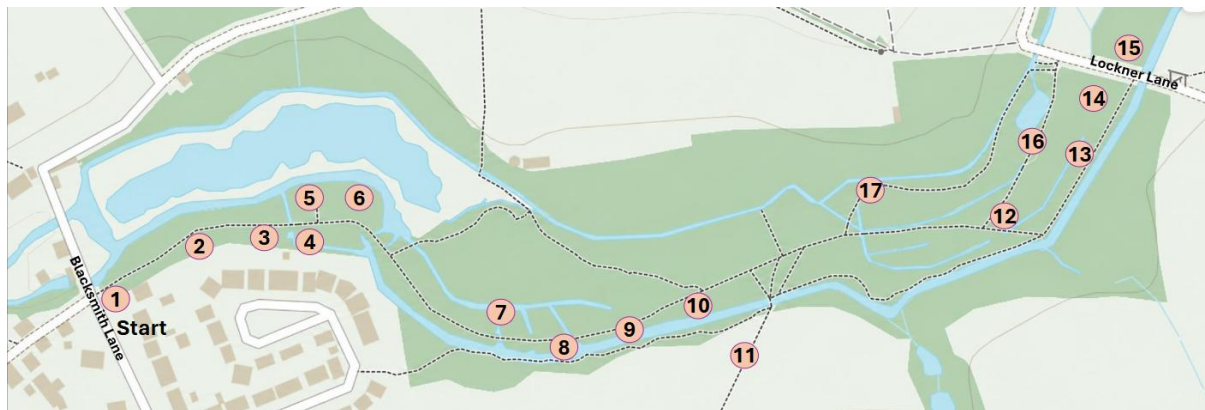
Chilworth Gunpowder Mills

A self-guided walk through 300 years of industrial history

Over almost 300 years from 1626 to 1922, Chilworth Gunpowder Mills grew to be one of Britain's most important explosives factories. Today, the central section of the site is a Scheduled Monument owned by Guildford Borough Council.

This walk follows a 1 km route from Blacksmith Lane to Lockner Lane, with several side paths to explore. As you walk through the site, the River Tillingbourne is on your left, while the 17th-century man-made 'New Cut' runs on your right. Water from the New Cut powered waterwheels that drove much of the manufacturing process.

Over three centuries the mills evolved from water power to steam power, with the later addition of a tramway for coal and gunpowder. The workforce grew to more than 600 during the First World War when it operated 24 hours a day. After production ended, machinery was sold and many buildings were demolished. What survives offers a glimpse of one of Surrey's most important industrial landscapes.



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|---------------------|------------------------------------|-------------------------------------|
| 1. West Lodge | 7. 1860s Steam Incorporating Mills | 13. 1880s steam incorporating mills |
| 2. Dusting House | 8. Swing bridge | 14. Charge House |
| 3. Expense Magazine | 9. Bridge Abutment | 15. Smokeless Powder Factory |
| 4. Dragon's Teeth | 10. Wharf | 16. Boiler House |
| 5. Corning House | 11. Tramway | 17. Prismatic Press |
| 6. Mixing House | 12. Chilworth Mounds | |

Start Point

1. West Lodge – Entering a dangerous workplace

You enter the heritage site through the original green factory gates. The small building on your right is West Lodge, (now a private residence), where workers reported before starting their day at 6:00 am.

Before entering, every worker was searched for matches and other prohibited items and changed into special “powder kit” clothing made of denim, with no pockets, turnups or buttons. They also wore wooden-pegged over-boots designed to reduce sparks.

Each worker was issued with a numbered brass token. In case of an explosion casualties involved could be identified by the tokens that had not been returned.

2. Dusting House – One of the final stages

About 100 metres along the path, look for the marker post labelled DH.

Only fragments of this once large building remain. A diagonal line of bricks, once the front wall, cross the path and parts of the rear wall are among the undergrowth to the right.

One of the final stages of gunpowder production, powder from the nearby Corning House was placed in silk-covered rotating reels, where the finest dust was separated from the finished grains before packing.

3. Expense Magazine – Safe storage between each process

Continue a short distance to the brick building on your right, beside the bench.

Expense magazines were used to store gunpowder safely as it moved through the manufacturing process. This building was supplied by barge from the New Cut behind it.

Before moving on, look carefully at the brickwork where the date **1873** can still be seen. It marks a period of major expansion as new magazines were built across the site.

A little further on you'll find two marker posts: DT on the right and CH on the left

4. Dragon's Teeth – Defending Britain in the Second World War

The concrete cones beside the path are known as Dragon's Teeth. They formed part of the **GHQ Stop Line**, a defensive barrier installed during the Second World War intended to slow any German advance towards London.

5. Corning House – The shocking explosion of 1901

Opposite the Dragon's teeth is the CH marker post. Walk a few paces off the path and you can look down onto the remains of the Corning House. (Please take care here as there is a steep drop over the edge).

This building was destroyed by a huge explosion in 1901 that killed six men. The blast was the worst accident in the history of Chilworth Gunpowder Mills, blowing doors open in Bramley, shaking houses in Shere and being felt as far away as Cranleigh.

The Corning House had been a two-storey brick and tile building, partly above and partly below ground level. The remains of the double walls of the lower chamber can still be seen on the left-hand side.

Here, pressed gunpowder was broken into grains of different sizes, from pistol to heavy-artillery grades. On the day of the explosion, two corning machines were about to begin work.

Investigators concluded that the accident probably began outside the building, when a spark from a hob-nailed boot ignited gunpowder being loaded onto a cart. A second, much larger explosion followed, destroying the building, hurling large pieces of machinery over 50 yards. A handle from the wooden cart was found north of the ruins. It helped investigators reconstruct what had happened, as it could not have travelled up and over the building if the Corning House itself had exploded first.

6. Mixing House – Preparing the ingredients

Return to the main path and continue until you cross a channel running under the path taking water to the Tillingbourne.

Here are the remains of a mixing house where the three ingredients of gunpowder—saltpetre, charcoal and sulphur—were first blended together in carefully measured proportions. The mixture was then taken to the incorporating mills, where it was crushed into a fine, uniform powder.

7. 1860s Steam Incorporating Mills

Continue along the path until you come to a row of edge-runner millstones each weighing around three tons. They mark the site of the first steam incorporating mills, where the ingredients were crushed together beneath two heavy vertical stones running in a circular trough.

Originally powered by water, the mills were later driven by steam as the factory modernized. This was one of the most important—and potentially dangerous—stages in the manufacture of gunpowder.

8. Swing Bridge – Crossing the New Cut

About 75 metres further on, look for the marker post labelled SB on your right.

This was the site of a swing bridge which carried a narrow-gauge tramway across the New Cut. The bridge could be swung back on the pivot that you can see, to allow punts to pass.

9. Bridge Abutment

About 100 metres further on, look for the marker post labelled BA on your right.

This bridge was probably used by locals walking to Guildford through the mills. In later years, the route was closed for security reasons and was used solely for access within the site.

10. Wharf – Loading by water

Walk about another 75 metres and look for the marker post labelled W on your right.

Punts moored here to load and unload materials. Similar wharfs were built beside each Expense Magazine, allowing gunpowder and supplies to be moved safely around the site. Look for the remains of a sluice gate and channel.

11. Tramway – Britain's earliest known metric-gauge railway

Continue to the picnic area. Opposite the picnic area and to your right, cross the bridge and, after a few paces, you will see a straight path leading directly to the station. Now known as Vera's Path, this used to be the part of the tramway linking the station to the site. Look for old railway sleepers that now form part of the fence.

Today's main footpaths follow the tramway route, installed around 1885 as the works expanded. Workers pushed wagons carrying gunpowder and coal. Wooden wagons reduced the risk of sparks; brass-bound wagons were used within the factory, while steel-bound wagons carried coal from the railway siding to the furnaces.

From a weighbridge at the top of Vera's path, the route ran downhill, and workers used to jump onto the wagons to get a free ride back to the site.

12. Chilworth Mounds – adopted nationally

Walk back across the bridge and return to the main path. Continue for approximately 250 metres until you see the marker post CM on the path.

First used at Chilworth, these were known nationally within the explosives industry as **"Chilworth mounds"**. Found all around the site these were huge mounds of earth, reinforced with corrugated iron drums, which protected neighbouring buildings and workers against blasts.

13. Steam Incorporating Mills – beginnings of a major expansion

Just beyond the Chilworth Mounds you will see the large incorporating mills.

The Steam Incorporating Mills were the beginning of a huge expansion at the site.

In 1885 the business became The Chilworth Gunpowder Company, backed by German investment. The site was modernized on a large scale and became the second-largest supplier of gunpowder to the British Government.

Within a few years the workforce grew from around 30 people in the 1860s to approximately 600 during World War One.

In June 1885, the company advertised for 150 excavators “wanted at once” to build the mills, while local newspapers reported complaints about traffic carrying bricks to the site.

Look for the surviving blast walls and gear rooms beneath the floor. Lightweight roofs and front screens directed explosion forces away from machinery, while a drenching system automatically flooded bays if an explosion occurred. Metal pulleys remain just below the roofline.

Also note the RSJs (Rolled Steel Joists) across the top of the bays. These were imported from Germany and are among the earliest recognized rolled steel sections used in Britain.

14. Charge House – Measuring every batch

Next to the incorporating mills stands the Charge House. CH

Here, carefully measured quantities of the gunpowder ingredients were prepared before being fed into each incorporating mill. Keeping each batch small improved both safety and consistency, reducing the amount of explosive material in any one place.

You have now reached the end of the publicly accessible section of the Gunpowder Mills.

15. Smokeless Powder Factory – A new generation of explosives

Opposite, on the other side of Lockner Lane was the Admiralty Cordite Factory, built between 1890 and 1915, which covered around nine hectares and contained more than 20 buildings.

Introduced in the 1880s, cordite replaced black powder. As a smokeless propellant, it produced less smoke and residue while delivering greater power, making it suitable for modern military weapons.

From here, you can either turn round and retrace your steps or turn left along Lockner Lane for about 50 metres before re-entering the heritage site through the gate on your left.



Take the path ahead to pass behind the incorporating mills and the Boiler House (16) or alternatively take the riverside path to the right that leads past the site of the Prismatic Press (17). Both paths return to the main route.

16. Boiler House – Powering a modern factory

Today, little remains of this coal-fired building apart from the outline of its brick foundations and the base of what was once a tall chimney. The boiler house supplied the steam that powered the incorporating mills.

17. Prismatic Press – Gunpowder for Britain’s biggest guns

By the 1880s, pressing gunpowder into small prisms with a central hole was found to produce a slower, more even burn. This made prismatic powder ideal for Britain’s largest naval and coastal guns.

Four presses were installed at Chilworth in 1886 - a year before similar machinery was introduced at the Government’s Royal Gunpowder Factory at Waltham Abbey.

Powered by water wheels, they rapidly produced six prisms at a time each measuring about 25 mm × 40 mm (1 × 1½ inches). The factory adopted the prism shape as its logo for its own cricket team.

The end of an era

The First World War brought unprecedented demand for gunpowder, but after peace in 1918 the market declined rapidly. Explosives manufacturers merged to form Nobel’s Explosives Ltd, later part of ICI. On 16 June 1920, the workforce was told that production at Chilworth would end.

The factory closed later that year, and the estate was sold in 1922. Much of the machinery was removed for use elsewhere, while many of the remaining buildings were demolished during the 1960s.

Today, the surviving buildings, earthworks and waterways provide a record of more than 300 years of gunpowder manufacture. We hope this walk has helped bring their story to life.