Allen Mill's Scheduled Ancient Monument

Arches supporting flues at Allen Mill, Photograph taken 1973 (Courtesy of Mr and Mrs Handcock)

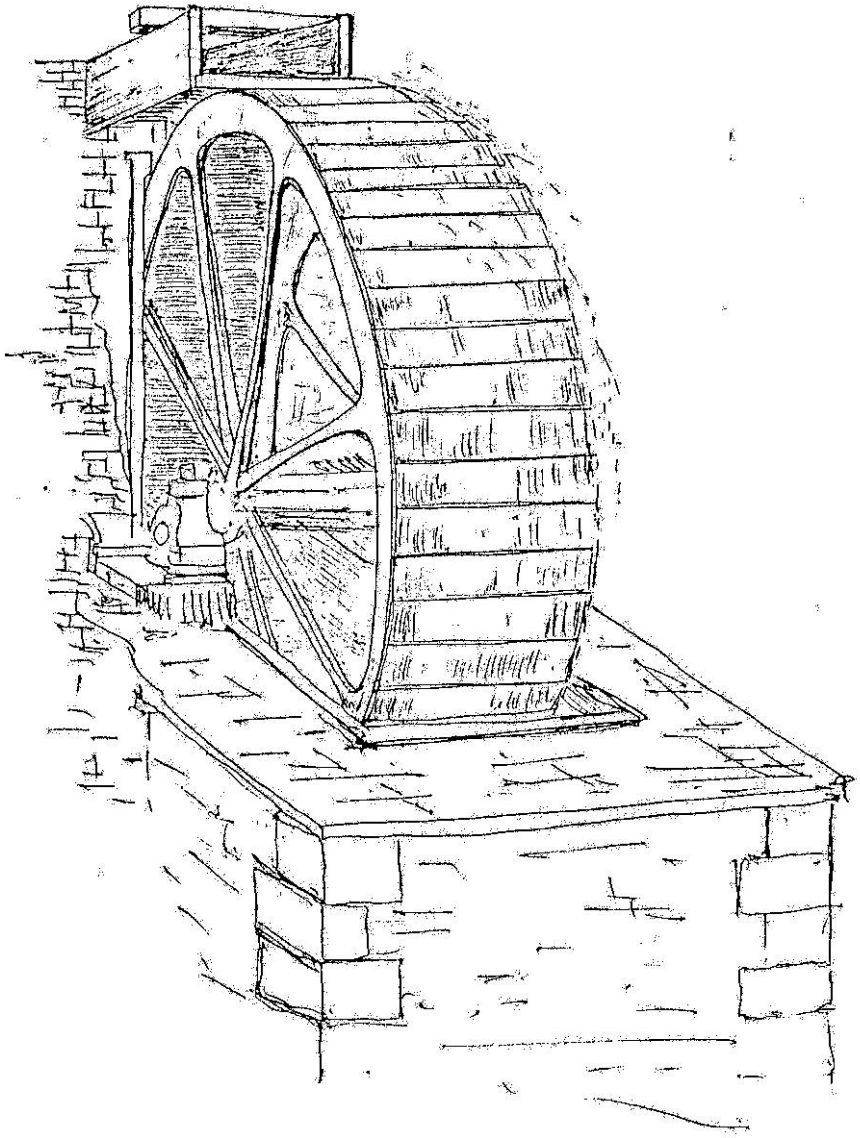
The 'SAM' at Allen Mill can be seen behind this fence. It includes the remains of condensing chambers and reverberatory ore hearths. In 1847 a document and plan of the mill shows 5 roasting furnaces, 8 ore hearths, a refining furnace, 2 reducing furnaces, 2 calcining furnaces, 2 reverbatory furnaces, 1 slag hearth and a separating house with 18 pots. Most of the smelt mill has been demolished but the remains of several stone structures can be seen here - stone walls with buttresses forming individual bays which are the remains of bouse teams (bingsteads - ore bunkers).

Bouse teams (also known as Bingsteads) used to store the ore
(Photographed at Allenheads courtesy of Mr and Mrs Handcock)

The flue system for the mill (constructed in 1808 and in 1845 - 50) was extensive and was built to condense the noxious fumes produced from the furnaces. The deposits that formed on the internal walls of the flues were removed periodically for their lead and silver content, via doorways in the flue wall. The flues survive as long mounds up to 8m wide and standing up to 2m high, but where they have collapsed they appear as ditches 2m wide. Some of these are visible at Allen Mill and three of the

flues can be followed for two to three miles (3.5km) onto open moorland at Flow Moss where they end at two chimneys.

OVER-SHOT WATER-WHEEL



WATER-WHEEL PIT

This is the pit for the over-shot water-wheel used here at Allen Mill

The weight and force of moving water cause a wheel to move, which in turn moves machinery by means of belts or gears. The water for the wheel at Allen Mill came from as far away as Weardale. The water was collected in reservoirs and underground systems to finally enter the smelt mill from the south, just above where the current 'SAM' is located.

The water for an over-shot water-wheel arrives in-line with and passes over the top of the wheel. The mechanical efficiency of an over-shot water-wheel is estimated to be 68% compared with that of an under-shot water-wheel (where the water passes under the wheel) which is thought to be only 35%.

The water-wheel at Allen Mill was used to drive the machinery to crush the ore and provide the air blast for the furnaces.

The importance of water

Smelt mills needed to be sited on or near a river. Rivers supplied water power to operate water wheels which supplied (by means of bellows) the blast for the furnaces. The ore was also crushed by water driven machinery. In 1870, 500 horse power was used by the machinery from water power from reservoirs and races constructed from high points in the valley downstream. There were 10 reservoirs beginning in Weardale passing along pipes to the mine at Allenheads and from there to the smelt mill here at Allen Mill.