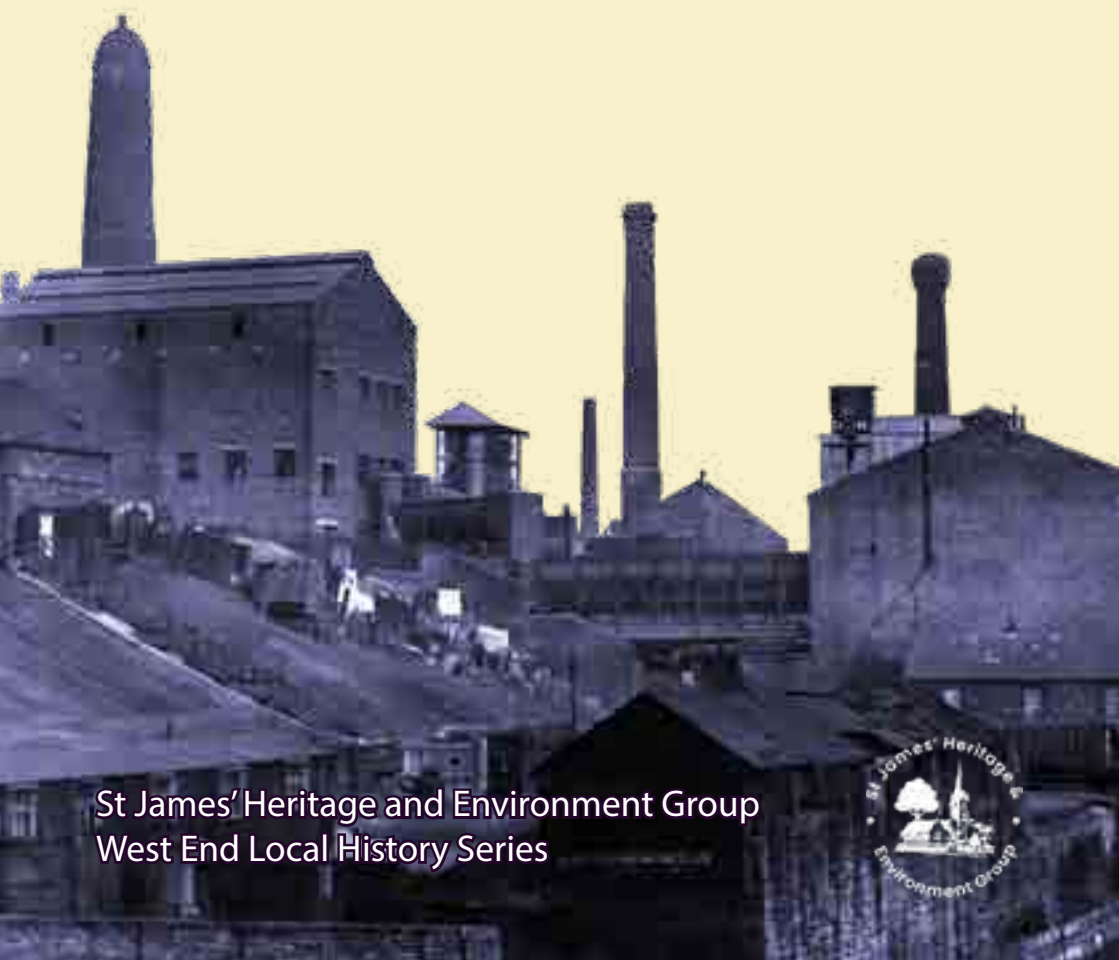


# Lead on the Tyne

The past, present and future of the  
Elswick Lead Works site



St James' Heritage and Environment Group  
West End Local History Series



# Acknowledgements

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# Introduction

This booklet forms part of an arts project to explore the former Elswick Lead Works site, as plans are afoot to redevelop it for housing. The wider project will track changes to the landscape as it transforms from an ex-industrial, brownfield site to a residential area. The aim is to understand what cultural, historical and ecological features and values are at risk through large-scale housing development processes.

I welcomed the opportunity to work with St James' Heritage & Environment Group - an independent volunteer-run charity based in Newcastle's west end. It began more than 15 years ago when local residents and workers began to tidy the historic parish graveyard which had become overrun with weeds and rubbish since its closure in the 1960s. The graveyard opened in 1832 when the area was home to some of the wealthiest, most powerful Tyneside families. One of these was the Cookson family who lived in Benwell during the 19<sup>th</sup> century. The Cookson vault at St James' is topped by a massive stone slab - an essential stopping point for any tours of the graveyard. The family had extensive business interests, from banking and coalmining to glass and lead manufacture. It was a member of the Cooksons who later played a key role in the amalgamation of Elswick Lead Works with other manufacturers to create Associated Lead Manufacturers.

St James' Heritage & Environment Group expanded its work to encompass exploring and sharing the history of Newcastle's west end, producing publications and films, and running talks, guided walks and community history events. An important focus has been the area's industrial history which was the site of a number of major industries. During the 20<sup>th</sup> century a remorseless process of deindustrialisation effectively destroyed this industrial base, and with it the economic and social fabric of the area. Elswick Lead Works occupies a unique place in the story of the industrial west end. It was not only the earliest of the manufacturing industries along the west Newcastle riverside, in operation for almost 70 years before the adjacent river banks were developed, but it was the last to cease manufacturing, finally closing at the beginning of the 21<sup>st</sup> century.

I hope you enjoy reading this booklet and getting to know this remarkable area of Newcastle as much as we have enjoyed researching it.

Julia Heslop

# Early industry

This area was originally known as Low Elswick. Elswick was a separate Northumberland township until it became incorporated into Newcastle in 1835. The land was part of the Elswick estate, owned by John Hodgson, an affluent cloth merchant and colliery owner. Hodgson's family came to possess the lordship of Elswick and rebuilt Elswick Hall in 1803.

The first industry on this site was the Wortley Elswick Coal Shaft sunk in c. 1805. An inclined plane linked the shaft with the Tyne, as can be seen in the map on the right, which also shows the colliery offices. The shaft was out of use by 1859.



The site of the mine shaft, 2026  
(Credit: Julia Heslop)



Above: Plan of part of the Elswick Estate, 1829 (Credit: Seymour-Bell collection, Newcastle City Library)

## Early Lead Works



J.M.W. Turner, *Newcastle-on-Tyne* c.1823, showing Elswick Shot Tower in the centre distance.  
(Credit: Tate)

Samuel Walker, a Rotherham iron master, alongside merchants Richard Fishwick and Archer Ward from Hull entered into partnership in 1778 to erect a White Lead Works at Elswick, leasing two acres of land from Hodgson for 99 years at an annual rent of £20. Walker provided most capital,

while his partners contributed business expertise. The site was probably chosen due to its good transport routes: a road to Newcastle, river access and links to the North Pennines lead mines. It also had a water supply from the King James Well - essential for washing and separating corroded lead from metal. Being beyond the town walls was probably beneficial - health and pollution problems from lead production were becoming known. In July 1778 the erection of the Lead Works began and the site was split into two - half for manufacturing, half for accommodation. A boundary wall, stores for products and raw materials and a stacking area were built, alongside a melting house, wash house, brewhouse, windmill and a dwelling for Fishwick. Powering the works (initially for the grinding of white lead) was through a 45 feet high windmill between 1778-1781, whilst a horse gin was employed from 1781-1788. More reliable steam power took over in 1786. Paint manufacture began in 1779 with raw materials sourced locally: molasses from sugar houses, copperas from collieries, chalk and sand from ballast in returning colliers. In 1780 the partners took a lease at Bussell's Factory House at Paradise, South Benwell, for paint production, but the range of colours produced was short lived as it was a competitive trade. Instead the partners expanded into other lead products.

# Expansion of the Lead Works

Profits of almost £150,000 over the period 1780-1800 aided an internally financed expansion. So, by 1785 a further two fields were leased which allowed the Works to expand its output. Red lead production began in 1786 and sheet lead production started in 1788. Construction of the Elswick Shot Tower began in 1796 and went into production in 1797. By the time the partnership agreement expired on 30<sup>th</sup> April 1800, the Lead Works was a large and successful business with around 100 employees.

At this point, Fishwick left the partnership to set up the first modern ironworks in Lemington which soon went bankrupt. Ward soon died from lead poisoning. David Kinghorn, an employee in Ward's office wrote, "I do not think he will ever again have good health, the Lead having tainted the inside". Samuel Walker Parker, the grandson of Samuel Walker I, was made a full partner in 1803 and the title Walkers, Parker and Co. was adopted. The company opened other lead works in London, Chester, Derby and Glasgow, but Elswick remained the largest.

Between 1802 and 1827 there is evidence that the site was rebuilt and expanded, perhaps owing to a fire on the site or another serious event, which necessitated the redevelopment of the area. This also led to the destruction of a substantial part of the company records.

## WALKERS, PARKER & Co. Ltd.



Lead Merchants and Manufacturers of  
WHITE, RED, ORANGE, SHEET AND PIG LEAD, WHITE PAINT,  
LITHARGE, LEAD SHOT, PIPES, TRAPS, BENDS & SOLDERS.  
BUYERS OF LEAD ORES AND SILVER LEAD ORES.



ELSWICK LEAD WORKS. NEWCASTLE-ON-TYNE.

Advertisement for the Lead Works.  
(Credit: Newcastle Photo Archive)

The business was becoming more established, and the workforce had grown by 1842, employing 96 men, 45 women and three boys. In 1840 the partners purchased the freehold of the land to the River for £8000 and in 1858 the remainder of the site was purchased for £17,800. A further extension to this was made in 1864.

In the next decades the Lead Works continued to expand. In 1846 a new rolling mill was constructed, in 1851 four white lead stacks and a new refinery were built and in 1855 a new steam engine was installed. Whilst smelting had previously been controlled by the mines, from the 1840s imports of ore began to expand which attracted manufacturers to undertake their own smelting.

Rowe states, "the local client base included coach makers (such as Atkinson and Co. of Newcastle), potteries (such as Maling and Co. of Sunderland), glassmakers (Charles Attwood of Gateshead and the Cooksons of South Shields), plumbers, painters, ironmongers, colourmen, dry-salters, druggists and gunmakers. The chief overseas markets were North America and... Northern European towns in Russia, Denmark, Holland and Germany".

Collier ships carried sheet lead underneath their cargoes of coal. Following the 1840s public health enquiries, which saw improvements to public health provision and hygiene, domestic



Diagram showing different sizes of lead shot made at Elswick.

(Credit: Newcastle Photo Archive)

water supplies and sewage systems became more common. As a result demand for lead pipe grew.

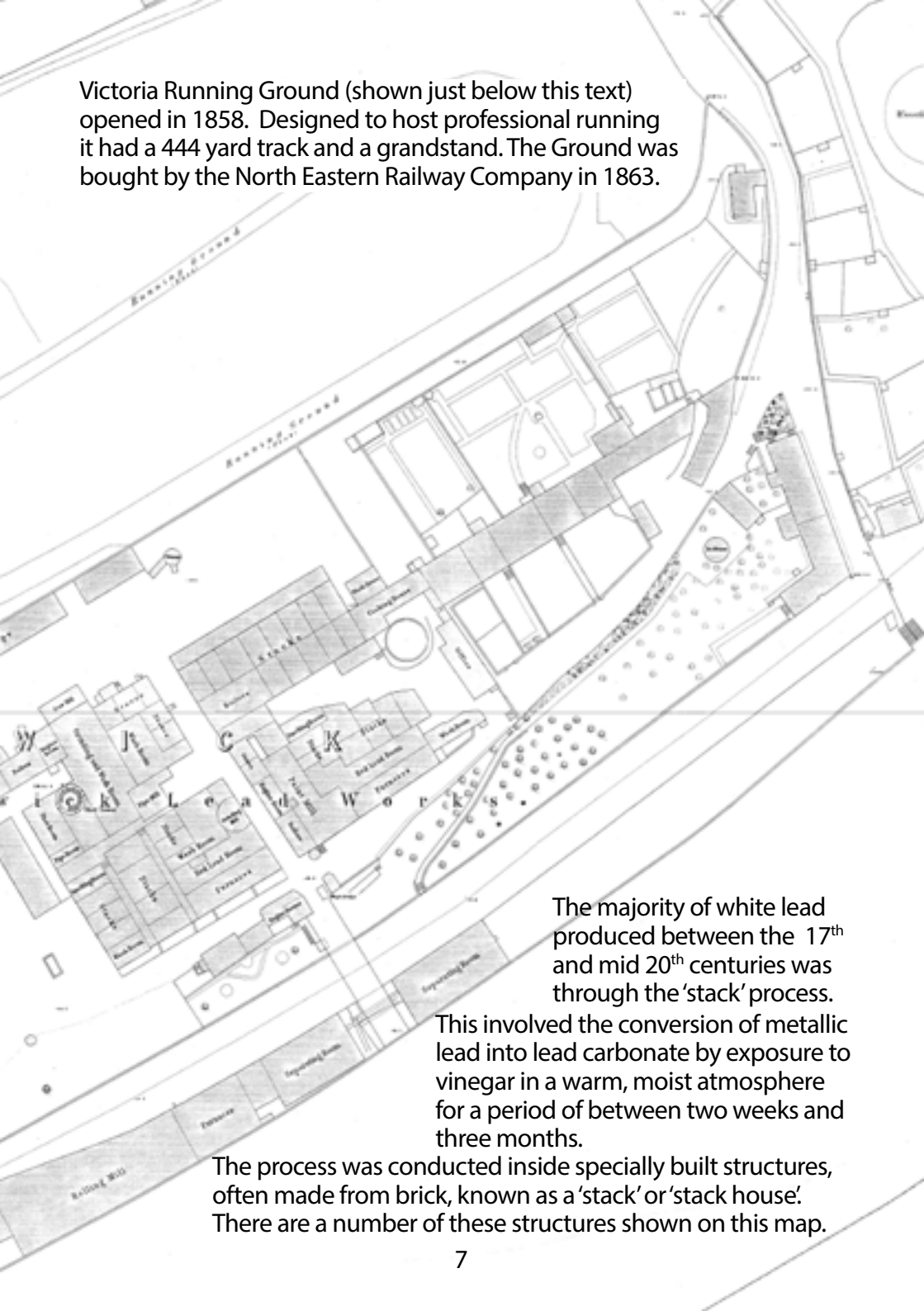
# Elswick Lead Works in 1862

This Ordnance Survey map from 1862 shows the Lead Works and adjacent housing



There were two pubs in the area: The Tyneside Inn at the north end of Tyneside Terrace (which was demolished by the 1870s) and the Tower Inn at the south end of Mitford Street which closed in 1917.

Victoria Running Ground (shown just below this text) opened in 1858. Designed to host professional running it had a 444 yard track and a grandstand. The Ground was bought by the North Eastern Railway Company in 1863.



The majority of white lead produced between the 17<sup>th</sup> and mid 20<sup>th</sup> centuries was through the 'stack' process.

This involved the conversion of metallic lead into lead carbonate by exposure to vinegar in a warm, moist atmosphere for a period of between two weeks and three months.

The process was conducted inside specially built structures, often made from brick, known as a 'stack' or 'stack house'. There are a number of these structures shown on this map.

# Origins of the lead

The lead industry can be broken down into five main components: mining, ore separation (washing), smelting, refining and production of lead products and compounds.

## Mining and Ore Separation

Initially, local pig lead was bought chiefly from the Blackett and London Lead Company's mines in Allendale, Weardale and on Alston Moor. The Blackett Lead Company (which descended to the 'Beaumont' family in 1792) had its origins in the late 17<sup>th</sup> century when Newcastle merchant William Blackett took lead mining leases in Allendale. It later extended to Weardale from the 1690s under his son William. This company and the London Lead Company became the largest employers in the North Pennine region during the 18<sup>th</sup> and 19<sup>th</sup> centuries, but after the collapse of British lead mining in the late 19<sup>th</sup> century, due to the discovery of rich lead deposits in the USA and Spain, the major mining companies surrendered their leases - the London Lead Company in 1882 and the Beaumont Company in 1884.

Miners were often also farmers. Largely independent, they would work in small partnerships of 2-12 men. They would enter agreements - bargains - with agents for the large companies to raise ore at a particular price. Once mined, the ore (called galena/lead sulfide) was crushed and rinsed with water (a process known as 'dressing') to separate the lead from other minerals. This was often done by women and children. Some miners and other small farmers also carried the crushed ore on pony trains over the fells from the remote mines to be smelted and refined, and then onwards on pony trains or waggons to Tyneside.



Sipton Lead Mine, Allen Valley, c.1880. This was the second shaft sunk along the Blackett Level by the Wentworth Beaumont Lead Company. Reworked between 1923-44 by the Weardale Lead Company, the buildings were demolished in 1950. (Credit: Allen Valleys Local History Group)

## Smelting

The galena/lead sulfide was then heated to turn it into lead oxide. The principal Blackett lead smelting mills were at Dukesfield near Slaley, Allenheads, Rookhope and later Allendale, passing these facilities to their successors the Beaumonts, along with refineries at Dukesfield, Allendale and Blaydon. Smelting was a relatively skilled process, and smelters were greatly valued by mine companies. From the mid 19<sup>th</sup> century smelting was completed on site in Elswick.



(Credit: Allen Valleys Local History Group)

Left; East Allen c. 1865 showing the Blackett Level - a substantial mine exploration and drainage system. Begun in 1855, it was intended to reach 7.5 miles, but few profitable ore deposits were discovered. Construction continued until 1903 but further construction was abandoned after 4.68 miles. The tunnel still exists today, housing an underground canal running between Allendale Town and towards Allenheads.

## Refining

Initially, refining of the purified lead was completed at Blaydon, near the present day railway station. Every ton of lead produced variable small amounts of silver (just a few ounces), but often enough to make refining worthwhile. In 1829, Hugh Lee Pattinson, a chemical engineer from Alston working at Blaydon, discovered and patented Pattinson's Process, or Pattinsonisation. Ian Forbes of the *Dukesfield Smelters and Carriers Project*, writes this "used the different temperatures of crystallisation of lead and silver to produce silver-enriched lead which could be refined in the traditional manner to extract silver... this transformed the economics of silver production. With the Pattinson process silver could be profitably extracted from lead containing only a few ounces per ton of silver". This process ended up being employed worldwide. As a result, Blaydon Bank, which runs down to the River Tyne, was historically called 'Silver Hill'.

From the mid 19<sup>th</sup> century lead was refined at Elswick using the 'Luce and Rozan' process of desilverising which improved Pattinson's process by injecting steam, allowing the liquid lead to run off from the other crystals.

# Lead carriers

Extract from the song *The Lead Road* by Roly Veitch:

Now just imagine seeing this a long long time ago  
Some fifty horses, single file, all walking in a row  
And on their backs large panniers hang with quite a canny load  
The men in charge they lead them on along an old drove road.

We're headed down to Blaydon  
We're on the old lead road  
Wor bags are fully laden  
Such a heavy, heavy load.

Across the moors from Allendale they wind their weary way  
Mile after mile the train moves on, the same day after day  
And then at last the end is reached at Blaydon, near the Tyne  
The Blackett-Beaumont factory where lead goes to refine.



Map showing the pack horse tracks, some of which are still in existence today, whilst others have been lost. (Credit: Greg Finch from the *Dukesfield Smelters and Carriers Project*)

Trains of galloway ponies initially transported the lead from the mines to Tyneside down well worn brideways. Over 100 horses a day would travel, roped together with two men in charge.



A train of galloway ponies. (Credit: Roly Veitch)

A wooden frame was fixed over the ponies' backs with a piece of smelted lead on each side. On arrival at Blaydon the ponies would be fed and rested at Horse Crofts. Once the lead was refined it would be transferred onto barges and moved down the Tyne to Elswick and other lead works on the River, as well as being shipped out internationally.



Lead Road sign at Greencroft. (Credit: Roly Veitch)

The carriers were mostly farmers who worked part time when roads were passable in the summer months. But supply was often inadequate for the Lead Works' owners, due to the difficulty of transporting lead from the remote moorlands, especially in winter when road conditions were so treacherous in the uplands that it was impossible to

move lead by packhorse. Furthermore, the River Tyne sometimes froze above the Tyne Bridge, delaying the movement of lead from Blaydon to the Works. Fine weather at other times could also delay the supply of lead, as Fishwick wrote in 1787, "for the farmers are the carriers and they must and will attend the seed time in preference so that very little will be done these two months".

The railway between Hexham and Blaydon was opened in 1835, aiding the movement of lead to the refinery, whilst traction engines were employed in the uplands from the 1870s. By rail, lead transport became around 40 per cent cheaper than by pony train.

# Housing

Three workers' cottages were built on the south east corner of the Lead Works site at the outset of the partnership. Nine cottages were noted as belonging to the Lead Works when it was offered for sale in 1884, although there may have been others located elsewhere on the site. The original 18<sup>th</sup> century cottages were probably at the north end of the row. The cottages still appear on the 1940 Ordnance Survey, but are noted as 'ruins' by the 1950s. The remains of the houses can still be seen in the wall at the bottom of Shot Factory Lane.



1862 Ordnance Survey map showing the workers' cottages marked in red.

The photo below shows the bricked up entrances and windows at the bottom of Shot Factory Lane which have been incorporated into the site boundary wall, 2026.  
(Credit: Julia Heslop)





Shot Factory Lane, c. 1936. The photo shows the entrance to rooms above Number 1, Skinnerburn Road which are reached via a long narrow path. The Redheugh Bridge can be seen above the house. (Credit: Newcastle Libraries)



Three terraces of houses were built outside the boundary wall of the Lead Works around 1855: Tyneside Terrace, Mitford Street and Back Mitford Street as well as Mitford Street School, built around 1894 (see map on pages 6-7). These terraces were demolished following the Housing Act of 1930 (otherwise known as the Greenwood Act) which encouraged mass slum clearance of areas of housing that were considered old, neglected and unhealthy places to live, the terraces were demolished. Many

of the houses were overcrowded and lacked amenities such as an adequate water supply, ventilation and sunlight. Using powers available under the Act to acquire and demolish privately owned properties, local authorities began slum clearance schemes. These terraces came under the Tyneside Terrace Clearance Order in 1934 and residents were moved to the new Ferguson's Lane Estate in Scotswood. The School building remained and was incorporated into the Lead Works as a warehouse.



Above: Original house plans for Mitford Street and Back Mitford Street.  
 Right: A view of Tyneside Terrace/Mitford Street Elswick, 1934.  
 (Credit: Tyne and Wear Archives)



"The area comprises 87 houses, 169 separate holdings, with a population of 660 persons... With the exception of three of the houses the others are of the flat type... The houses generally are in a very bad state, broken and porous slates on the roof, and I think the internal structure may best be described as worn out. The ventilation of the bedrooms is bad... when going into these places it seems very much like the Black Hole of Calcutta. In the off-shoot bed-rooms there is considerable rising dampness. It is so serious that many of those rooms are not used. They are not capable of being used. Washing accommodation, owing to the fact that there is no yard, cannot, and does not, exist. The properties in Mitford Street and Tyneside Terrace are separated by a narrow lane only 8 feet wide. It is perfectly obvious from this plan that the properties are extremely congested at the rear... they are unfit for human habitation... there are a very large number of defects which appear to me at any rate to be incapable of rectification at a reasonable cost." (Tyneside Terrace Clearance Order, 1934)

# Low Elswick House / Crescent House



Low Elswick House was originally built between 1780-81 for the partners of the Lead Works. It was later replaced by a Georgian house, built immediately to its north between 1802 and 1827. This perhaps coincided with changes to the partnership. In 1884 the house was recorded as having gardens, a tennis court, icehouse, fernery, peach house and several greenhouses. A carriage drive was largely separated from the works. The house was later renamed Crescent House and was incorporated into the company's offices, eventually becoming the head office of Associated Lead Manufacturers. The building was finally demolished when the site was cleared in the early 2000s.

Background image: View of the south-facing elevation of Crescent House showing lawns, sculpture and the Redheugh Bridge.  
(Credit: Northern Archaeological Associates)

Opposite: This extract from the 1862 Ordnance Survey map shows Low Elswick House and its south facing lawns and ice house.

Middle: C.1933 demolition of buildings prior to the enlargement of Crescent House office block. The workers' canteen is also shown, marked in red.

Bottom: Interior of Crescent House. (Credit: Tyne and Wear Archives)



# Lead shot

In 1782 Bristol plumber William Watts patented a way of making regular sized and shaped shot. He found that perfectly formed globules are formed by forcing a molten alloy of lead, antimony and arsenic through holes in a sieve at the top of a tower and dropped from a considerable height. The art of shot running was to make the molten metal form drops on the underside of the frame which slows the flow of the molten material, making each hole drip regularly but quickly. The shot is caught and cooled by falling into a deep basin of cold water at the base. Watts described his shot as: "Solid throughout, perfectly globular in form, without the dimples, scratches and imperfections which other shot heretofore manufactured usually have on their surface." This was a huge improvement on shot previously made by casting and the Elswick partners paid £10,000 to Watts for the patent.



This photo shows: Centre: Shot Tower; Bottom far right: Travelling crane on rails, installed in 1909 for moving stacks of white lead; Centre left: The building with arched windows was the Pipe Mill which is still remaining on Skinnerburn Road. (Credit: Tyne and Wear Archives)

# Elswick's Shot Tower

The shot tower was completed in 1797. It was 174 feet high with a dropping point 150 feet from the ground. However, it was built two feet out of the perpendicular. This was rectified by digging down to the foundations and removing soil on one side. It was illuminated to celebrate the defeat of Napoleon and from 1910-13 an electric sign advertising Lipton's was erected on the tower. As former employee Alan Edgar wrote, the Shot Tower had "outside galleries at two or three levels. These were grandstands for watching the great rowing races on the river in the 18<sup>th</sup> and 19<sup>th</sup> centuries. In my time they were sometimes used by the men at bait-time – the view was very fine". Manufacture of shot in the tower ceased in 1951 and, despite it being listed as of historical interest in 1954, it was not maintained effectively, its tilt increased and it was demolished in 1969.

Background image: Looking down the spiral staircase of the Shot Tower.  
(Credit: Newcastle Photo Archive)



The photos on this page date from c. 1955.

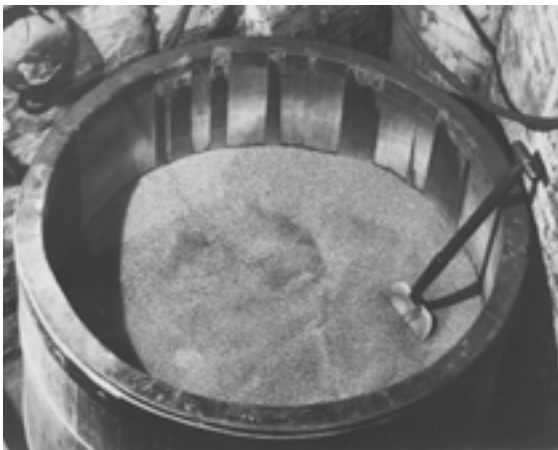
Top: Lead shot falls into water to break its fall and to cool it;  
Middle: The underside of the frame where drops of uniform size are formed before dropping 175 feet down the Tower;  
Bottom: Wooden vat filled with lead shot in the shot processing room outside the base of the Shot Tower. (Credit: ALM)

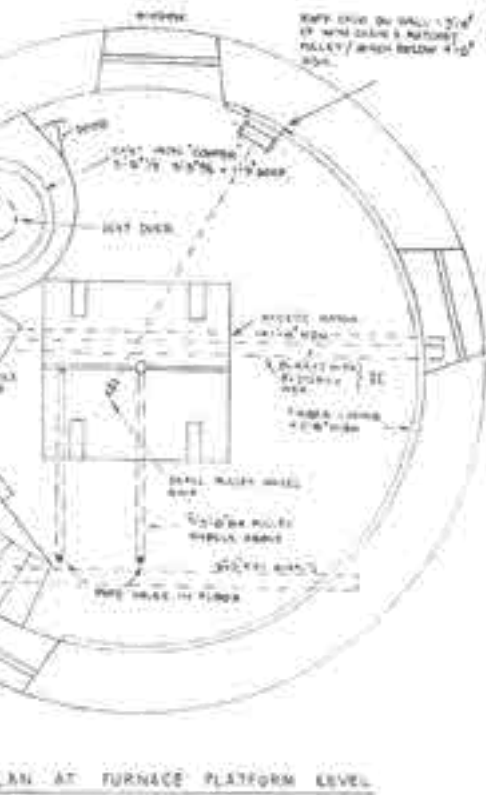


The diagrams opposite were drawn by R.M. Higgins who surveyed the Tower in December 1968, prior to demolition.

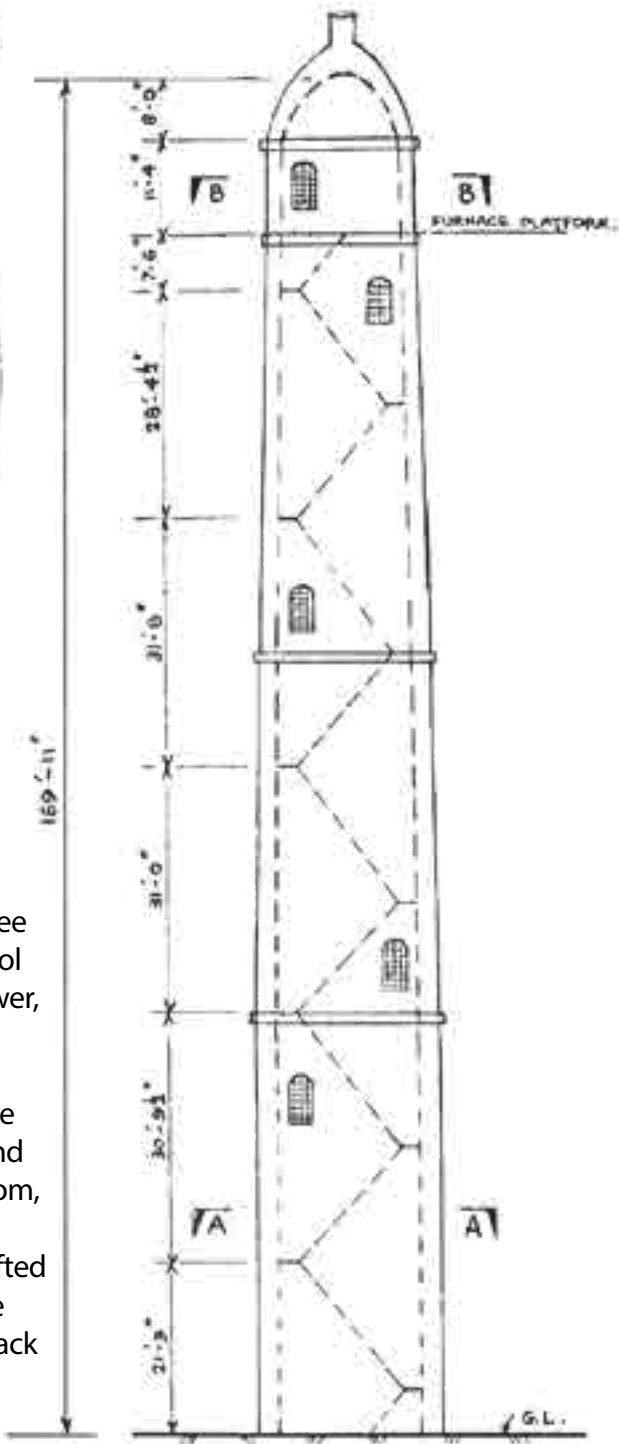


The shot runner and his mate would work 12 hour shifts at the top of the Tower. As Ian Glendenning writes: "The shot running floor at the top of the Shot Tower was provided with a furnace and a melting pot, supplies of fuel and lead were sent up to the top of the tower by a bucket hoist... The shot runner had to climb the spiral stone staircase round the inside wall of the Tower to do his work and... stayed at the top as long as possible. He communicated with his 'mate' on the ground... by messages,





sent up and down in a small bucket on a rope; some shot runners sampled their shot three times an hour in order to control the size... At the base of the tower, in the centre, stood a wooden vat holding about 600 gallons of water... to break the fall of the shot, and to avoid distortion and damage... In the processing room, the shot was drained, dried by handling on a hot iron plate, sifted for size in sieves slung from the roof and then polished with black lead in a rotating drum, [then] packed into bags or casks."



# Amalgamation in the industry

The company flourished under generations of Walkers and Parkers. By 1884, when the Works were put up for sale it was considerable in size, with a 930 foot frontage, 33 white lead stacks, two red lead furnaces, a pipe mill, paint mill, shot tower, rolling mill, 'Rozan' steam desilverising process, six hydraulic pipe presses and a beam engine to provide power. In addition there were partners' houses, nine cottages and both mens' and womens' dining and bathrooms. However, by 1889 the price of lead had fallen on world markets and the firm was having less financial success. Whilst the First World War brought a welcome upturn in orders for ammunition and lead for submarine batteries, in July 1919 Associated Lead Manufacturers

(ALM) was incorporated to consolidate major British lead companies, free them from foreign competition and link production with manufacturing. Walkers, Parker was officially controlled by ALM from 1<sup>st</sup> January 1930, under the chairmanship of Clive Cookson, who had lead and chemical plants at Hayhole in Howdon and Willington Quay. However, individual brands were initially preserved. It was highly successful. By 1930 ALM accounted for more than three quarters of UK output of white lead, about two thirds of red lead and around one third of sheet and pipe lead. Whilst the 1920s saw a slump that impacted employment, which fell from 253 in 1930 to only 179 in 1931, it recovered to 227 in 1939.

Photos opposite (c. 1950s): Right: The old lead refinery with 50 ton capacity kettles, casting refined lead into 50lb pigs (ingots). The operator on the right is skimming any oxide dross formed during pouring, the operator on the left is stamping the batch number into the ingot when solid and the rear operator is wheeling away solidified ingots, stacking them vertically to cool overnight. The next day a team of two (called lumpers) would stack the ingots in one-ton bundles; Left: Tapping molten metal, probably aluminium. (Credit: Tyne & Wear Archives)  
Background image: C. 1940s Aerial of the site. (Credit: Tyne & Wear Archives)

As a result of consolidation, the white lead stacks at Elswick closed and all Tyneside production of white lead became concentrated at Cookson's Hayhole works in Howdon by 1931, while Cookson's drew its sales requirements of sheet and pipe lead from Elswick. Administration of the company was based at Elswick and resulted in the extension of offices at Crescent House in 1932 (see photos on page 17). World War II provided another boom period for Walkers, Parker as part of ALM. Their output included

munitions, sheet lead, batteries and vast quantities of lead paint for camouflage. On 1<sup>st</sup> January 1949 the old company names were dropped. Cookson's dominated the rationalisation process and directed closures. It was seen as a hard-headed organisation: "One of the standard comments of the period among those employed in the lead industry on Tyneside was that "Walkers, Parker was engraved on your heart but Cookson's was engraved on your backside" (Rowe, 1983, p. 337).



# Health hazards: Lead distemper

"The labour employed is mostly casual; the men are taken on and paid off day by day... The white lead works are looked upon as the last resource of the starving, of the helpless and lowest class of the unskilled - but there are those who, having once tasted the lead colic, prefer to apply to the Guardians rather than repeat the experience." (Charles Booth)



Woman crushing lead ore from  
*Ure's Dictionary of Arts,  
Manufacturers & Mines.*

The Lead Works was a dirty and dangerous place causing serious health problems, mainly due to the ingestion of white lead dust which could cause a variety of symptoms: abdominal pain, headaches, memory problems, infertility and numbness. They were often called 'white cemeteries' by workers.

In the 18<sup>th</sup> and 19<sup>th</sup> centuries women were at most risk of lead poisoning as they were employed in unskilled labour which brought them into close contact with white lead, such as filling and emptying white lead stacks in windowless spaces with

little ventilation. Women had a twofold setback in that their jobs were more risky, whilst they were also paid less than men. In 1892 the *Daily Chronicle* wrote two articles on conditions in the Works. The article entitled 'White Cemeteries - How Women Are Poisoned' gravely stated: "To the women in Newcastle who cannot get bread, it offers white-lead." Work at the Lead Works was often employment of last resort, as an alternative to destitution or the workhouse, especially for single women or those with a husband out of work or on low earnings. Reporting on an inquest of a 17 year old girl who died from lead poisoning after working there for only 5 months, her father said: "She used to come home and clean herself thoroughly, and shake out the dust from her underclothes. They were like a 'poke of flour'".

The health problems associated with white lead works were not seriously addressed until the 1880s, and only due to a public outcry. The Factories Act of 1898 improved white lead drying stoves and dust extractors became mandatory, whilst women were prohibited from working there. After 1900, incidences of lead poisoning at the Lead Works declined rapidly. Blood testing became instituted although didn't become a statutory requirement for lead works until 1964. Former employees highlight the health and safety issues in the late 1960s and early 1970s:

"You used to get a medical once a month... the doctor he'd ask you some questions and every now and then they'd take a blood sample off you to make sure that the level of heavy metal in your blood wasn't getting too much. If it was too much... they'd put you on to another job. They used to take you out of the place where it was really bad and put yer out in the yard where it wasn't too bad, because it was mostly fresh air. You'd go and work in another part of the factory where the health conditions were better until they subsided again, then you could go back until it kicked off again."



Lead worker having a medical examination in the 1970s, from Associated Lead Manufacturers, *Elswick Lead Works* celebrating the Works' 200<sup>th</sup> anniversary.

"It was very labour intensive. In the refinery you had 6-8 pots all run at about 180°C. You were sweating so much you could lose a stone over a fortnight in the summer without even trying. I wouldn't recommend it as a health cure mind... We used to get [given] salt tablets to suck."

"Even in the '60s, a lot of working practices hadn't changed much for probably the better part of half a century or more... you didn't know any better you just looked after yourselves and the guys we were working with, and if you heard a rumble and a crack you just ran, you didn't wait to see what was going to blow up."

# Workforce

These quotes from employees in the 1960s and '70s highlight the makeup of the workforce. Inevitably the work was often hard and tiring, but, "They were paying very good money". As was more common at the time, the Works was mostly unionised:

"it was such a hazardous place to work, you needed a bit of clout to stop the management taking the mickey, and making you do things you didn't want to do."



Workers, c. 1940s.

(Credit: Tyne and Wear Archives)

"In the refinery end were people who'd been made redundant from the coal mines in north Durham.... from Consett and round that way... In the refinery they were nearly all from Elswick. ... At the far end of the works was a little aluminium smelter... nearly all the guys that worked there were Eastern European refugees. Poles, Russians, Lithuanians... There was no animosity... they're all well into heavy industry and it just flowed."

"The guys on the most money... were the ones making the ingots because they were on piece work and the more they made, the more they got paid. And that was nearly hereditary, yer had to be the son of one, or the cousin of one to even be considered for that. You couldn't just get a job there... When they made the ingots they used to tip them out against the wall. There was another crew of four and they'd go and pick them up and stack them, and then they'd load them onto little trucks and take them away for storage, and they were on good money as well but it was hard work 'cause an ingot of lead, I think it was about 100 weight and a half, they weren't light things... But it was very clean work compared to the rest of us."

Women were also employed in the Works, and not just in the offices, but one team would solder traps onto the bottom of sink u-bends: "they were on piece work as well and they were on very good money, because it was quite skilled because too much heat and the whole thing melted."

# Lead and the environment

As well as increased safety requirements during the 1970s, new environmental regulations for industries were emerging. The Alkali Inspectorate recommended improvements to practices for a whole range of industries based on findings from the lead industry. At Elswick improved ventilation and filtration systems were installed together with regular emission monitoring.

"During the 70's the Health & Safety Executive was established looking to develop unified workplace safety standards and regulations aimed at protecting workers from harmful exposure to dangerous chemicals, fumes and dust. Given the well known hazards with lead, the industry was used as a test case. So the regulations that eventually came out that now cover all of the chemical and manufacturing industries are based on the work initially carried out lead works such as Elswick Through the recycling process it is possible to recover well in excess of 97% of the lead content of the raw materials, with only minor amounts of lead present within the slag from the furnaces being sent off site to carefully controlled notifiable waste dumps."  
(Former employee)

The lead slags went to a notifiable waste tip, first at Stargate in Blaydon, then to Tow Law in



Water treatment plant on the Newcastle Quayside. (Credit: ALM)

County Durham. Whilst the rainwater from the site and any runoff from processes was collected and sent to a waste treatment plant situated on Newcastle Quayside. Settlement pits captured any heavy material which was then periodically dredged out. Finer particles were recovered in a rotary vacuum filter to ensure only clean water entered the River Tyne. All materials recovered were then returned to the raw material storage for re-smelting. One former employee stated that in the early 1970s "A lot more lead containing effluent would be leaving the factory".

# Battery breaking: Post war lead industry

Greenside in the Lake District was the last British lead mine, the last ore being removed in 1961. After World War II there was a large increase in the availability of waste materials such as lead acid batteries, drosses from manufacturing processes and scrap lead metal. By 1980 almost two thirds of lead processed in the UK came from sources produced through recycling. Indeed lead is one of the most widely recycled metals in the world.

"When I joined ALM in the early 70's the company had already turned completely to recycling of waste lead products. These included scrap sheet, pipe and cable which could be melted directly in the refinery in what we called kettles. Lead plates (from car batteries), oxides and any other lead residues would require smelting using blast or reverberatory furnaces or more recently large 20 ton capacity rotary furnaces. The lead recovered from those furnaces was then transferred to the refinery generally in a molten form.." (Former employee)

"On the river bank... there was a big yard and the guys that worked there used to smash car batteries up to get the lead out by hand with axes. They were on piece work, the more they broke up, the more money they got paid over and above their flat rate... The battery acid used to eat all their overalls away." (Former employee)

In 1984 a battery breaker was purchased enabling more rapid mechanical separation of the lead battery parts from the polypropylene (PP) casing. In 1985 facilities were installed to fully recycle the recovered PP for reuse in new products. The increase in capacity enabled over 60,000 tons of batteries to be recycled per annum and raised the annual output at Elswick to 70,000 tons of lead, alloys and sheet, plus 4,000 tons of PP. The Elswick Works thus became the largest such recycling operation in the country.



Battery breaker.  
(Credit: Howard Forrest)

## The later years

In 1977 Walkers, Parker & Co. was struck off the company's register after 199 years of the Walkers name being associated with the lead industry. In 1978 ALM celebrated the bicentenary of the founding of its first constituent company, Walkers, Fishwick & Co. By 1989 the workforce had reduced to around 100.

In recognition of the family's contribution to ALM, 'Cookson' was adopted for the Group name in 1984 with the Newcastle operations becoming Cookson Industrial Materials. Roland Cookson had an office at Elswick until his death in 1991 aged 82.

In 1994, Calder - a European engineering group - was formed via a management buyout of Cookson metals business. Calder Industrial Materials became a subsidiary of the wider Calder Group. With lead uses declining, Calder decided to dispose of the lead manufacturing businesses. Consequently, in 1998 the lead smelter was sold to Britannia Refined Metals. The only manufacturing left was the re-melting of scrap lead to produce lead sheet, plastics recycling and the production of negative expanders. By 2000 the workforce had reduced to around 50.



Above: Lead ingots being stacked. (Credit: ALM)

Background: Battery stockpile. (Credit: Howard Forrest)

# More value in the land than lead

In 1998 there was a secondary management buyout by Permira (Europe's largest private equity firm), along with the other ex-ALM businesses. Permira went about selling the Works' assets, seeing the potential of the site for riverfront apartments. It sold the plastics recycling to HJ Enthoven in Derbyshire for



Computerised rolling mill, installed in 1982. (Credit: CIM)

around £1 million whilst the negative expander business (which was relocated from the Bootle factory in the early 1980s) was sold to Hammond Expanders (an American company based in Gateshead). Eventually what was left of the Elswick Works consisted of the refinery and rolling mill, which were moved to the Chester lead works in 2003. Planning permission was given for 528 homes and the site was sold to Bellway Homes for £7 million. As one former employee stated, there was "more value in the land than there was in the lead business". But following the 2008 economic crisis, Bellway sold the site to Newby Homes who put in a new planning application in 2020 for 1,100 homes. Commercially unviable, due it being

highly contaminated, the site was eventually bought by Homes England (the government's housing and regeneration agency) in 2024 for an undisclosed amount of money.

Lead ingots were rolled into sheet form in the rolling mill. (Credit: ALM)



# The site today

In many ways the site today is a typical brownfield site which has been colonised by fast growing species. However there are still physical clues here that offer clues to the history of the site, as highlighted here.

## **Power House, Skinnerburn Road**

Built in 1917 along with an adjacent jetty, associated flues and a travelling crane, it is not clear whether the building housed a hydraulic engine or was a pumping house.

(Credit: Julia Heslop, 2025)



## **Pipe Mill, Skinnerburn Road**

Built c.1874 the Mill boasts attractive arched windows. Lead pipe was originally produced by soldering or welding sheet lead which had been rolled into a cylinder. Later it was produced by drawing and extruding. The pipe produced here was probably fabricated using the latter method. As noted in a sale catalogue of 1884 the building probably contained six hydraulic presses. In the 1980s the Works' offices were relocated here from Crescent House, which in turn had become ALM's central offices. The upper floor was rebuilt and re-roofed prior to this. The ablutions facilities, including showers etc., were also here. A jetty came out from the eastern gable, across Skinnerburn Road to the River. (Credit: Julia Heslop, 2026)





### **Skinnerburn Homing Society**

There have been allotments and pigeon crees on this site from the 1940s. Whilst there used to be 21 lofts here, now there are only seven. Currently owned by Newcastle City Council, the site is due to be sold to Homes England, probably to landscape the area for the new development. Some Club members have had lofts here since they were children in the 1940s and '50s and are rightly sad about losing what they describe as "a way of life". (Credit: Julia Heslop, 2025)



### **Jetty**

The supports of a jetty can be seen on the quay at the far east of the site. (Credit John Taberham, 2026)

### **Mitford Street School (above)**

Mitford Street School was converted into a warehouse for the Lead Works (see photo above left: c. 1940s (Credit: Tyne and Wear Archives)). Some of the railings that were once on the periphery of the School can be seen at the north east corner of the allotments/pigeon crees (see photo above right (Credit: Julia Heslop, 2026)). Unfortunately the rest have been taken for scrap.

### **Icehouse**

This was built in the mid nineteenth century for residents of Low Elswick House. In 1923 it was converted into a petrol tank. (Credit: Tyne and Wear Archives, 2005)



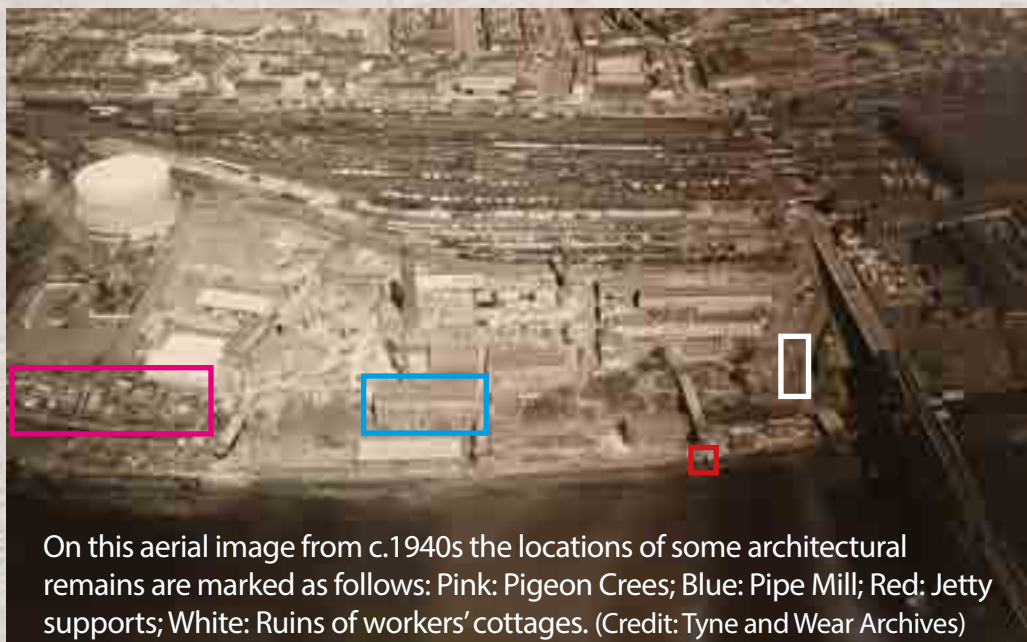
### **Workers' cottages**

Alongside the bricked up remains of the doors and windows, the cornerstones of the cottages can be seen on the corner of Skinnerburn Road and Shot Factory Lane.

(Credit: Julia Heslop, 2026)

### **Wortley Elswick Coal Shaft**

Remains of a coal shaft sunk in c. 1805 can be seen in the north of the site. The photo on page 2 shows what the shaft looks like today.



On this aerial image from c.1940s the locations of some architectural remains are marked as follows: Pink: Pigeon Crees; Blue: Pipe Mill; Red: Jetty supports; White: Ruins of workers' cottages. (Credit: Tyne and Wear Archives)

# Ecology of the site today



Top: Northern Marsh  
Orchid; Bottom:  
Yellow-wort



The site was cleared in 2003/4 and again in 2017/18. Despite this, there are semi mature trees on the site, including Aspen, Poplar, Alder, Willow, and many Silver Birch - this being an early succession species on land left uncultivated and/or undeveloped. Many of the plants on the site thrive in recently disturbed soils and are typical to brownfield or edgeland sites. There are however some lesser seen plants, such as the locally rare Yellow-wort, a low-growing annual which usually prefers chalky soils in the south of England and the Northern Marsh Orchid, with its attractive rich purple flower. Different species of Cotoneaster can be found across the site, perhaps spreading from the gardens of Low Elswick House. Cotoneaster is known as a 'bee magnet' providing vital energy for bees in Spring.

Naturalist Sam Fisher has observed the birdlife on the site. He writes: "The Lead Works site is a typical urban brownfield habitat, with a mosaic of useful features for wildlife including scrub, pioneer tree species, grassland, damp areas and bare ground. Despite its heavy industrial past and contamination from the former Lead Works, the site supports healthy insect populations, having escaped the ravages of persistent pesticide application seen in rural areas. Combined with lack of disturbance and a range of nesting habitats, the site is useful for a variety of garden and edgeland bird species. Some of the birds observed here include:

## **Siskin (*Carduelis spinus*)**



The site has been colonised by pioneering tree species such as birch and alder, whose seeds are a winter food source for the Siskin, a member of the finch family. Siskin numbers are swollen in winter by birds visiting from Europe and have been observed feeding on the Forth Banks trees in January.



### **Long-tailed Tit (*Aegithalos caudatus*)**

Long-tailed Tits are gregarious and lively birds, with long tail feathers and subtle black, white and pink markings. Known for their exquisite spherical nests, constructed with moss, lichen and spider webs, they breed low down in bramble or thick vegetation.



### **Whitethroat (*Sylvia communis*)**

The Whitethroat is another warbler species with a more scratchy song, renowned for its skulking habit amongst low vegetation. These birds breed in the low scrub and bramble on the site, earning its colloquial name “nettle creeper”.



### **Blackcap (*Sylvia atricapilla*)**

A species often encountered in gardens, the male sports a black crown whilst the female has a chestnut cap. The Blackcap is well-suited to the bramble scrub on site but also favours more mature trees around the site boundary, where the male bird sings to declare its territory.



### **Blackbird (*Turdus merula*)**

The site offers the Blackbird all it needs, with thick scrub in which to breed, open areas in which to feed and young trees from which the male sings its melodic song in spring and early summer.



### **Willow Warbler (*Phylloscopus trochilus*)**

A summer visitor which spends the winter in Africa, the Willow Warbler’s magical song in descending cadence, broadcast from a song perch, heralds the advent of spring. The Willow Warbler is sensitive to climate change, its range moving north to cooler, damper climes.”

# The future of the site

The site faces a number of viability challenges, access constraints and infrastructure requirements, which have hindered the private sector from bringing it forward for housing in the past. In use for over 200 years as a lead works the site has significantly elevated levels of lead, arsenic and asbestos. A site-wide remediation strategy would need to include sealing the contaminated materials beneath a capping layer and membrane, with topsoil above. The retaining wall around the site also requires replacement.

Without a viable alternative, in 2024 Homes England bought the 15 acre site and received £121.6 million in government funding, with a further £5 million from the North East Combined Authority to remediate the land and make it suitable for housing development. The development area has been named 'Forth Yards' and is part of a wider strategic development area which includes the adjacent Heliport, gasworks, Arena (former railway goods yard) and the old railway line between Newcastle and Carlisle. A developer for the site is due to be announced in late 2026.



2025 computer generated image of the site developed for housing.  
(Credit: Newcastle City Council)



Left: Two aerial views of the Lead Works site at different times. Top: 1948 (Credit: Historic England); Bottom: Today (Credit: Newcastle City Council)

Background: The site in 2026 - a mixture of rubble and rewilding. (Credit: Julia Heslop)

Whilst most of the buildings on the Elswick Lead Works site have been demolished and nature has taken over, by looking closely you can still find snippets of history - such as the wrought iron fencing of Mitford Street School, the concrete supports of a jetty, the arched windows peeking out from the render of the old Pipe Mill, the pretty pink hawthorn once planted in the gardens below Low Elswick House. These snippets tell us about lost industries and the lives that lived and worked here. Yet this isn't just dead history. Living heritage also exists here, albeit at risk, such as Skinnerburn Homing Society pigeon crees - due for removal in 2026. The Crees tell us that even in the face of redevelopment a case must be heard for preserving, celebrating and supporting the unique histories and cultures of our region. If not, it leaves our city and region much poorer.

# Lead on the Tyne

The past, present and future of the Elswick Lead Works site

This booklet traces the past, present and future of the former Elswick Lead Works site, the earliest of the significant manufacturing industries along the West Newcastle riverside, in operation for over 200 years. It charts the Lead Works' growth, eventual amalgamation and closure in 2002. The booklet discusses the extraction of the lead ore from the North Pennines, and later from recycled sources, as well as exploring issues of health and safety in the industry, including the working conditions of the period and the housing that existed on the site. Returning to the present day, the booklet explores the area as it currently is, from the birds and plants which have colonised this brownfield landscape to the architectural traces that still remain in this remarkable site.



Lead ingot (Credit: ALM)

## St James' Heritage & Environment Group

St James' Heritage & Environment Group is an independent voluntary organisation and registered charity dedicated to exploring the history of West Newcastle and preserving stories and images from its past. The group provides activities and resources for people of all ages to explore and celebrate the history of the area. Its local history books, heritage guides and films can be viewed on the website. The Group also maintains the historic graveyard of St James' in Benwell.

**Write:** St James' Heritage & Environment Group, c/o Sunnybank Centre, 12/14 Sunnybank Avenue, Newcastle upon Tyne, NE15 6SD

**Email:** [stjamesbenwell@gmail.com](mailto:stjamesbenwell@gmail.com)

**Website:** <https://stjamesheritage.com>

**Visit:** The Group meets every Wednesday between 10am and 1pm at St James' Graveyard, Benwell Lane. Visitors are welcome. If you would like a guided tour of the graveyard or have a particular query, it is advisable to contact the Group in advance to make arrangements.

