Project Title: Lumley Forge, near Chester-Le-Street, Durham
Type of Work: Industrial Archaeology Survey and Assessment
Client: Wear Rivers Trust

A little piece of Durham's industrial heritage tucked away below the A1 flyover.

Lumley Forge lies 2.5km east of Chester-le-Street, just north of the Smith's Arms pub at Brecon Hill. Situated on a curving stretch of the Lumley Park Burn, little remains today of the former forge and later boot blacking factory, but during the late 18th and early 19th century this secluded little spot was a hive of industrial activity.

In February 2012, NAA were commissioned by the Wear Rivers Trust to undertake a heritage assessment and survey of the industrial remains at Lumley Forge, this was in advance of the installation of the new fish pass, designed to allow migrating sea trout and salmon access to upper stream beds for spawning. On first inspection the site did not look very promising, but as the trees were cut back and the site was de-watered, fragments of buildings, machine bases and revetment walls all began to emerge out of the undergrowth.

The first documentary evidence for the forge dates to 1779 when the property was purchased by the iron manufacturer, William Hawks. There is evidence to suggest that some form of forge was already in operation on the site prior to this period, although this is currently open to debate. Hawks & Co, were formed in 1747 by William's father, a former smith at the famous Ambrose Crowley Ironworks in Winalton. By the end of the 18th century the company was producing chains, cables, anchors and plate, primarily for the shipping market. As well as Lumley, Hawks & Co. operated forges at Bedlington and Beamish, but their main focus of operation was the large engineering works at Gateshead - The New Deptford and Woolwich Works. During the 19th century, they were to become one of the biggest iron manufacturers in the North East, responsible for the High Level Bridge and Sunderland Bridge, amongst others.

At Lumley, the main focus of production appears to have been the re-processing of scrap metal, although a small brass foundry may have also operated on the site for a short period of time. Re-forging scrap was a lucrative industry during this period, with material often being brought in as ballast by the colliers and purchased at a very reasonable price. The forge mainly produced a range of iron and brass products including shovels, anvils, bar iron, nails and chains. However, one of Lumley's more salubrious commissions was the re-forging of the boiler of Timothy Hackworth's Royal George; the first commercial viable goods locomotive.

Hawks & Co. sold the forge in the late 1840s or early 1850s, concentrating their work at Beamish and New Deptford, before suddenly pulling out of production altogether in the North East in 1889. After the sale, cartographic evidence seems to indicate that the site was largely re-built, possibly as a result of a devastating fire which is known to have swept through the property in 1855. A year later, Lumley is termed a charcoal manufactory and barley mill in local trade directories (and on the First Edition Ordnance Survey map); held under the ownership of Ward & Jackson. All references to the forge subsequently cease. Charcoal was in demand for a number of uses; not least gunpowder and chemical manufacture. Barley was largely used for animal feed. The site later became a stove and boot blacking company before finally being abandoned sometime in the early 20th century.

The forge is believed to have featured at least three balling (reheating) furnaces for the reprocessing of scrap iron. Powering the furnace blowers and the tilt hammers were two waterwheels, each served by a comprehensive water management system. Today, features associated with this - sluices, a crescent weir and overflow channel - comprise the majority of the extant archaeology, together with a series of revetment walls. One of the revetment walls is quite unusual; constructed of 'mossers' which are semi-spherical lumps of forge slag. The use of slag as a construction material is rare in the North East, although relatively common in Wales. There was little other structural evidence on site, the area being extensively demolished and cleared in the 1930s.

Archaeological recording of the site comprised a photographic, written and topographical survey of all surviving features and outline assessment of potential impact. Overall, the construction of the fish pass was believed to be of benefit to the heritage significance of the forge, serving to preserve those vulnerable elements which were being eroded by the flow of the water by covering them in a layer of sand and installing quarry-stone guarding along the banks. A number of trees were also removed as part of the scheme, preventing further tree root damage to the standing structures and opening up the area for interpretation. As a result, we now have a much better understanding of the site and of iron forging along the Wear prior to the wide scale expansion of the industry in the late 19th century.

However, there remain a series of unanswered questions at Lumley, including whether pig iron was ever being processed at the forge or if it was just used to re-work scrap material. Although in latter years it seems to have been largely reprocessing scrap, the degree of investment in the original construction suggests it might have formerly been intended as a much larger operation. It is tempting to think that Lumley may have been set up to process the pig coming from the blast furnace at nearby Whitehill, although there is currently no evidence to support this. However, Hawks does seem to have been prepared to invest considerably amounts in the works when he initially purchased the site, including the construction of a rolling mill close to the site, but these plans were later abandoned. Was this possibly because of the closure of Whitehill in 1787? This raises the question of whether there were ever puddling furnaces at Lumley. A new technology in the late 18th century, these replaced the more traditional finery furnaces in the conversion of pig iron to wrought. Hawks saw the new furnaces exhibited by Henry Cort in Newcastle in 1784 and definitely purchased them for use at Bedlington, - was the intention to install them at Lumley as well? During the survey, a considerable quantity of amorphous slag was found spread all along the north side of the site, some pieces measuring over 2m across. These might be associated with puddling, although they could conceivably be from the balling furnaces.

It is clear that Lumley has only just begun to give up its secrets and further research is needed in order to understand the site and how it fits into the development of Durham's iron industry. Currently, a potential programme of archaeo-metallurgical sampling is being investigated. Keep checking our site for further updates.

NAA would like to thanks David Cranstone, Stafford Linsley and Robert Kitchin-Smith, for all their help, knowledge and advice during the course of this project.