Gribdale Gate, the pronounced col in the west-facing escarpment of the moors, just three kilometres from Great Ayton, is well-known to Aytonians and visitors alike. This is a favourite starting point for walkers making for Roseberry Topping or Capt. Cook's Monument on Easby Moor. It was in this area that an alum works was active, albeit briefly, in the eighteenth century (Figure 1)

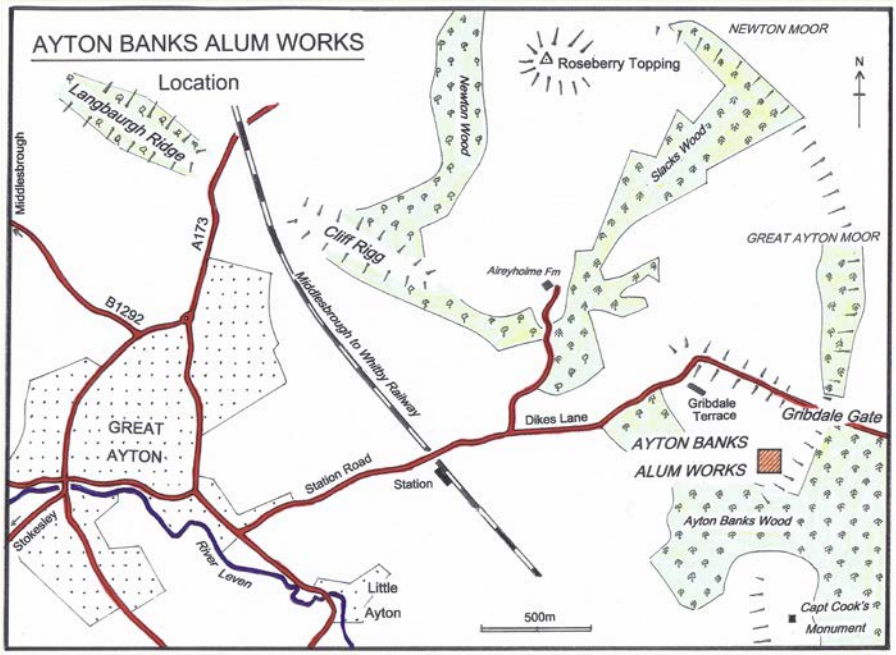

Figure 1 Ayton Banks Alum Works, location

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Over the last thirty years much attention has been paid to the coastal alum industry between Saltburn and Ravenscar. Considerable research and excavation has helped our understanding of this industry which was in production throughout the seventeenth, eighteenth and a large part of the nineteenth century in north Yorkshire. The extraction and processing of alum shale had a greater impact on the landscape of our area than any other industry. There were also inland sites, including Guisborough works, which were the first in our region to produce alum crystals.

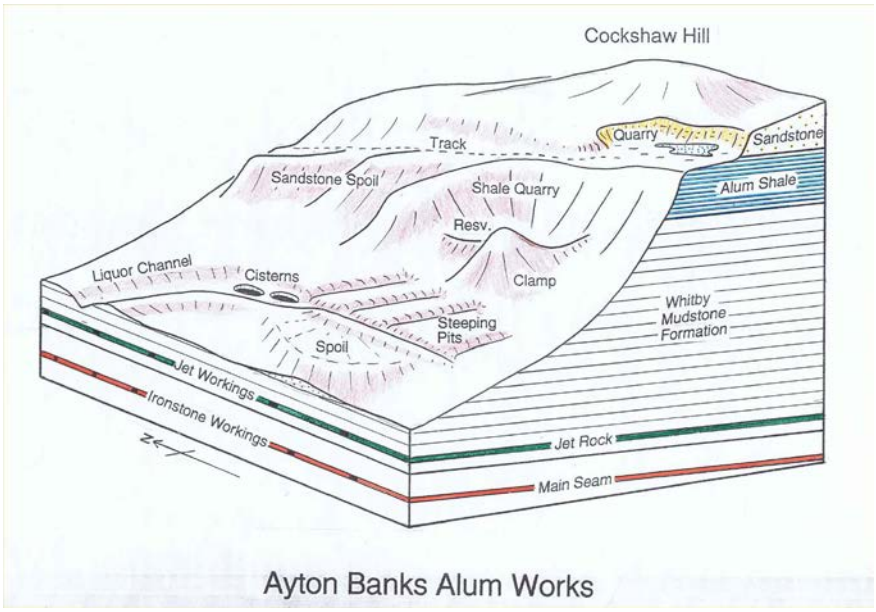
Ayton Banks alum works is one in a line of activity extending from Selby Hagg to Thimbleby near Osmotherley. The site is protected as an Ancient Monument (RSM 31343, National Monuments Record No. NZ 51 SE 60). It lies in private scrubland with open access, 400m south of Gribdale Gate car park.

The area has been extensively mined and quarried for sandstone, jet, ironstone and whinstone as well as alum and as a result is very hazardous to the walker. During summer months dense bracken is an additional problem.

The best viewpoint can be reached by climbing south from the col along a well trodden path to Cockshaw sandstone quarry which lies immediately above the alum works. It seems very likely that this quarry provided stone for the various structures used in the production of the alum crystals. The layout of the small works can be seen from the edge of the quarry looking west (Figure 2). A copy of an engraving of 1814 (See Fig.2) illustrates well the early phases of activity.

Figure 2 Remains of alum works from Cockshaw sandstone quarry, showing reservoir, clamp, leaching pits, cisterns and spoil heap.

Ralph Jackson (1736-1790) a local diarist conveniently left us the following record for 19th July 1765.
"Mr Wilson and I rode to see the Allom work erecting a little to the south of Roseberry Topping"



Production may have started in 1766 and various records indicate that it may have closed in 1775.

All the alum works found that the first 30 metres of blue/grey shale beneath the sandstone bed was most productive.(Figure 3) Walker's engraving of 1812 illustrates well the early stages of activity. (Figure 4). At Ayton Banks, although much overgrown, the quarry face can still,be seen. The shale was hacked from a stepped face using picks and iron bars, then loaded onto barrows to be taken to be calcined. This process, lasting many months, involved controlled burning of the shale using brushwood at the base of

Figure 3 Diagram of geology and remains of works

a conical clamp.(Figure 5) This mound can be seen from the viewpoint. Closer examination reveals that the shale is protected by a thin veneer of clay. In places the shale can be seen through the clay and its colour indicates that it has been burnt. Documentary evidence indicates that this clay covering was intended to be a temporary measure, giving protection from the weather, the assumption being that the market would pick up and the calcined shale would be available for processing later.

When cooled the burnt shale was barrowed to a series of steeping pits, the outline of which can be seen beyond the clamp (bracken

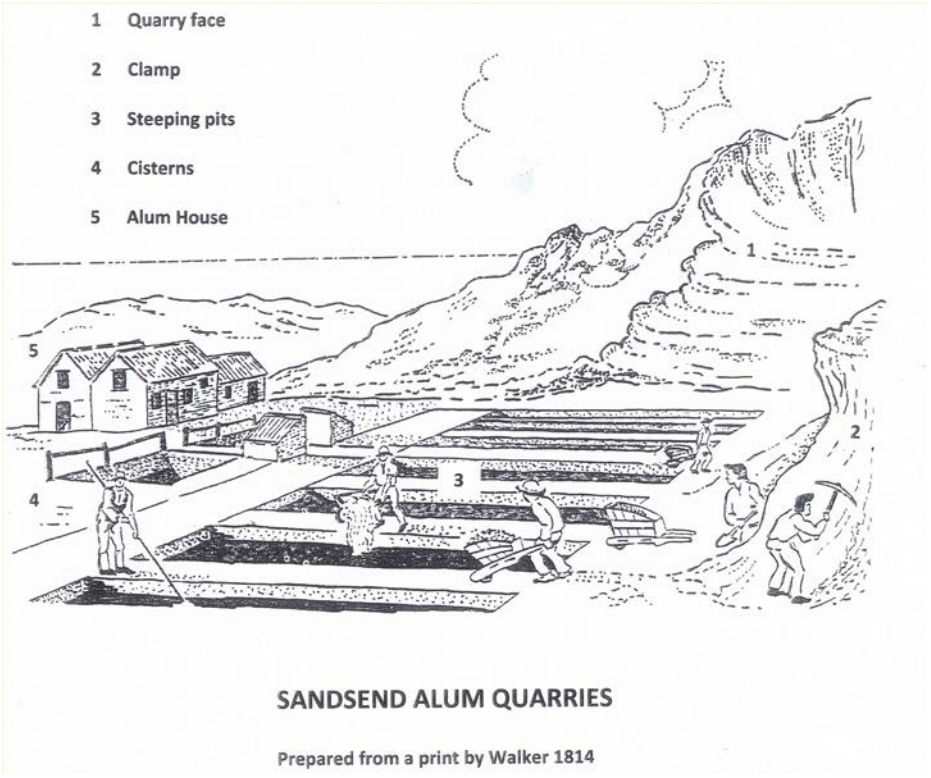


Figure 4 View of a coastal alum works Taken from an engraving from Walker's "Yorkshire Costumes" (1814)

permitting!). Water from the small reservoir was used in this complicated and skilled process of leaching, in order to dissolve out the aluminium sulphate. When the correct concentration was reached. the liquor was run along channels to two circular cisterns which can be seen with their corbelled, dressed sandstone walls.(Figure 6) The dimensions of the steeping pits and cisterns are very similar to those exposed by excavation some time ago at Carlton alum works.
The spent shale was removed from the pits to be taken to the large spoil heap just a few metres west of the cisterns.

After being allowed to settle in the cisterns, protected from the elements by a wooden lid, the liquor was pumped into a channel to begin the journey of about 500metres to the boil house. Only the first 20metres of this channel can be seen today, as the land along its route has been disturbed by later jet and ironstone workings.

Figure 5 Clamp, fired but not opened

Early OS maps indicate that the channel took a direct course towards the area of the present Bankhouse Farm, near Gribdale Terrace. This location would be selected to reduce transport costs of raw materials and the finished product.Carts and pannier teams would used, indeed there are records of damage to local roads at this time by the heavy traffic.

The boil house would have been a substantial building, but as yet it has been impossible to say exactly where it stood. Using coal from Durham the liquid was separated from any solid impurities and concentrated before being reacted with burnt kelp. The alum crystallised in large casks,which were broken open to allow the crystals to be crushed.

This alum site was established at a time when market prices were high, but as so often with alum, prices fell and Ayton Banks was no longer viable by 1775. It was particularly vulnerable on two counts;
firstly because it was small-scale and secondly because of high transport costs because of its inland site. To the industrial archaeologist it is a very valuable site. It illustrates the methods of production at a precise time in the long history of alum in north Yorkshire and has been undisturbed by later 'modernisation'.
Alum had a wide variety of uses.Its production is often referred to as "The first chemical industry". It was most important as fixing agent for textile dyes and in tannng, making the leather more supple. It was also widely used in medicine, not always to the benefit of the patient!

Supported by lottery funding,a team from Great Ayton Community Archaeology Project under the guidance of Kevin Cale, a professional archaeologist, carried out a non-intrusive survey of Ayton Banks site from 2002 to 2004. Approaches were made to English Heritage who agreed to produce, with assistance from GACAP, a more detailed plan of the area. There is no record of any previous surveys or excavations.

Fig.6 Remains of one of the liquor cisterns