

EXTRACT FROM ENGLISH HERITAGE'S RECORD OF SCHEDULED MONUMENTS

MONUMENT: Surrender lead smelt mill

PARISH: REETH, FREMINGTON AND HEALAUGH

DISTRICT: RICHMONDSHIRE

COUNTY: NORTH YORKSHIRE

NATIONAL MONUMENT NO: 28297

NATIONAL GRID REFERENCE(S): NY98890016
NY99260016

DESCRIPTION OF THE MONUMENT

The monument includes the remains of Surrender lead smelt mill and flue, the adjacent fuel store and slag crushing works and parts of the water management system. It lies in two areas of protection. One area is located on a terrace on the north bank of Mill Gill and contains remains of the mill complex, the other is located 300m to the north east and contains a dam associated with the water management system. The current mill structures date to 1839 and are built on the site of two earlier mills known as Low Mills.

The smelt mill, which is Listed Grade II, is now a roofless ruin, although most of the walls still stand to their full height. It is built on an unusual symmetrical plan with two ore hearths on one side balanced by an ore hearth and a slag hearth on the other. The water wheel which powered the bellows stood in a wheel pit in the centre of the building. A roasting hearth was added later in a small room on the north east side of the main building. Two arched flues led away from the rear of the building and then joined to form a single flue extending up the fellside for 745m. Originally the flue was only 470m in length but was extended some time after 1854. The site of the original chimney midway along the length of the flue was then converted into a condenser to extract lead from the fumes. The flue has mostly collapsed but in some places, including where it passes beneath the road, it is still intact as an arched tunnel. In some sections the flue is tunnelled through the ground. To the north east of the mill are the ruins of the fuel store. This was an open sided rectangular building with the roof supported on solid gables and lines of stone piers. This open aspect allowed peat, the main fuel, to be dried. The fuel store building is Listed Grade II.

To the south of the mill adjacent to the beck are the slag crushing floors. This is where slag, formed from the initial smelting of the ore, was broken down in order to be re-smelted. There are the remains of a wheel pit which would have held a water wheel to power the crushing and dressing equipment. Water was fed into the mill complex from the higher ground to the rear and was brought to the site along leats cut into the ground. Two major leats led to the mill from the west and the north east. The leat from the west tapped water from Mill Gill, several hundred metres upstream to the west. It survives as a channel 1.5m and 0.3m deep. Only the last 150m of this leat between the road and the north west corner of the mill are included in the monument as the further extent to the west has been lost by erosion of the steep beck side. The second leat on the north eastern

side, extended across the fell side for about 1km following a winding route to meet Bleaberry Gill 50m south of Fore Gill gate. This leat survives as a channel 1.5m wide and up to 0.5m deep. At NGR NY99190007 the leat enters a large boggy area and its route cannot be traced until beyond the dam a further 150m beyond this point. Although most of this leat can still be traced on the ground beyond the dam, only the first 200m nearest the mill are included in the monument as it is considered that a suitable sample will be protected.

The dam is located at NGR NY99260016 and survives as an earthwork bank constructed across a wide, natural low point in the generally undulating fell side. It is orientated north west to south east. It curves slightly in plan and is a total of 65m in length. At its widest point in the middle it measures 10m wide and stands 1.5m high. At the south eastern end it grades into the natural ground level. At the north western end there is a more prominent edge to the dam. It is breached in the centre to allow the continued flow of water.

The early Low Mills are known to have been in existence by 1770 as they are shown on a map engraved at that date. However, documentary references in 1685 also mention a mill of the Wharton family being fed by water from Bleaberry Gill. It has been suggested that this was the original Surrender Mill fed by the leat which still survives extending north east from the current mill building. There were two Low Mills by 1720 when they were leased to the Chaytor family and in 1764 were passed with the rest of the Wharton Mines to Lord Pomfret. The first reference of Surrender in connection with the site is in 1806 when there was a request to let hearths to the Surrender Company. The company took on the mills and in 1839 when the lease was renegotiated the current mill building was built using in part stones from the old mills. Output at the mill began to decline during the 1870s and the mill finally ceased smelting in 1880. However, the buildings were still maintained for the next 20 years until the mill was finally dismantled and sold off in 1902.

The surface of the road that crosses the flue is excluded from the scheduling, although the ground and the section of flue tunnel beneath it are included.

ASSESSMENT OF IMPORTANCE

Approximately 10,000 lead industry sites are estimated to survive in England, spanning nearly three millennia of mining history from the later Bronze Age (c.1000 BC) until the present day, though before the Roman period it is likely to have been on a small scale. Two hundred and fifty one lead industry sites, representing approximately 2.5% of the estimated national archaeological resource for the industry, have been identified as being of national importance. This selection of nationally important monuments, compiled and assessed through a comprehensive survey of the lead industry, is designed to represent the industry's chronological depth, technological breadth and regional diversity.

Ore hearth smelt mills were introduced in the 16th century and continued to develop until the late 19th century. They were the normal type of lead smelter until the 18th century, when they were partially replaced by the reverberatory smelt mill. The ore hearth itself consisted of a low open hearth, in which lead ore was mixed with fuel (initially dried wood, later a mixture of peat and coal). An air blast was supplied by bellows, normally operated by a waterwheel; more sophisticated arrangements were used at some 19th century sites. The slags from the ore hearth still contained some lead. This was extracted by resmelting the slags at a higher temperature using charcoal or (later) coke fuel, normally in a separate slag hearth. This was typically within the ore hearth smelt mill, though separate slag mills are known.

Early sites were typically small and simple buildings with one or two hearths, whereas late 18th and 19th century smelt mills were often large complexes

containing several ore and slag hearths, roasting furnaces for preparing the ore, refining furnaces for extracting silver from the lead by a process known as cupellation, and reducing furnaces for recovering lead from the residue or litharge produced by cupellation, together with sometimes complex systems of flues, condensers and chimneys for recovering lead from the fumes given off by the various hearths and furnaces. The ore hearth smelt mill site will also contain fuel stores and other ancillary buildings.

Ore hearth smelt mills have existed in and near all the lead mining fields of England, though late 18th and 19th century examples were virtually confined to the Pennines from Yorkshire northwards (and surviving evidence is strongly concentrated in North Yorkshire). It is believed that several hundred examples existed nationally. The sample identified as meriting protection includes: all sites with surviving evidence of hearths; sites with intact slag tips of importance for understanding the development of smelting technology; all 16th-17th century sites with appreciable standing structural remains; 16th-17th century sites with well preserved earthwork remains; and a more selective sample of 18th and 19th century sites to include the best surviving evidence for smelt mill structures, and flue/condenser/chimney systems.

Surrender lead smelt mill displays a wide range of well-preserved features associated with the lead processing industry. The mill itself retains important remains of the smelting processes and the adjacent peat store and slag works offer important scope for the wider understanding of the complex. Surrender mill complex preserves important archaeological remains which serve to illustrate the history and development of the lead industry throughout the region and the country.

SCHEDULING HISTORY

Monument included in the Schedule on 20th September 1979 as:

COUNTY/NUMBER: North Yorkshire 1228

NAME: Surrender Smelt Mill, Melbecks

The reference of this monument is now:

NATIONAL MONUMENT NUMBER: 28297

NAME: Surrender lead smelt mill

SCHEDULING REVISED ON 03rd September 2002