

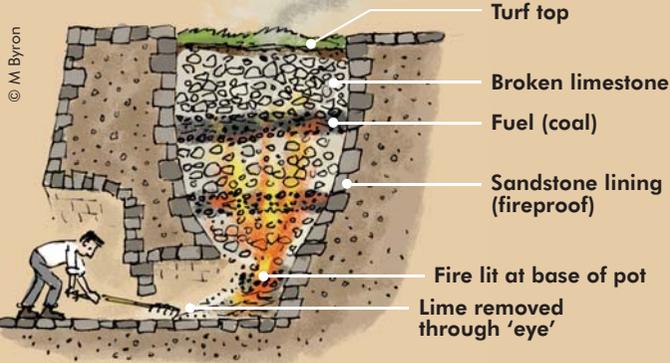
## Working rocks

Quarrying, especially for Magnesian Limestone, has been an important local industry for centuries and nearby Quarrington Hill and Raisby quarries are still active. Over the years the Magnesian Limestone has been quarried for a wide range of uses: as a building stone, to produce agricultural lime (see below), as a flux in iron making, in the manufacture of chemicals and as a crushed stone (aggregate) for the construction industry.

Today, the rock is quarried mainly for use as an aggregate, but some is still used for agricultural purposes and as a flux. The Yellow Sands are worked for use as a building sand.

## Lime from stone

Lime-making was once a widespread rural industry. Crushed limestone was burnt in kilns to produce quicklime, which was mixed with water to make 'slaked' lime. Lime was used to neutralise acid soils on farmland and in building as a lime putty or mortar.



Inside a limekiln



**Workers at Raisby Limekilns from around the early 19th century. Limestone was burnt with local coal in these kilns to produce lime.**

Raisby Kilns are about 1km east of Coxhoe. Partly hidden in trees, they are nevertheless an impressive sight and still contain lime from the last burning many decades ago.

The Limestone Landscapes Partnership is working with many different people to conserve the landscape, wildlife and rich heritage of the Magnesian Limestone and to enable communities to learn about, enjoy and celebrate their local area.

This walk is one of five we have produced which introduce the unique geology of the Magnesian Limestone Plateau.

- 1 Marsden cliffs and Souter
- 2 Sunderland City Geotrail
- 3 Tunstall Hills
- 4 Nose's Point, Seaham
- 5 Coxhoe



Please report any issues with paths on this route on 03000 265342 or email [pro@durham.gov.uk](mailto:pro@durham.gov.uk).

For information on the Kelloe Way and the Local Nature Reserves contact [countryside@durham.gov.uk](mailto:countryside@durham.gov.uk) on 03000 264589

Harvey Wood is managed by The Woodland Trust: [www.woodlandtrust.org.uk](http://www.woodlandtrust.org.uk) Telephone 0800 026 9650

This project has been coordinated by Groundwork NE & Cumbria; Changing Places, Changing Lives – one green step at a time. Find out more at [www.groundwork.org.uk/northeast](http://www.groundwork.org.uk/northeast) or follow us on Facebook and Twitter.



We would like to thank Durham County Council, the Woodland Trust and Coxhoe History Group for their help.

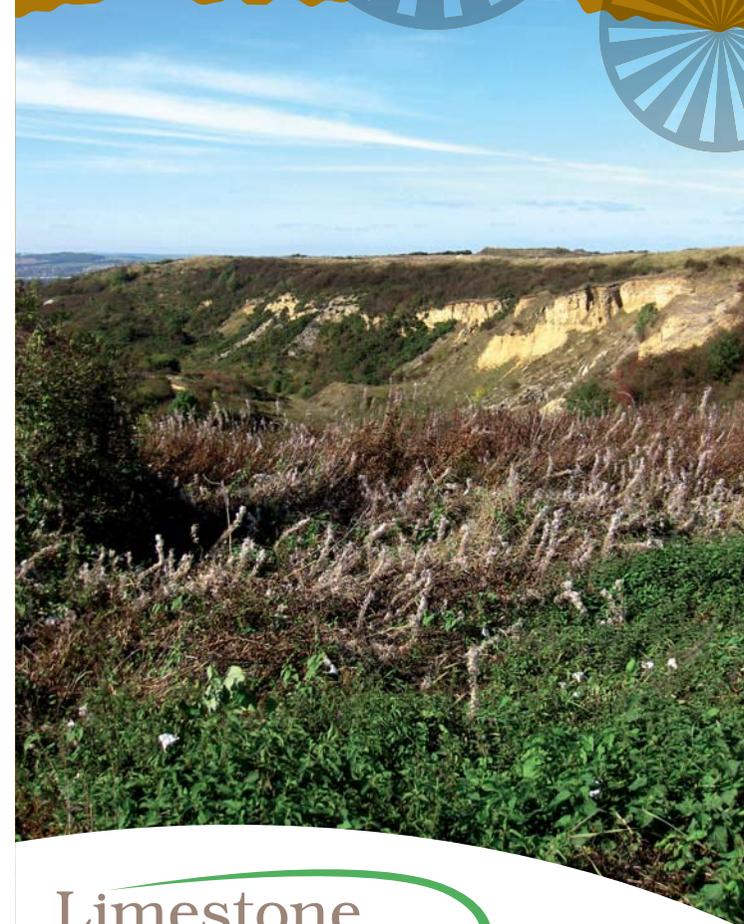


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## A Magnesian Limestone Geotrail. Walk 5

# Coal, clay and quarries

A 7-mile walk in the lovely countryside around Coxhoe, with surprising views



Limestone  
Landscapes

Making a positive difference to the unique environment of the Magnesian Limestone area

## A walk on the Magnesian Limestone Plateau

This walk is one of five self-guided trails that help you to explore East Durham, South Tyneside and Sunderland and find out how the geology has influenced the area's natural habitats and the lives of local people.

Together the walks offer a fascinating overview of the many processes that shaped the landscape you see today.

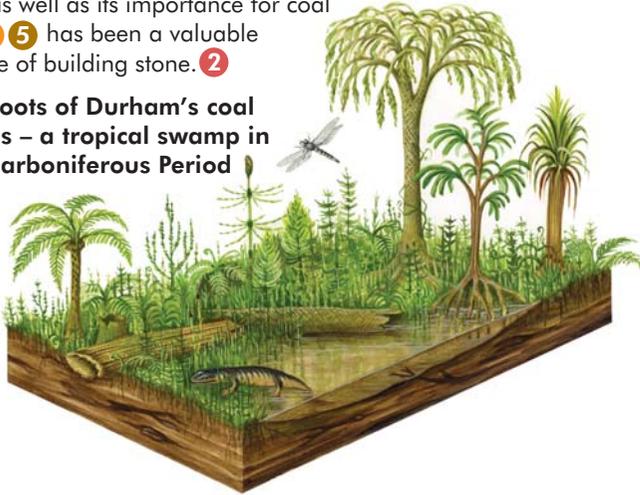
## Introducing the area's geology

The numbers in circles show which walk is best for seeing a particular geological feature.

310 million years ago, in the Carboniferous Period, this area was part of a large continent that lay across the equator. Low lying tropical swamps covered the land. Dead trees and other plants built up as a layer of peat, which was then buried under layers of sand and mud. Eventually the peat hardened to form coal seams and the sand and mud became sandstone and shale. This sequence of rocks is known as the 'Coal Measures' and as well as its importance for coal

① ④ ⑤ has been a valuable source of building stone. ②

**The roots of Durham's coal seams – a tropical swamp in the Carboniferous Period**

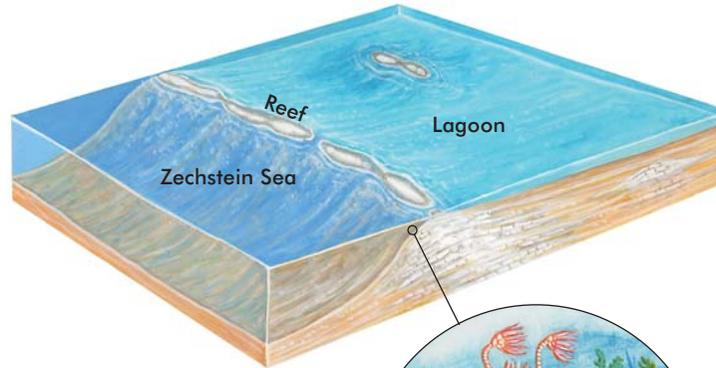


About 300 million years ago the land moved slowly further north of the equator and the climate became hotter and drier. This area became a barren desert covered by sand dunes. The remains of these dunes, the 'Yellow Sands', are quarried today for building sand. ⑤

A large part of the desert lay beneath sea level and around 260 million years ago, in the Permian Period, water from the surrounding ocean flooded it to create a shallow inland sea, known as the Zechstein Sea. Over the following several million years the sea level rose and fell several times, causing the Zechstein Sea to periodically dry up.

A reef formed a barrier running roughly in a north-south direction, separating a shallow lagoon to the west from deeper water to the east. The reef can be seen today as a

number of hills in the area, including the Tunstall Hills featured on this walk and Beacon Hill near Seaham. ④ A large variety of animals lived on and within the reef. Tiny fragments of shell and skeletal remains built up as lime-rich mud on the sea floor. It is this limy mud that eventually became limestone. In places fossilised shells can still be seen in the rock.



**The Magnesian Limestone reef and a close-up showing some of its many sea creatures**



During periods of falling sea level, the hot arid climate caused the sea water to evaporate, making it much saltier. Salt minerals known as evaporites built up on the sea floor. Thick salt deposits still exist deep beneath the surface further south, but in this area they have dissolved, causing the rocks above them to collapse. ① ④

This area continued to drift north for 250 million years until it reached where it is today. We do not have any record of the geology of the area during that time as any rocks formed have been removed by the work of rivers and seas. Some of these 'missing' rocks have been quarried elsewhere and brought into the area for building stone. ②

Over the last 2.5 million years the climate alternated between colder periods ('ice ages') and warmer periods. At times, ice sheets up to 1km thick covered County Durham and the North Sea. The ice finally melted about 15,000 years ago. The action of the ice and meltwater were largely responsible for shaping the landscape you see today. Rivers and seas continue to wear away the land, deepening valleys and further altering the dramatic coastline. ① ③ ④ ⑤

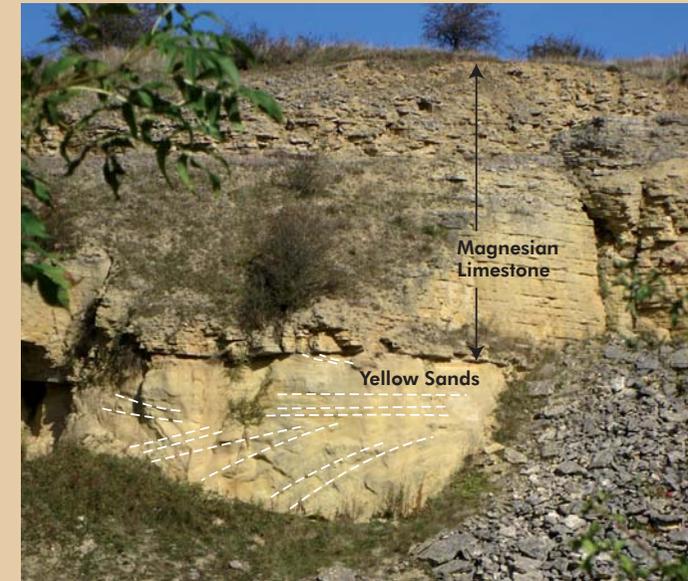
## Sands of time

The 'Yellow Sands' that you can see in the lower part of Cold Knuckles Quarry face are the dunes of an ancient desert that covered this area 260 million years ago in the Permian Period. This was a hot arid land, very much like parts of Africa or the Arabian Gulf today.



This picture of the Namib Desert shows how the area might have looked 260 million years ago.

The dunes that make up the Yellow Sands were vast. Studies have shown that they formed great ridges one to two kilometres apart and up to 60 metres high. As desert winds whipped sand across the barren landscape, the dunes shifted and traces of their movement are preserved in the rocks we see today. Sloping layers in the rock reflect the movement of dune slopes (the dashed lines in the image of Cold Knuckles Quarry below). Known as cross-bedding, this feature can tell geologists in which direction ancient winds blew.



## Walk information

### Exploring the industrial history & geology of Coxhoe, Kelloe & Quarrington Hill 7 miles/11.5km

There are quite a few steady climbs, mostly on well-graded paths that are also used as cycle routes.

**A** There are several road crossings on the walk. Please take care, especially crossing the B6291 where the national speed limit (60mph) applies – traffic can be moving quickly.

Keep dogs under close control; preferably on a lead. Take care on cycle paths for other users – cyclists and horseriders.

**P** In Coxhoe; walk starts from the pit wheel on the village green

**B** Route 56 Durham to Bishop Auckland via Coxhoe and Ferryhill [www.arrivabus.co.uk](http://www.arrivabus.co.uk)

**C** Cafes and shops in Coxhoe, Quarrington Hill and Kelloe

**I** Coxhoe Village Hall

## Directions

**1** From the pit wheel **a**, take the tarmac path cutting across the green to a road (Pettersen Dale). Take the next left (Beechfield Rise) and look for a footpath on right, just before the first house. Follow this between houses and a hedge **b**, to a driveway then a road.

### **a** A village built on coal, clay and quarries

Coxhoe is here because of the geological resources on which it is built. Coal seams underground and valuable sources of sand, limestone and clay have all helped build today's settlement. The village had its industrial heyday in the 19th century. Coal mining, quarrying, brick and tile making and other industries flourished, helped by the expansion of the railways. The village grew from a small hamlet of 117 inhabitants in 1801 to a bustling town of 3,904 in 1841. Although most of these industries have gone, quarrying remains, and there are many other reminders of the area's rich industrial heritage to be seen on this walk.

### **b** Water source

About half way up the climb from Beechfield to Coxhoe Quarry Wood is a natural spring. Groundwater makes its way through fissures in the underlying Magnesian Limestone – an important source of good clean water in the past.

### **c** Coxhoe Quarry Wood

Centuries ago this area was quarried for its Magnesian Limestone, but it is now a lovely wood of ash, beech and sycamore trees.

**2** Cross the road with care **A** and climb the steps on the other side to a wood. Cross a low wooden fence and turn right, then right again through a wooden squeeze stile. At main path junction turn left. Follow this main path through wood **c**, ignoring waymarked path on right. Where path meets metal barrier and squeeze stile go through stile and turn immediately right to walk along top of field to another squeeze stile.

Follow this path through woodland, bearing left as path narrows to come to a path junction. Turn right and follow this path to and down a set of wooden steps to the entrance to a disused quarry.

**3** Cross the main road **A** into the entrance to the Household Waste Recycling Centre. Turn left, following the access road downhill. At cycleway sign (Quarrington Hill, Kelloe & Cassop) turn right. **d** Follow this well-surfaced track for 1km to a junction with another track on the left. **e** To see the viewpoint and panel keep straight ahead for 20m, but for the main route turn left down to and through a metal gate and wicket.

**4** Keep on track through second gate and wicket, which narrows as it descends through woodland. You will come to a stone structure ahead, all that remains of Crowtrees Colliery. **f** Keep on path, following it round to right then left, crossing a low wooden barrier as the path narrows and climbs to meet a sandy track. **g** Turn right and follow this track as it zig zags up to a road.

**5** Turn right, following pavement. At a crossroads turn left **A** passing the Half Moon pub on left, and then Cassop Primary School after another 300m. Where pavement ends, cross road **A** to a small parking area. Walk past metal barrier along the hedge-lined track ahead.

**6** After 100m look for metal wicket on left. Go through this and follow wide green path through new woodland planting ('Harvey Wood'). At

### **h** Of mines and men...

As you emerge from the trees you are walking through the site of East Hetton Colliery, which opened in 1836 and closed in 1983. The scale of industry here is hard to imagine now – in the 1890s the mine employed around 1,500 men, with over 1,000 working underground. Even as recently as 1980 it was still employing 907 men. The ground here is scattered with bits of coal – all that remains to tell of 150 years of blood, sweat and toil.

### **i** The power of ice and water

From here you get a good view over a winding valley with steep sides and a flat bottom. This is an excellent example of a glacial meltwater channel. About 20,000 years ago this area would have been covered by up to a kilometre of ice. When the ice melted torrential meltwaters carved deep channels like this.



top of rise and crossing of paths turn right and follow this new path to another metal wicket. Through the wicket cross a gravel track and keep straight ahead on faint, wide path through sparse woodland. Eventually the path narrows and descends through conifers, before coming out into an open area. **h** Keep straight on to the edge of a distinctive valley. **i**

**7** Turn back and take path just to the left of the one you came in on. Bear left at next path junction and follow path down to road. Cross the road **A** to head along the cycleway ('Kelloe Way') **j**. After about 500m cross a road **k** and keep on the Kelloe Way which drops down to cross another road, before continuing along the valley.

**8** After about another 400m you cross the access road for the sewage works. After another 350m look for a metal wicket on your left. Ignore this but turn right on a small (sometimes muddy) path over a metal footbridge, across a wooden stile and up a steep meadow, with an old hedge on your left. At the road turn left and just after the bus stop keep left on byway. After the buildings of Coxhoe East House look for stone gateway into woodland on your right. This takes you past the ruins of Coxhoe Hall. **l** Keep on path which emerges onto the road again. Turn left, then first right down track (public footpath sign) **m**. As the track levels out go through gap next to metal field gate. Follow the field edge all the way to a small wooden bridge over a ditch. Over stile turn left to follow field edge to far corner.

**9** Keep ahead on narrow path between hedges. **n** You come out at the back of houses. Turn right then left to leave cul de sac and out onto road. Turn right along Front Street then Station Road back to start.

### **j** Walk the line

You are now at the start of the Kelloe Way Railway Path. This peaceful path follows the line of the old mineral railway that transported coal from East Hetton Colliery throughout its life, and also brought in materials and machinery. The line linked with the railway south of Coxhoe, which took the coal to Hartlepool and Teesside. Look out for a memorial to the ten miners who died in a flood in the colliery in 1897.

### **k** Toil and tragedy

Like Coxhoe, nearby Kelloe is a village built on the industries of coal mining and quarrying. In the 19th century pitheads dotted the landscape and within only two miles of the village were at least four different collieries. Although the village owed its existence to mining, the community sometimes paid a terrible price. A stone memorial to the 74 miners killed in an explosion in nearby Trimdon Grange Colliery in February 1882 is in the churchyard here. To see it, go through a squeeze stile on the left just before a line of upright stones. Trimdon Grange and East Hetton pits were linked underground and a few miners managed to escape from East Hetton. The tall stones are part of a small sculpture park dedicated to all those who lost their lives in East Hetton Colliery.

## d Cold Knuckles

Soon after you join the cycleway you can see a long pale yellow rocky scar dominating the escarpment ahead. This is Cold Knuckles Quarry, which has exposed the Magnesian Limestone and sandstone below (see point g).

## e A fine view

As the cycleway gains height a sweeping panorama opens up. You are walking on the high ground of the Magnesian Limestone escarpment and looking over countryside underlain by older Coal Measures rocks (see overleaf). Glacial deposits from the last ice age blanket the landscape, giving it its gently rolling characteristic. On clear days you can see Durham Cathedral, just to the left of the escarpment slope. This famous building is constructed from Coal Measures sandstone quarried from near the cathedral site, and some of the original mortar is almost certainly made from Magnesian Limestone.

## f Crowtrees Colliery

This peaceful northern corner of Crowtrees Local Nature Reserve once rang with the rumble and clang of coal mining. The only obvious relic of the colliery that once stood here is the ruin of the winding engine house. This lowered miners down the mine shaft and winched coal tubs back up. Known locally as 'The Castle', the building dates from the 1860s. There were several phases of colliery development here, probably dating back to the late 1700s. The last colliery here closed in 1897.

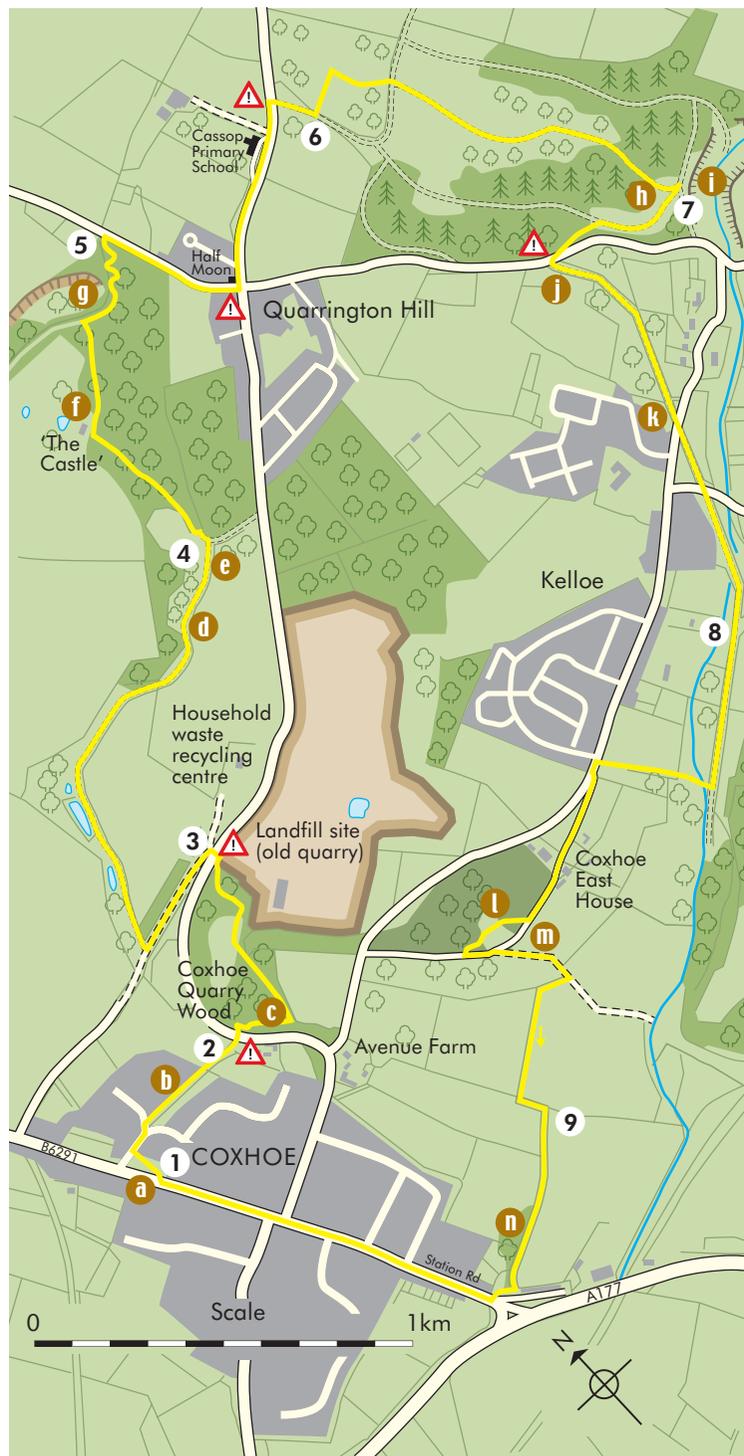
## Crowtrees Colliery, as painted by James Wood in 1841

© Photograph Library Beamish Museum



## g Sea and sand

Look closer at the exposed rock face above the grey boulders and you'll see that it is made of two different rock types, formed in very different environments. The lower rock is slightly yellowish and contains faint sloping lines (see photo and description in panel overleaf). This is a formation known as the 'Yellow Sands'. Above it is a well-layered cream rock; this is Magnesian Limestone. Quarrying in this area, both here and at the working quarry just over the crest of the escarpment, has been for both sand and limestone.



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Group of miners at nearby Kelloe Winning Pit in the early 20th century.

© Photograph Library Beamish Museum

## l A grand history

Coxhoe Hall was originally a medieval manor house, linked with a village in the fields below m. It was rebuilt in 1725 in grand Gothic style and was once considered one of the finest houses in County Durham. The hall was demolished in 1952. The ha-ha (wall and ditch) below the hall is built from rough blocks of local Magnesian Limestone.

## m Medieval village

The humps and bumps in the field on your left are all that remains of the medieval village which was abandoned in the 15th century.

## n Coxhoe Pottery

As you approach Coxhoe along a narrow footpath you'll pass an area of dense woodland on your right. This infills an old pit that was once dug for clay. Clay – of glacial origin and also from layers in the Coal Measures – was the raw material for the town's potteries and brickworks. There was a pottery at Coxhoe as early as 1769, producing brown earthenware pots. By 1851 it was making clay tobacco pipes from clay brought from Cornwall as ships' ballast. Other potteries, brick and tile works grew up, producing 'brownware' pots, chimney pots, tiles, drainpipes and bricks. Coxhoe Pottery was working until the early 20th century. Although the potteries are long gone they are remembered in the name of this part of Coxhoe.

Look out for a street sign saying 'The Pottery' once you reach the row of houses along Front Street.

Not just another brick in a wall: a Coxhoe brick made by Carnaby Brickworks in the late 19th century

