Abbeydale Industrial Hamlet

Free Self-Guided Resource for Schools

Key Stage 3

These teaching resources were made possible as part of Embrace Abbeydale, with The National Lottery Heritage Fund. Thanks to National Lottery players, we have been able to create these free resources for teachers, which give information and guidance on supporting children and young people on a self-guided visit to Abbeydale Industrial Hamlet.

Welcome to Abbeydale Industrial Hamlet

The historic heart of Sheffield's steel story

This early factory might look like a tranquil cluster of farm buildings, but these were once the noisy workshops and bustling homes of Sheffield metal workers and their families.

Generations of skilled workers earned their living here making crucible steel to a secret recipe. This steel was crafted into high quality scythes and vital farming tools that were exported around the world.

Abbeydale Works was once one of the largest water-powered industrial sites in Sheffield.

The thunderous noise of the tilt hammers and the roar of the grinding wheels would have rung out across the valley. Today, the site and many of its remarkable stories have survived for us to explore.

Crucible steel made Sheffield famous, creating great wealth for a select few. The impact of the steel industry on people, landscape and nature are still being felt today. We are working towards understanding this complex legacy.

Free Entry | Please Donate
Find our opening times at sheffieldmuseums.org.uk/openingsih or scan the QR code

Abbeydale Works by Kenneth Steel © George Longden & Son Limited

1. Blacking Shop
Scythes were packed here ready for export.

2. Hand Forges
Workshops where skilled artisans still make hand tools.

3. Crucible Furnace
The only intact crucible steel factory in the world.

4. Tilt Forge
The forge and the hammers where metal was shaped into blades.

5. Water Wheels
The water-powered heart of Abbeydale Works.

6. Grinding Hull
Where skilled grinders put a sharp edge onto blades.

7. Counting House
The business hub of the site, where orders were made, and workers were paid.

8. Workers Cottages
Homes for Abbeydale workers and their families.

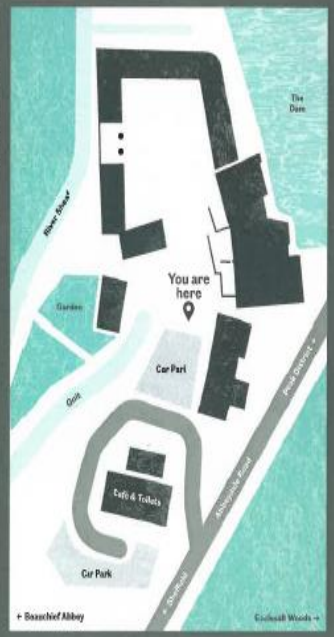
Also look out for:

Manager's House and Garden
Family home for the Manager beside the River Sheaf.

Boring Shop and Millwright's Chamber
Where scythe blades were drilled, and water wheels repaired.

Steam Engine and Boiler House
The age of steam power arrives at Abbeydale.

Abbeydale Dam Pond
Holding river water, ready to power the machinery.



Welcome to Abbeydale Industrial Hamlet

The team at Abbeydale Industrial Hamlet have put together these self-guided resources so that visiting school groups can better understand the site and its place in history. We hope to make visitors aware of the importance of sites like this, but also to help them relate to the people of Sheffield's history. These questions are designed to equip teachers with some helpful information about the hamlet, as well as some questions to help the students engage with the past. Much of history is better understood as a series of questions and interpretations, rather than simple answers about what happened. We hope to encourage students to relate to and empathise with those who came before us. Above all, we have designed these resources so that students and teachers will get the most out of their visit to Abbeydale Industrial Hamlet.

The resources are designed in a circular way, meaning that you can begin at any part of the museum and continue from there. However, we recommend that visitors begin at either the Dam or the Manager's house, working either forwards or backwards through the resources. If possible with staff numbers, teachers may want to split students into two groups and start each group from different areas of the site.

We hope you enjoy your visit to Abbeydale Industrial Hamlet today. If you have any feedback or questions about these resources, feel free to get in touch with us at:
learning@sheffieldmuseums.org.uk

The Dam and Waterwheels

Abbeydale Works was the biggest water-powered industrial site on the River Sheaf in the 19th century. The river water was held in the dam before being released to flow through the waterwheels which drove the machinery. The used water then travelled in a tunnel under the ground back to the river. The water from the dam is still used to power the waterwheels today. The dam was also used for a variety of other activities, like fishing, bathing and ice-skating.

Possible questions to ask your students:

At the dam:

- If your group is starting the trail here, you could begin by asking the students what initial thoughts they have about Abbeydale: What do you know about this place? How does being here make you feel? What do you think people did here?

- Industrial activity has taken place at Abbeydale for almost a thousand years. Life a thousand, or even a hundred years ago, was vastly different to life today. Can you think of ways the workplace and workers' lives have changed over such a long time period?

- On the other hand, can you think of similarities between work in the past and work today?

- The dam is home to a variety of animal and plant species, some of which are endangered. What risks would a working industrial site pose to nearby wildlife? How could we protect wildlife from this human impact?

Pollution:

In 1899, Tyzack, Sons and Turner (the managers of Abbeydale) were fined for allowing the dam water to become polluted, which was killing fish.

- What dangers can a body of water like this pose to humans? (Accidents from swimming/skating, waterborne illnesses etc.)

Drowning:

In 1876, 24-year old James Naylor, who worked with his father William at Abbeydale as a millwright and lived onsite, was found drowned in the dam after falling in whilst drunk. He left behind a wife and two daughters (one yet to be born), and his widow Sarah was recorded in the 1881 census as living with her father-in-law and mother-in-law, reliant on Parish Relief (an early form of benefits).

Cholera, a waterborne illness causing over 100,000 deaths in 19th century Britain:

Sheffield experienced a cholera epidemic in 1832, and there were subsequent cholera outbreaks in 1849, 1854 and 1866. Drinking unclean water is a major cause of cholera, although the link between cholera infection and contaminated water was not widely accepted until the late 1850s. The disease has now been eradicated in the UK, but can still be caught in some parts of the world. You can ask your students if they know of or have visited Sheffield's Cholera Monument for the victims of the 1832 epidemic.

At the waterwheels:

There are four waterwheels of varying sizes, with the largest spanning 18 feet/ 5.5 metres in diameter and generating around 30 horsepower (Horsepower is a unit of power approximately equivalent to how much work one horse can do. Because horses were widely used to pull carts, this way of measuring energy could be understood by most people in the 18th and 19th centuries).

- Do you think industrial practices in the 19th century were generally good or bad for the environment? How? (Can discuss burning coal, pollution and lack of environmental/health regulations, but also highlight the fact that this was a water-powered site and water is a renewable resource)

- What could be some of the advantages and disadvantages of powering an industrial site by water?

- Should we take some inspiration from Abbeydale and think about using more water power in the modern world? What types of renewable energy sources are used today; can you think of examples of how they are used?

Students may ask:

- **Do the waterwheels still work/is the dam still used?**

Yes! Although the water in the dam has been lowered after a problem with leaking, when the leak is repaired the dam will be refilled and the waterwheels will run again.

Workers' Cottage

Three workers' cottages were built on the Abbeydale site in 1793.
Each cottage had an allotment garden outside in what is now the car park.
These cottages were 'tithed', meaning that to rent one you would have to be a worker at the Abbeydale site. Many generations of one family lived in the cottages, with some sons following in their fathers' footsteps to also work at Abbeydale. This highlights how workers' skills often passed through the generations, but also the difficulty of social mobility in the Victorian era.

Possible questions to ask your students:

- What do you think is missing from this house? (Some possible answers could be an indoor toilet/bathroom, running water, electric lighting, heating, fridge/freezer. If you have already visited the Manager's House, invite comparisons between the home life of the middle class as opposed to the working class.)

- How do you think the people living here stayed warm/lit the house/got water?

- Where do you think food was stored in a small house like this? (The door under the stairs leads down into a pantry cellar, where food was stored in a dark and dry environment in a time before fridges and freezers).

- Some of the families who lived here had up to 10 children. What could be some of the problems of overcrowding? (As well as a lack of privacy and resources, overcrowding usually led to poor hygiene and infectious illnesses like smallpox spreading quickly)

Smallpox, one of the most common causes of death in mid-19th century Britain:

Abbeydale Works hit Sheffield's headlines in 1880 when scythe maker Alfred Wolstenholme was taken to court and fined for refusing to have his baby son vaccinated against smallpox. The 1853 Vaccination Act made it compulsory for all children born from 1853 onwards to be vaccinated against smallpox in infancy, but Alfred was vehemently anti-vaccination and even referred to it in court as 'an unmitigated evil'. In 1893 Alfred was again in the newspapers after he and one of his children were hospitalised with...smallpox!

- What do you think life was like for the housewives of Abbeydale workers? (some points to discuss could be: the large amount of housework to do without modern appliances; women's dependence on their husbands due to lack of education and subsequent lack of paid work opportunities; the dangers of serial pregnancy and childbirth in a time of large families, before birth control or even routine hospital births. Emphasise that, unfortunately, these difficulties still affect women all around the world today.)

Women's dependence on their husbands:

John Smith worked at Abbeydale from 1849 to 1875 and had five surviving children with his wife Catherine. John's job came with one of the tied cottages, but when he died in 1875 Catherine lost the tied cottage. Her two adult sons with John had already died young, leaving her little choice but to move in with her daughter and depend on the income of her son-in-law.

Sarah Naylor, whose husband James drowned in the dam in 1876, ended up living with her parents-in-law and her two children, and relying on poor relief.

Students may ask:

- **How did the people living here stay warm?**

Point out the fireplaces downstairs and upstairs, the rugs and curtains used to provide insulation, and the multiple blankets on the bed, but stress that it would still feel very cold indoors in the winter! Some students may notice the warming pan on the bed. The pan would be filled with embers from the fire and put under the covers to warm the bed up. The long handle made it easier to move the pan around the bed and carry it without burning yourself.

- **How did people see after dark with no lights in the house?**

The workers and their families would use portable light sources like candlesticks and oil lamps. Over in the Manager's House, the manager's wealthier family had the luxury of two oil lamps.

- **How did the people living here wash/get water?**

Water would have to be collected outside and brought into the house to be heated up and used. The toilet was outside and was shared between everyone living in the three cottages. The inhabitants of the cottage could use chamber pots at night to avoid having to go outside to the toilet in the cold.

Grinding Hull

The grinding hull is where tools at Abbeydale were sharpened, the site's water wheels powered grindstones inside that grinders would use to sharpen blades.Grinders would sit behind the spinning grindstones and move the blades on them to create a sharp edge. For further information see the interpretation board.

Possible questions to ask your students:

- Looking around this room, what are the first things you notice? What does it make you think of or feel?

- The work done here was very dangerous. Grinders would sharpen blades on spinning grindstones, with little protection from the possible dangers, not to mention grinder's lung disease caused by inhaling all the dust. How do you think this kind of factory work has changed since then? Why has it changed?

- Records from Sheffield Cemetery show that a lot of Grinders died young, between 16 and 60. One example is William Staniforth, a scythe grinder who died in 1859 aged 37. What would have been the dangers of working on a site like this? (Dangerous machinery, sickness, pain, lower standard of living).

- The grindstones were powered mainly by direct water power through the waterwheels, but also through the site's steam engine. What do we use now to power our technology? How is it different from industrial technology? (Using electricity, renewable energy, solar power, nuclear power and the move away from fossil fuels being a priority).

- What kind of skills would you need to be a grinder?

- Phrases like 'The daily grind', 'keeping your nose to the grindstone' and more recently, 'rise and grind', have their origins in this kind of work. Why do you think this job inspired those phrases?
-

Bonus Question: Why were the tools important in the first place? For their practical use of course but also reputation building for Sheffield and the UK.

Students may ask:

- **How and why were the tools sharpened?**

The spinning grindstones were powered by **the Dam**'s waterwheels and sometimes the steam engine on site. The grinders would run the blades along the spinning grindstones to make a sharp edge. The blades needed to be sharp for use on farms and the strong steel made at Abbeydale helped bring money and fame to the city's industry.

The Steam Engine, Boiler and Tilt Forge

General Notes: There is a lot to see between these three features.
If possible with staff numbers, teachers may want to separate their students to look at different sections of the stop.

The Boiler, or the foundations of where the boiler once was: These foundations once housed a boiler to heat the hamlet. In 1870 the boiler exploded causing one death and several injuries. This speaks to the lack of regulation in places like this during the 19th century. For those in charge of sites like Abbeydale, the fines for accidents like this one were lower than the cost of introducing safety measures, so little was done to ensure the workers' safety.

Possible questions to ask students:

- A boiler of this size is obviously far bigger than any of us have at home. Why would a site like Abbeydale require such a huge amount of heating? (Providing steam for the engine in the next room, providing power for machinery and heating the adjoining buildings).

- Two men named John Beighton and James Palmer died when the boiler here exploded in 1870. The explosion was ruled an accident and not much changed in terms of health and safety on the site. How would it be different if it happened today?

- Why did the safety of workers not concern managers very much? What was more important? (The fines issued for workplace injury or death were cheaper than it would have been to introduce safer measures. Workers had far fewer rights than today. Abbeydale was out of the city centre so a little removed from the hustle and bustle, which made it easier to cover up accidents. The working class also lacked access to the press, unlike in the modern day where people can start recording a video and post it on social media to expose their employer)

The Steam Engine Room: This steam engine is the only one in Sheffield that is still in its original site and has been restored thanks to the work of historical engineers and restoration specialists. It was added to the site in the 1850s and helped to power the machinery at Abbeydale when there was not enough water in the dam to do so.

Possible questions to ask students:

- Have you seen a steam engine before? Can you think of anything else that might have used steam engines for power? (Trains, Ships, Mines, Factories).

- Why was steam power so important to the British Empire at this time? (Better technology results in more power with which to dominate other countries)

- Even though this seems like just local history, the steam engine was hugely important as both a result of and a tool in building global connections. One example is that some of the research that led to the steam engine's invention was funded by transatlantic slavery[1]. Can anyone think of anything else that depends on nations being connected to each other? (Media, Communications, Trade and Finance, Economy, Diplomacy, Food and raw materials).

The Tilt Forge: It was in this room that scythes were made by welding steel between iron. When the site was actively making tools, this room would have been filled with the sound of the huge hammers powered by the waterwheels and the heat of molten metal.

Possible questions to ask students:

- What stands out immediately about this room? What can you see, smell or feel?

- What would be the advantages or disadvantages of working in a place like this? What alternatives might be available? (Advantages may include that it is skilled work, apprenticeships with the potential for a career, it's better than agricultural work or seasonal employment).

- Even though the people here worked tirelessly, most of the money went to either the managers, owners or people who never set foot on the site. Do you think that's fair? If you were the owners of Abbeydale, how would you change things?

- It was common for people close to your age to be working at places like this. Could you imagine yourself working here? What would be the challenges?

- What kind of skills would you need to work in the Tilt Forge? What skills might transfer well to modern jobs?

- Steel became an important part of Sheffield's identity and reputation. Can anyone think of anything else Sheffield might be famous for or things you like about the city? If you're not from Sheffield, what is your hometown famous for? (Possible answers might be Music related, Football, Green spaces, The Peak District)

Students may ask:

- **About how the process worked:**

It was here that pieces of steel were heated up to over 1000°C between two pieces of iron, like a metal sandwich! Once they were heated up they were passed underneath the hammers and banged into shape. Then they would be taken to a different forge outside to be hand shaped.

[1] Eric Williams, *Capitalism & Slavery* (Chapel Hill: University of North Carolina Press, 1994).

Crucible Furnace, including the Potmakers Store and the Cellar

Here men worked in extreme heat with very little protection to forge the crucible steel. While it is hard to prove where exactly crucible steel was first developed, the unique 'recipe' used at sites like Abbeydale was part of the reason Sheffield became so synonymous with steel production. There is not much space in the building so again, if possible with staff numbers, teachers may want to split the children into groups to look at different sections.

Possible questions to ask students:

In the Charge Room:

- Does manual and practical work like that done at Abbeydale interest you as a career? Do you prefer more theoretical work? Perhaps something different entirely? Why?
- It was here that they made the steel for the tools and it would get extremely hot, (up to 1600°C). What kind of clothes would you have to wear? (The workers only had leather and water-soaked sacking to protect themselves).
- In all of these jobs, only men were employed to do the work. Why is that? How has the workplace changed, especially regarding women in the workplace?
- A huge impact we feel today because of the Industrial Revolution, is climate change. How do you think a site like Abbeydale affected the environment?

In the Potmakers Store and Cellar:

- Young people not much older than yourselves would have to work in places like this? How does that make you feel? What would you ask a child from this time if you could?
- Pot makers would travel all over the country to do their work. What challenges do you think that would present?
- At this time, education was a privilege for the wealthy, with most young people having to work. How do you think Victorian families may have been affected by this?

Bonus Question: Everywhere you have seen so far is kept in good condition by a team of historical engineers. Do you think it's important to preserve our past? Why or why not?

Students may ask:

- **Why do they put the metal in the holes?**

They are called melting holes. The team would lower the steel mixture in and close the lid to keep it hot enough. It could take up to four hours!

- **Why are the pots on the shelf destroyed?**

Those pots are the ones that have been used and been damaged by the process.

The Blacking Shop

The Blacking shop was where the last steps of the scythe-making process were carried out. Here the finished scythe blades would be painted with a special black varnish to prevent rusting (hence the name of the workshop), then dried in front of the fire. When the blades were dry, they would be wrapped up in straw rope (as seen on the workbench) ready to be stored in the warehouses on the site and then shipped out across the country and abroad.

Although there is a lack of evidence for women working in Abbeydale's blacking shop, at some of the other works managed by the Tyzack family, who ran Abbeydale from 1849 to 1933, women often worked in the blacking shops.

Possible questions to ask your students:

- This was a particularly busy workshop with plenty of workers gathering around the hearth to take their breaks, eat, and chat. Would you prefer to work in a more social environment with lots of coworkers, or work more independently in a personal space?

- What dangers do you think workers here had to deal with? (Highlight the sharp scythes, the furnace, the damage to the workbench from the tools, and the lack of protection for the workers' hands and eyes) Do these working conditions seem safe/fair? What sort of regulations do you think would be implemented in such a workplace nowadays?

- Why was it so important to polish and package up the finished scythes? (Protecting the blades, but also a business owner would want the scythes to look good and impress the people who bought them to create a good reputation for Abbeydale products, which were sent all over the world)

- How would you sell the scythes if you were in charge at Abbeydale? What advertising could you use to encourage sales? (Students may reference modern advertising methods, but you could also challenge them to think of how they would promote the products with only 19th century resources available)

Students may ask:

- **Where did the stairs lead to?**

The stairs went up to the warehouse where the packaged scythes were stored before being exported.

- **What was kept in the large container?**

Whale oil, used to lubricate the scythes. Whale oil was used generally as it is thin and non-corrosive and stays in liquid form even in freezing temperatures. At Abbeydale, whale oil was applied to hot scythes as it could bring the temperature of the metal down without affecting its high quality. Commercial whaling was effectively banned in 1986, which in turn almost completely ended the use of whale oil.

The Works Gallery

Here may be a good place to reflect on what you have seen so far with a bit more space for the students. You can learn more about the different jobs that were done at Abbeydale and talk about what the students think.

Possible questions to ask students:

- What does a place like this make you feel or think? How would you explain this museum to other people who haven't visited?

- Do you think places like Abbeydale are important? Why or why not?

- What has been your favourite part of the museum so far? Why is it interesting?

- Steel was and remains an important resource around the world. Its origins, developments and uses spanned the globe. Can you think of any countries outside of the UK that might have been involved in either making or using steel? (Possible answers include, but are not limited to: Russia, USA, France, Germany, Brazil, China, Australia, India, Sri Lanka, Sweden, Norway.)

- Inequalities of these resources and the countries that sought them have left deep impacts on our modern world. How do you think the past affects the present?

- Everywhere you have seen or will see on this site is maintained by a team of historical engineers and restoration specialists. Do you think it is important to preserve the past? Why or why not?

- Convincing people to buy these tools was also important. How would you advertise Abbeydale steel?

Bonus Question: Do you think the people here knew how dangerous but important their work was? What questions do you think people in the future will want to ask about the way we live now?

The Manager's House

This was the family home for the manager of Abbeydale Works, built in 1838. The coach house and the stables were added in 1840. Today it's furnished to show what home life was like for a lower-middle class family in the late 19th century.

One family who lived here were the **Tyzacks**. Three generations of this family ran Abbeydale for 85 years, beginning in 1849.

If your group is finishing here, you could ask the students, from what they've learned and can remember so far, what events, changes or difficulties the Tyzack family would have experienced during their tenure as managers.

Students can also be encouraged to compare the features of this house to those of the **Workers' Cottage** and evaluate the different lifestyles of the middle class and working class in the 19th century.

Possible questions to ask your students:

- What do you think is missing from this house? (Some possible answers could be an indoor toilet/bathroom, running water, electric lighting, heating, fridge/freezer)

- How do you think people in this house might have kept warm without heating/got water/found light at night?

- What do you think life was like for the housewife of an Abbeydale manager? (In many ways an easier life than that of a working-class woman, with the ability to hire domestic servants, a driver etc. However, middle-class housewives were not exempt from financial dependence on their husbands, nor from the dangers of pregnancy and childbirth in the 19th century.)

- If your group is finishing the trail here, invite them to reflect on their visit: What lessons can we learn from how Abbeydale was run in the past? Overall, what things do you think were good and what are you glad has disappeared?

- What difficulties can you think of in preserving a heritage site like this? (Maintenance of buildings and machinery, financing this maintenance, finding people with the skills to do the maintenance. Attracting visitors to your site!)

Students may ask:

- **Why does the (master) bed have curtains around it?**

In the Victorian times bed hangings were common for families who could afford them. They allowed the manager and his wife to have some privacy from their children and from servants in a time when houses were generally smaller and families generally larger, and were also a status symbol.

- **When did Abbeydale close down? Why?**

Abbeydale Works ceased production in 1933, when the managers, Tyzack, Sons and Turner decided to concentrate all their manufacturing at another site on the River Sheaf, the Little London Works. Without the demand for the site's steel, Abbeydale lay dormant for several years. The hamlet was reopened for a short period during WW2 when its high quality crucible steel was made again to aid the war effort, and has been open as a museum since 1970.