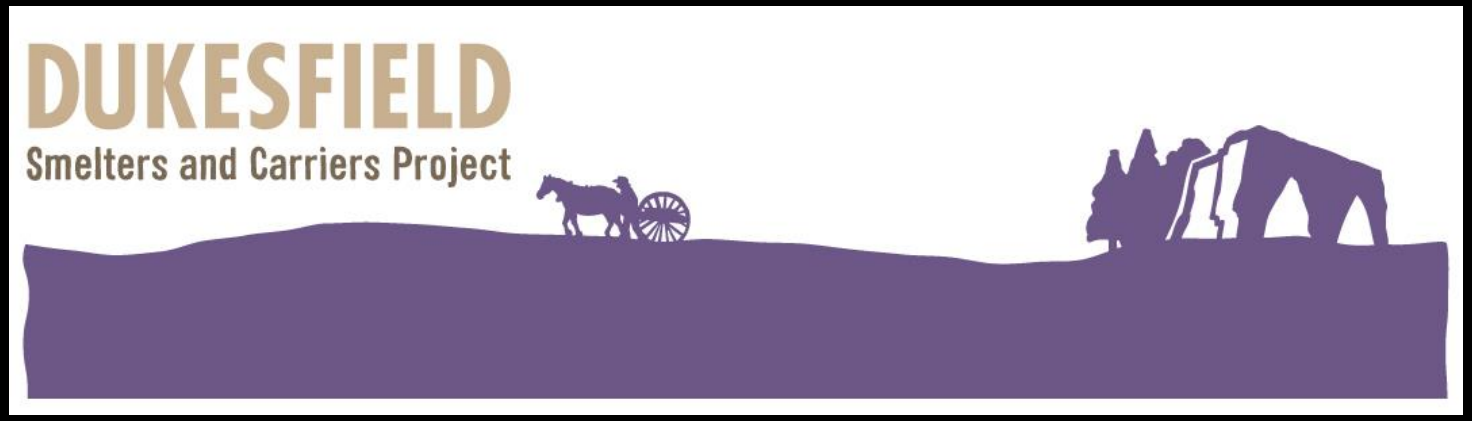



# The North Pennine Lead Industry

**Find out more:**

**www.Dukesfield.org.uk**


Roofing

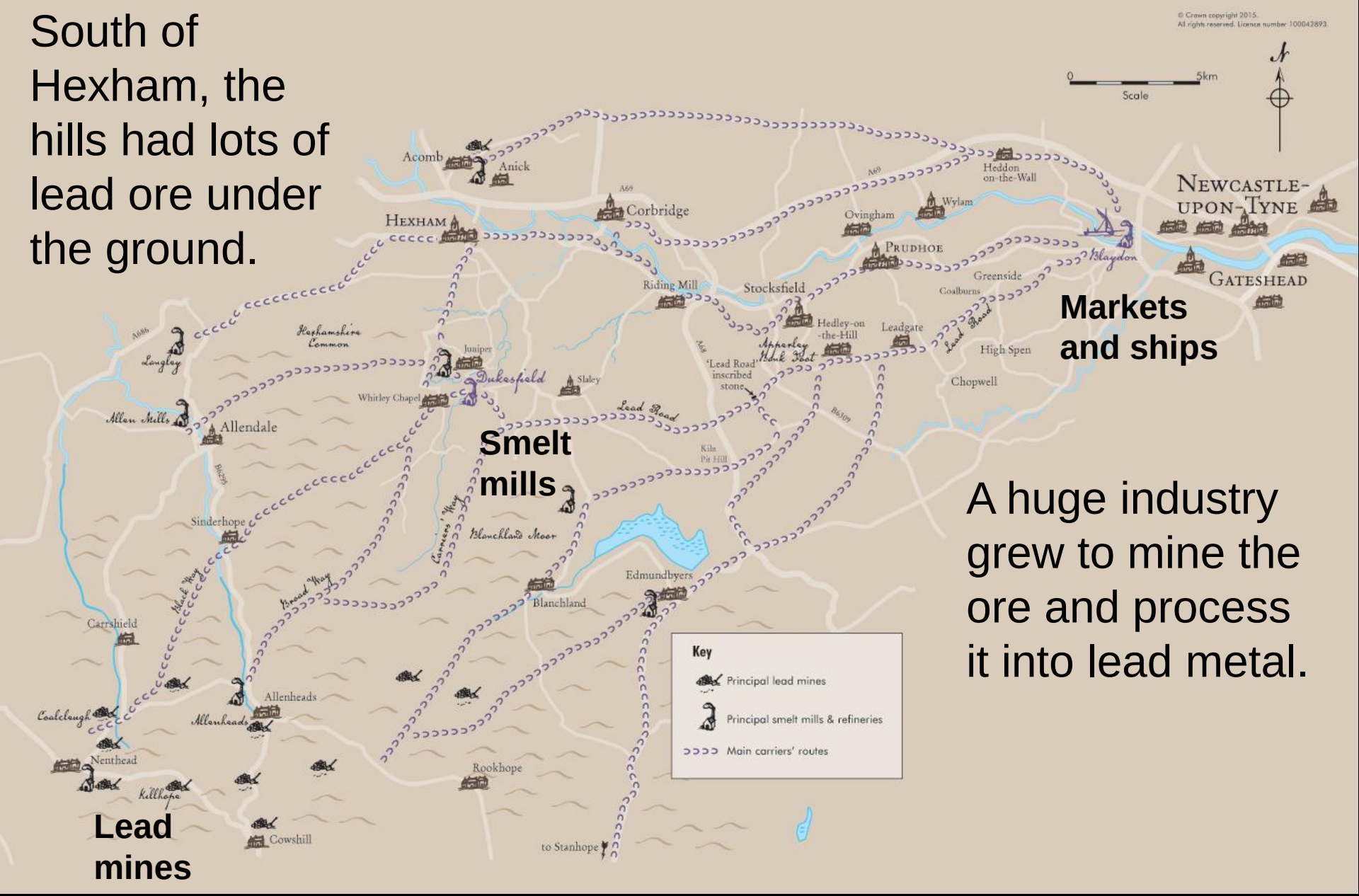
Pipes


Lead was important, because it is soft enough to bend and shape and doesn't rust. It was also an ingredient in paint and glass. It was valuable because it was so useful.


Lead shot


Crystal

South of Hexham, the hills had lots of lead ore under the ground.




**Markets and ships**

**Smelt mills**

A huge industry grew to mine the ore and process it into lead metal.

**Lead mines**


After it was mined, the ore (galena) was crushed and washed, to get rid of other rocks. It was then smelted into lead metal.

Crushing & washing

Smelting

Lead miners chiselled the galena (lead ore) from veins which run through the rock underground. They worked by candle light.

The big lumps of rock which the miners had brought to the surface, were smashed and crushed to separate the galena from other worthless stone. This included fluorspar, and other ‘bonny bits’

Smaller pieces of galena were separated out on the washing floor. They were heavier than other rocks, so stuck in the grates.

Jiggers were used to sort the very small pieces of galena.

The crushed and washed galena was measured into sausage shaped sacks. Each sack weighed 8 stones.

Carriers slung the sacks over wooden saddles on the backs of pack ponies. Each pony carried two sacks.

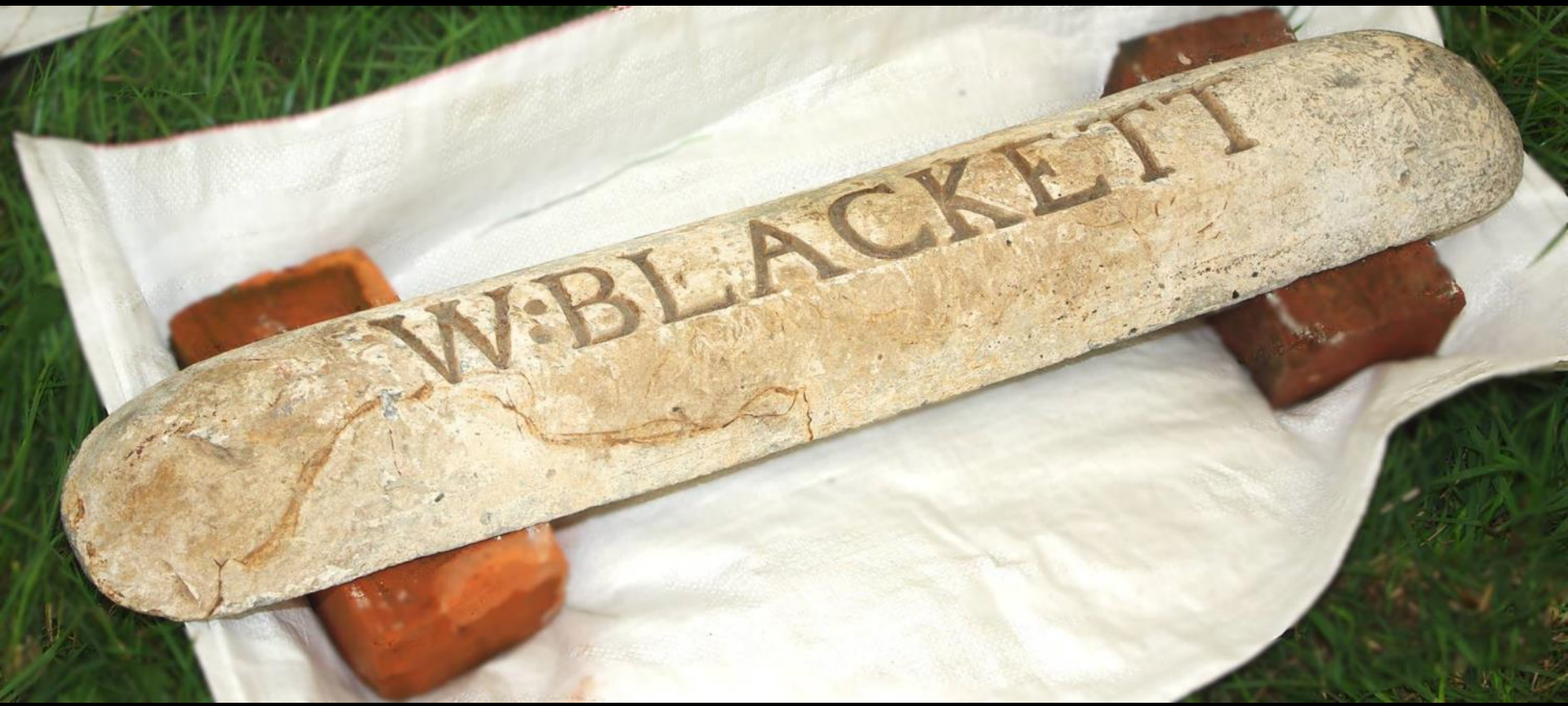
Chains of ponies carried the ore over the moors to the smelting mills. The carriers would walk with them and bring them back. That's about 20 miles every day!

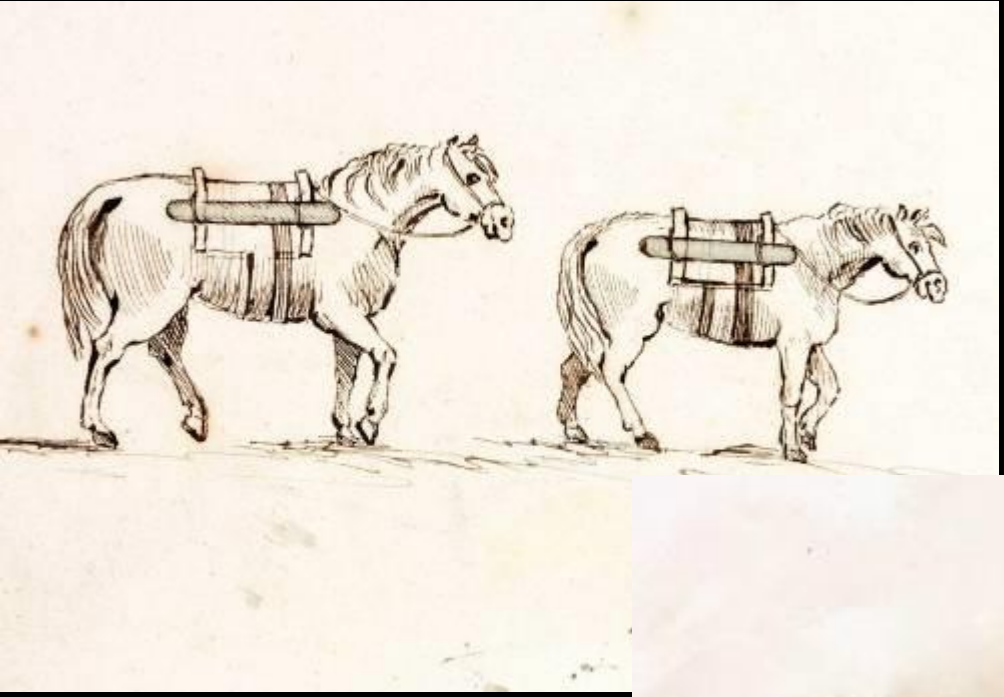
At the smelting mill, the lead ore was heated until the lead metal melted and ran off. It was cast into metal ingots, or ‘pigs’.

David Allan, Leadhills, Lanarkshire c. 1780, National Gallery of Scotland

A pig of lead was 83cm (30 inches) long and weighed 51kg (8 stone).

This one was found on the moor track leading from Rookhope in Weardale to the staiths at Blaydon. The carrier who lost it must have been very sorry – he would have been paid by how much he delivered!



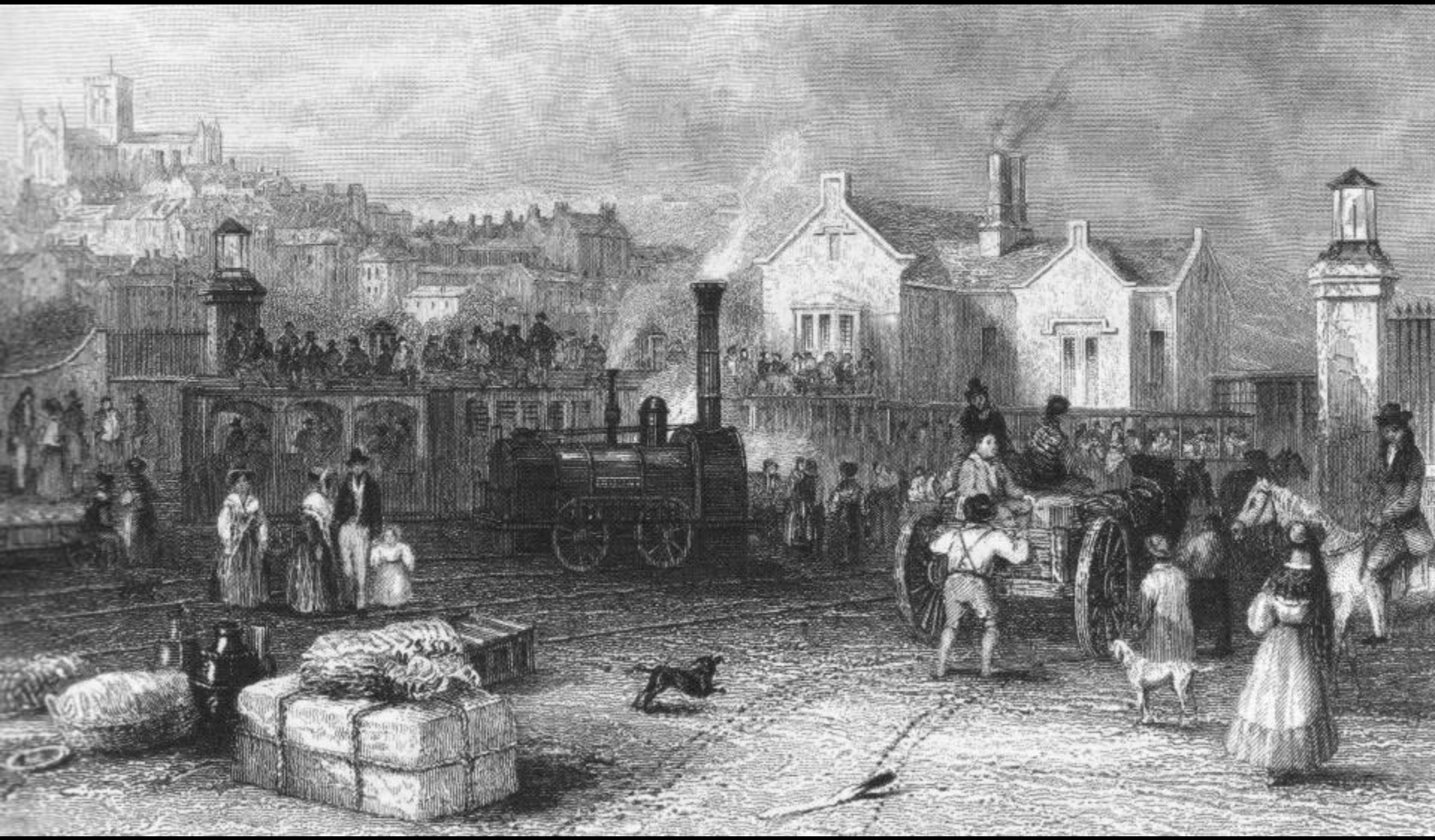


The ponies carried two pigs of lead, on their backs or on a cart (depending on the track) from the mill to the river staiths at Blaydon near Gateshead.



The lead was loaded onto boats and shipped to the factories and markets all over the country.

As the industry grew, railways were developed and built. The trains from Hexham to Newcastle replaced the pack ponies and as transport became easier, more modern smelt mills were built closer to the mines.



Hexham Railway station around 1835

Newcastle was a busy port with traders sending goods, including lead and lead goods, all around the country by boat, as the road transport was difficult and slow

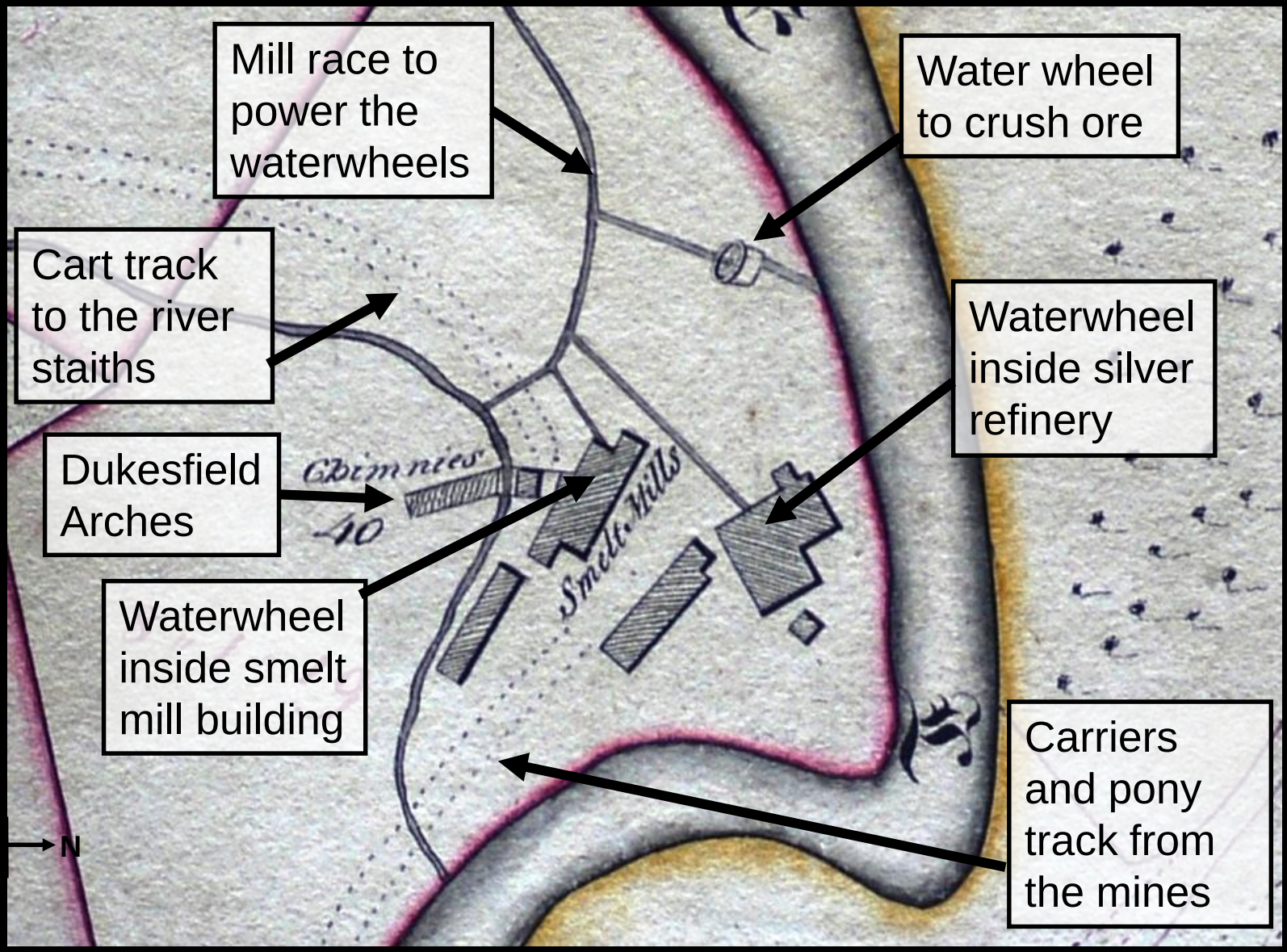
J.M.W.Turner, View of Newcastle, 1823

The Blackett family bought the Dukesfield estate 350 years ago to build a smelting mill. Their business became so successful their family married into local aristocracy, and Dukesfield became part of Allendale Estates.

Sir William Blackett I,
c1620-80

Sir William Blackett II,
1657-1705

Dukesfield Smelt Mill mapped in 1802. You can see the mill race which powered waterwheels to crush the ore and pump the bellows which made the smelting hearths burn hotter.



From the WB Lead company business accounts, researchers have calculated that…

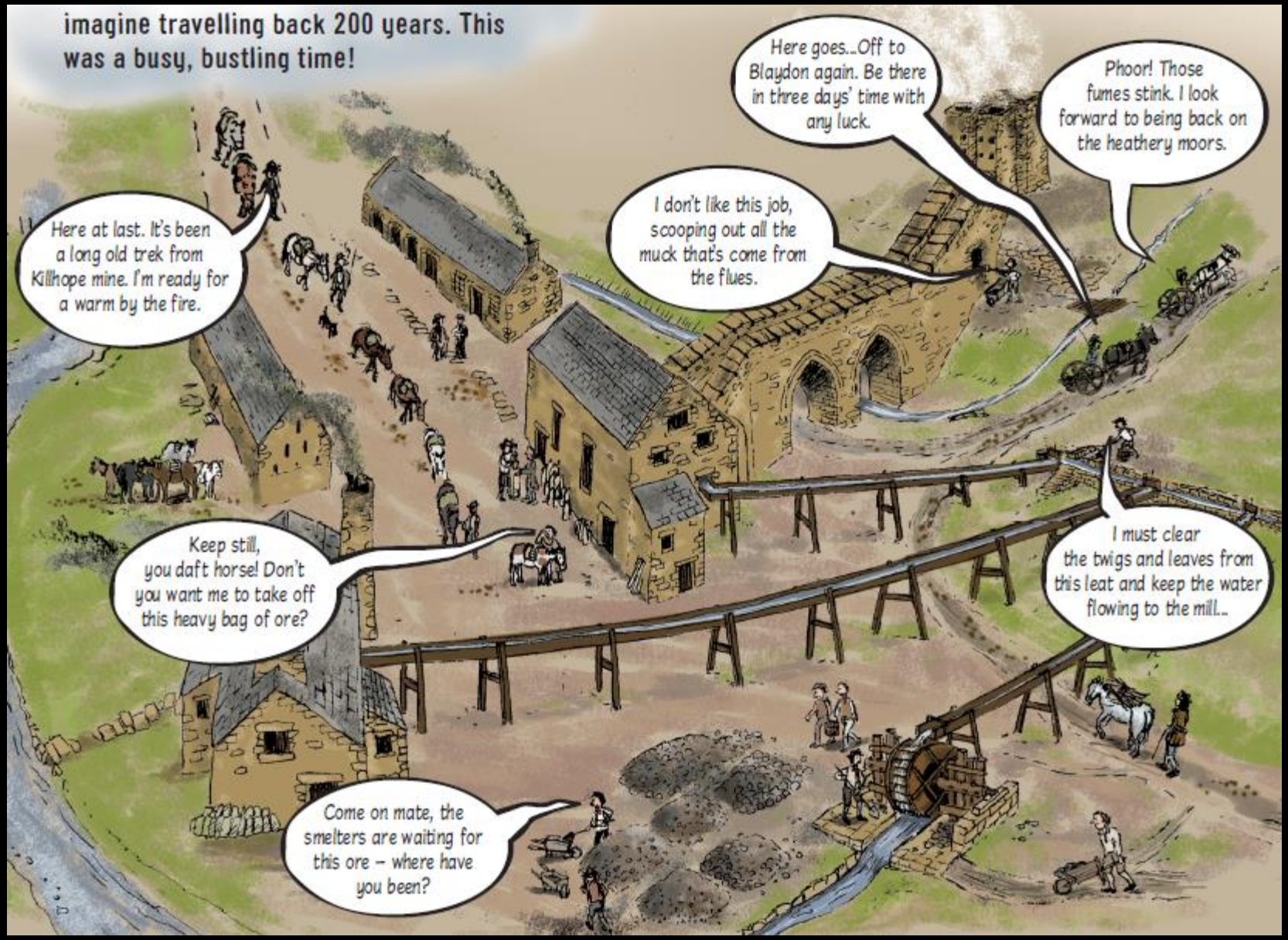
**Each summer's day at Dukesfield in 1800 there were:**

- **300 horse loads of ore delivered from the Pennine mines**
- **40 cart loads of peat from the moors to fuel the hearths**
- **160 pigs of common lead smelted from the ore**
- **50 pigs refined (purified) for silver, litharge & refined lead**
- **25 cart loads of lead taken away to Blaydon staiths**

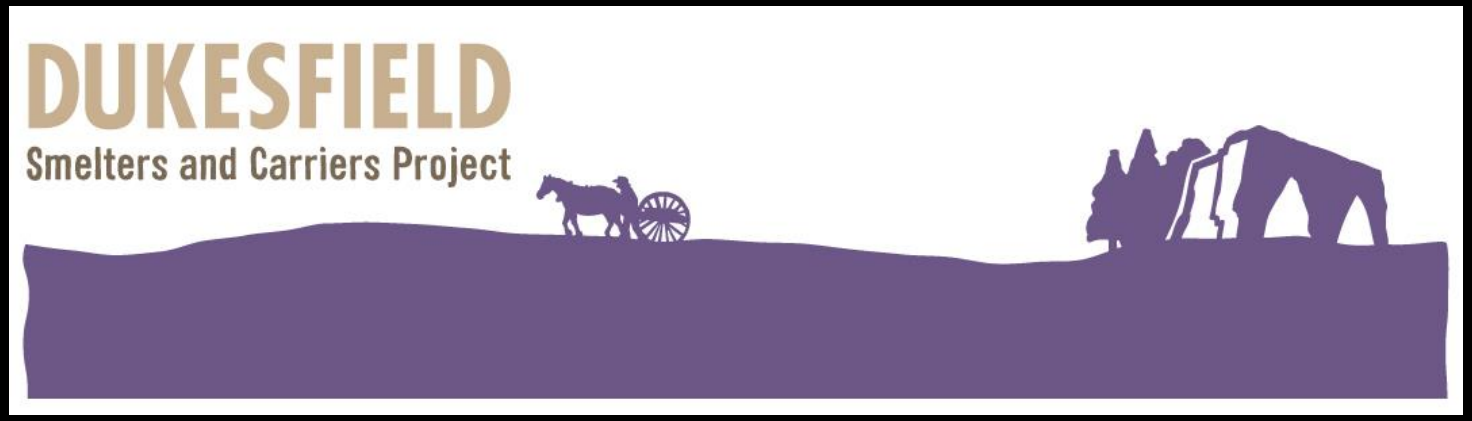
**36 smelters worked at the hearths**
**60-70 carriers and their ponies walked over the moors**

In the summer the moors were dry underfoot and the days long enough for the carriers to walk there and back in daylight. More lead ore and fuel could be brought to the mill.

This is an artist's impression of what Dukesfield Smelt Mill would have looked like. It is based on the 1802 map, recent archive research and archaeological excavations.



This is a photograph of what Dukesfield Smelt Mill looks like today.
Only the arches and the bases of the chimneys remain.
This is very different from the busy industry of 200 years ago!




More teaching resources at:

**www.Dukesfield.org.uk**