
DELIVERING SPECIALIST EXPERTISE SINCE 1933
BALVAC

CELEBRATING 90 YEARS OF SPECIALIST EXPERTISE

Balvac Ltd was originally incorporated in Liverpool as Whitley Moran & Company Ltd in October 1933.

Since then the company has survived the Second World War, developed various patented techniques for concrete repair and been acquired by Balfour Beatty. Our name has changed twice as well, initially becoming Balvac Whitley Moran Ltd in 1986 before we eventually settled on our current name in 2003.

During our transformation from gunite professionals to the highly specialised, technical structural repair company we are today, we've been fortunate enough to build a diverse archive of artefacts, personal stories, anecdotes and other information relating to our business.

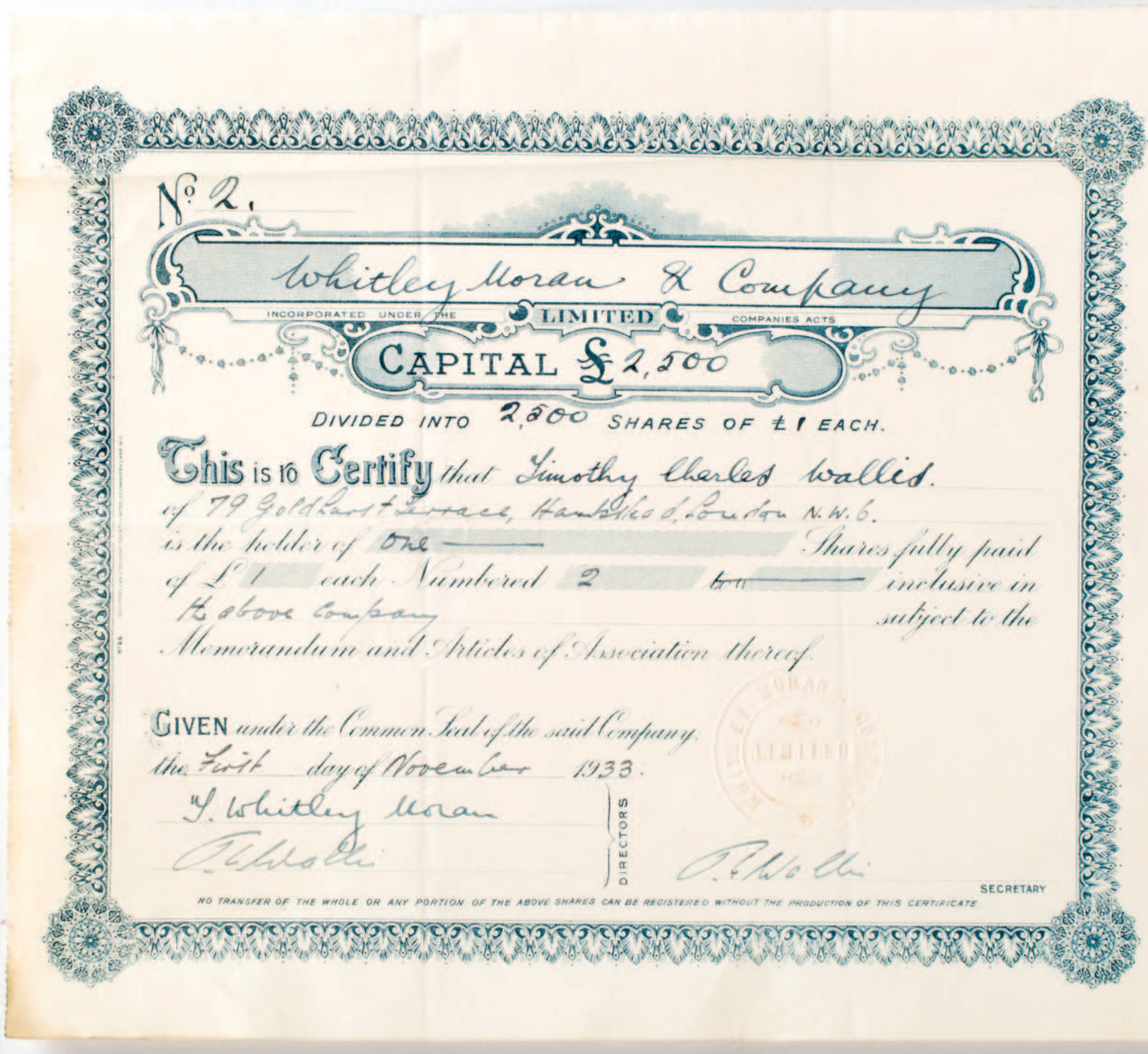
As we now turn 90 years old in 2023, we have taken the opportunity to update the wonderful book with highlights of our successes over the last decade.

OPEN FOR BUSINESS

1933

On 27th September 1933, Thomas Whitley Moran and Timothy Charles Wallis formed an association to 'manufacture and deal in gunite and all cementations, materials and products or other substances required for or used in the general business of the company...'

The company was formally incorporated on the 4th October 1933 with share capital of £2,500. The two directors each received one share worth £1.



No 2.

Whitley Moran & Company

INCORPORATED UNDER THE LIMITED COMPANIES ACTS

CAPITAL £2,500

DIVIDED INTO 2,500 SHARES OF £1 EACH.

This is to Certify that Timothy Charles Wallis.
of 79 Goldhurst Terrace, Hampstead, London N.W.6.
is the holder of One Shares fully paid
of £1 each Numbered 2 to inclusive in
the above Company subject to the
Memorandum and Articles of Association thereof.

GIVEN under the Common Seal of the said Company.
the First day of November 1933.

T. Whitley Moran
T. C. Wallis
DIRECTORS

T. C. Wallis
SECRETARY

NO TRANSFER OF THE WHOLE OR ANY PORTION OF THE ABOVE SHARES CAN BE REGISTERED WITHOUT THE PRODUCTION OF THIS CERTIFICATE.

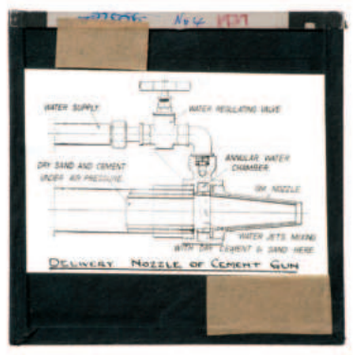
Timothy Charles Wallis' share certificate.

The original tender ledger from 1933. The ICI project is job number 23.

THE FIRST TENDERS ARE WON

1934

The company won its first contract for ICI on 9th February 1934. The work involved making gunite repairs to a steel tank at the Castner Kellner works in Runcorn. And the value of the project? The handsome sum of £19.



DEDICATED TO CONTINUOUS IMPROVEMENT

1933–PRESENT DAY

Gunite was invented in the early 1900s by American taxidermist Carl Akeley. Dry concrete was blown out of a hose with compressed air while water was introduced at the nozzle as it was released. In 1911 Akeley was granted a patent for his inventions including the 'cement gun' equipment and 'gunite', the material that was produced.

By 1937 Whitley Moran & Co. Ltd engineers were busy designing improvements to the cement guns they used to apply the gunite.

Left: Whitley Moran & Co. Ltd cement gun and operative 1955.
Above left: Diagrammatic section of a Whitley Moran & Co. Ltd cement gun 1937.
Above centre: Delivery nozzle of cement gun.
Above right: Diagrammatic layout of a cement gun outfit.

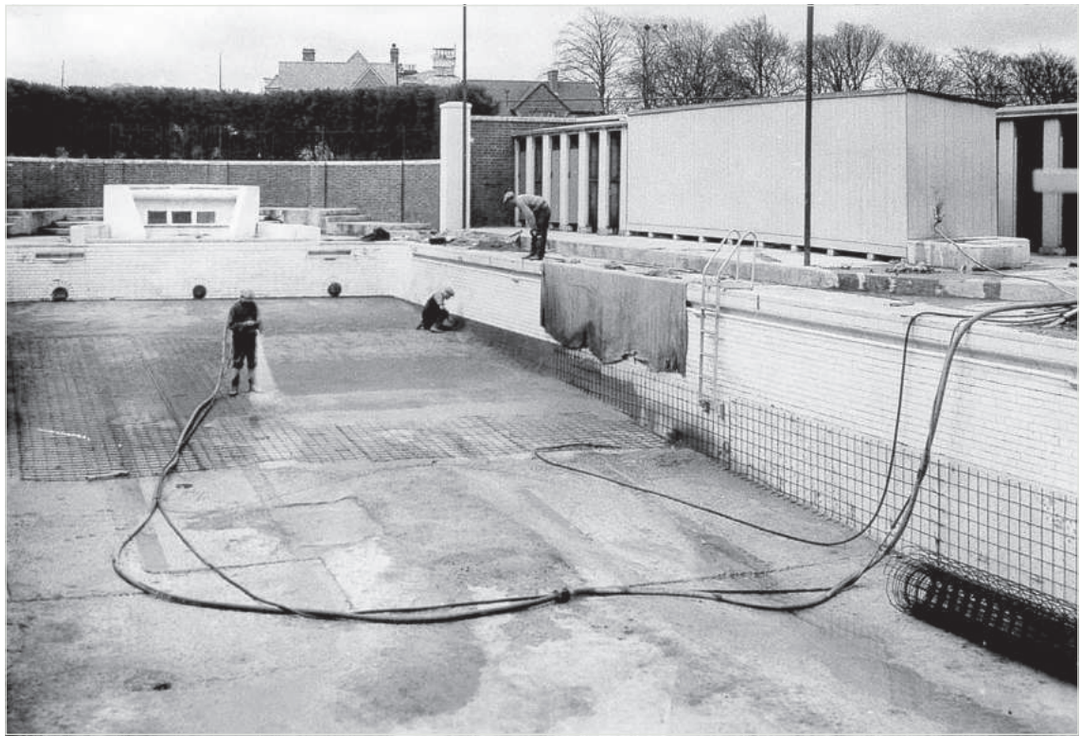
Gunite

Over the years a scrapbook was kept of the company's advertising.

A GROWING REPUTATION

1933–1955

In the early years of the company Whitley Moran and Co. Ltd were firm believers in the power of advertising. Regular print adverts were placed from 1933–1955 in the major trade publications of the day ensuring a steady supply of contracts for the business. Concrete, Civil Engineering and Engine and Boiler House Review all received adverts from the company's Liverpool office.

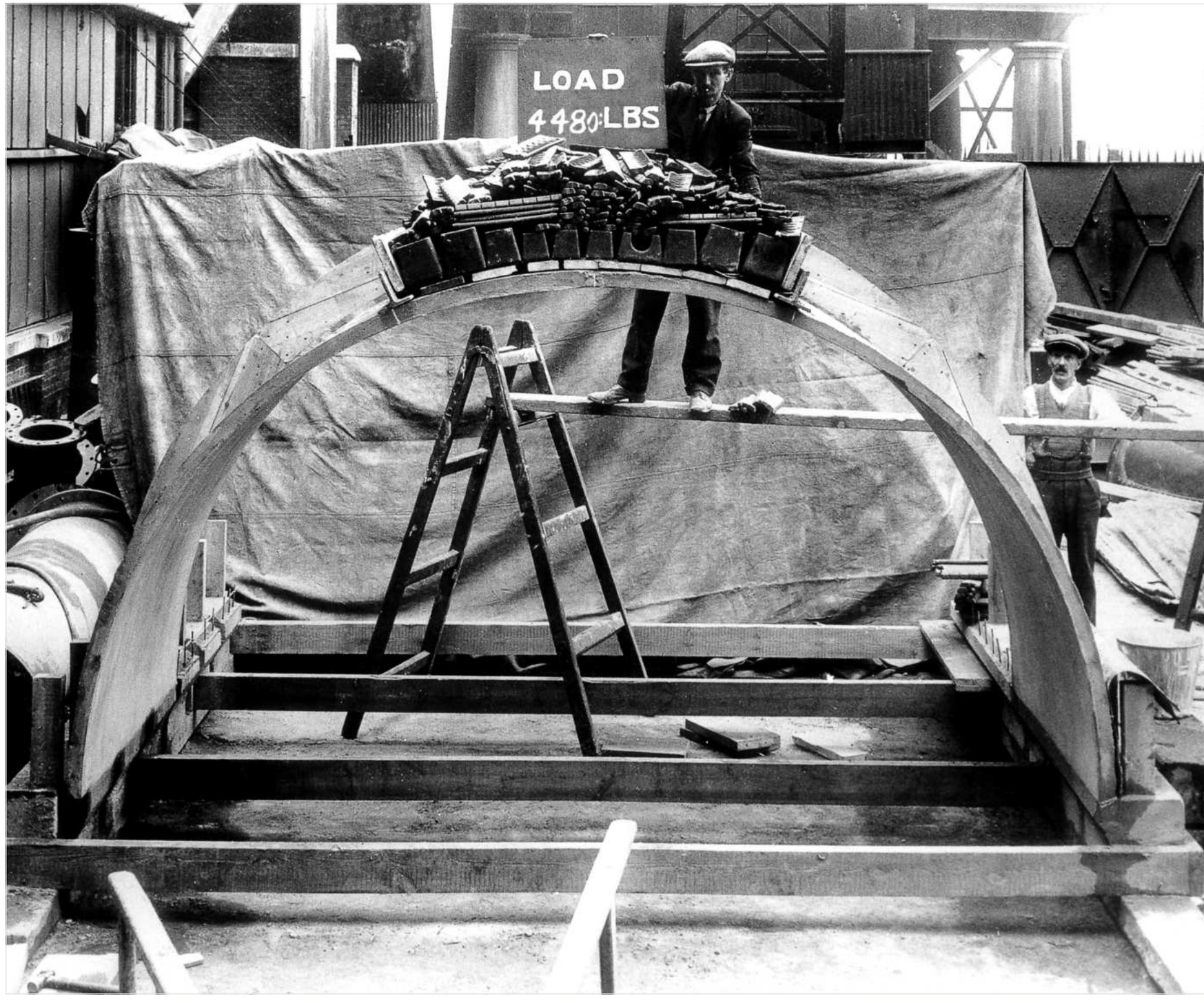


Above: Cement gun repairs to a beautiful outdoor swimming pool in Rock Park, Barnstaple, 1935.

TAKING THE PLUNGE IN NORTH DEVON

1935

Company records show a payment received on 18th July 1935 for £545 from the Barnstaple Corporation. This was to pay for cement gun repairs to a beautiful outdoor swimming pool in Rock Park, Barnstaple.

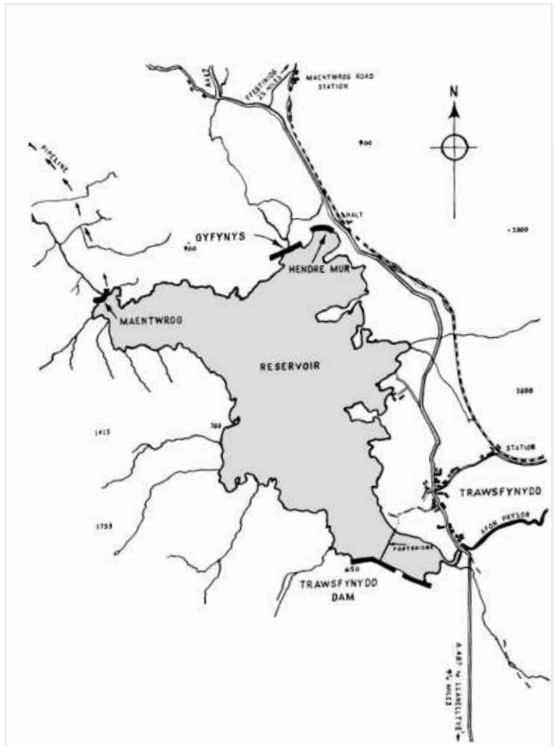


Cavity lining in load bearing test.

AT THE FOREFRONT OF TUNNEL ENGINEERING

1935

In the mid-1930s an early opportunity identified by Whitley Moran and Co. Ltd was the extensive remedial works required to ageing tunnels and subways. This led the company to develop a patented technique known as the Colquhoun-Moran Cavity Lining for Tunnels, Subways and Underground Works. The same principles are still at work today as we provide technical solutions to structural problems in various subterranean environments.



Above: Map of the works required by the North West Power Company.
Left: Repairing the lower level Dam at Trawsfynydd.

TRAWSFYNYDD DAM, WALES

1944

On 13th December 1943 Whitley Moran & Co. Ltd submitted bid number 635 in the sum of £20,000 to undertake gunite repairs to the concrete dams. Work commenced in March 1944.

Patent No. 765217

Elizabeth the Second by the Grace of God of the United Kingdom of Great Britain and Northern Ireland and of Her other Realms and Territories Queen, Head of the Commonwealth, Defender of the Faith: To all to whom these presents shall come greeting:

WHEREAS Whitley Moran & Company Limited, a British Company, of 5, Old Hall Street, Liverpool, 3. Lancashire,

(hereinafter referred to as the said applicants) have prayed that a patent may be granted unto them for the sole use and advantage of an invention for Improvements in or relating to the projection of settable mixes of building materials to form a coating,

AND WHEREAS the said applicants (hereinafter together with their successors, and assigns, or any of them referred to as the patentees) have declared that there is no lawful ground of objection to the grant of a patent unto them:

AND WHEREAS the complete specification has particularly described the invention:

AND WHEREAS We, being willing to encourage all inventions which may be for the public good, are graciously pleased to condescend to their request:

KNOW YE, THEREFORE, that We, of our especial grace, certain knowledge, and mere motion do by these presents, for Us, our heirs and successors, give and grant unto the said patentees our especial licence, full power, sole privilege, and authority, that the said patentees by themselves, their agents, or licensees, and no others, may subject to the conditions and provisions prescribed by any statute or order for the time being in force at all times hereafter during the term of years herein mentioned, make, use, exercise and vend the said invention within our United Kingdom of Great Britain and Northern Ireland, and the Isle of Man, and that the said patentees shall have and enjoy the whole profit and advantage from time to time accruing by reason of the said invention during the term of sixteen years from the date hereunder written of these presents: AND to the end that the said patentees may have and enjoy the sole use and exercise and the full benefit of the said invention, We do by these presents for Us, our heirs and successors, strictly command all our subjects whatsoever within our United Kingdom of Great Britain and Northern Ireland, and the Isle of Man, that they do not at any time during the continuance of the said term either directly or indirectly make use of or put in practice the said invention, nor in anywise imitate the same, without the consent, licence or agreement of the said patentees in writing under their hands and seals, on pain of incurring such penalties as may be justly inflicted on such offenders for their contempt of this our Royal command, and of being answerable to the patentees according to law for their damages thereby occasioned:

PROVIDED ALWAYS that these letters patent shall be revocable on any of the grounds from time to time by law prescribed as grounds for revoking letters patent granted by Us, and the same may be revoked and made void accordingly: PROVIDED ALSO that nothing herein contained shall prevent the granting of licences in such manner and for such considerations as they may by law be granted: AND lastly, We do by these presents for Us, our heirs and successors, grant unto the said patentees that these our letters patent shall be construed in the most beneficial sense for the advantage of the said patentees.

IN WITNESS whereof We have caused these our letters to be made patent and to be sealed as of the seventh day of September one thousand nine hundred and fifty-four

Comptroller-General of Patents, Designs, and Trade Marks.

The patent certificate.

INNOVATING FOR COMPETITIVE ADVANTAGE

1954

On 7th September 1954, Whitley Moran & Co. Ltd was granted a patent number 765217 for improvements to the gunite process. This allowed coating materials to be applied to very low thickness to 'one sixteenth or one thirty second of an inch'. The technique was titled, 'Improvements in or relating to the projection of settable mixes of building materials to form a coating'.

This pioneering invention was the forerunner to a number of other innovations such as spray applied levelling and fairing coats.

= *One sixteenth of an inch*

= *One thirty second of an inch*

Main: Skerryvore Lighthouse is located on a remote reef that lies off the west coast of Scotland, 12 miles south-west of the island of Tiree in the Outer Hebrides.
Bottom left: Access to the lighthouse was especially difficult.
Bottom centre: Working at height in 1955.

MAROONED ON SKERRYVORE

1955

In March 1954, the world's biggest lighthouse, which had been built on the small rock of Skerryvore between 1838 and 1844 was burned out by a fire that broke out in the lamp room during the night. The lighthouse-men were rescued after spending 12 hours on a narrow ledge terrified that the 158ft structure would collapse on them.

One year later, nine workmen from Whitley Moran & Co. Ltd made the sea swept rock their home for three months as they repaired the damage under a £16,000 contract.

AN EXTRAORDINARY CIVIC VISIT

1955

The Mayor of Liverpool, Alderman Reginald R. Bailey heard about the Skerryvore men and their lonely work and, while holidaying in Oban, paid a four-hour visit to the site.

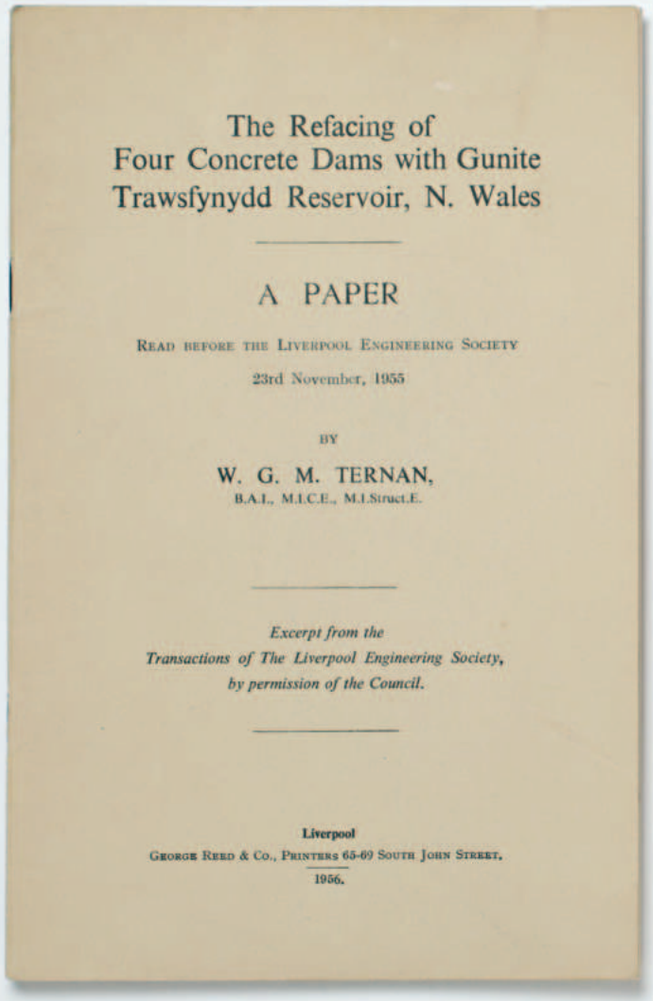
Delighted to receive such a distinguished visitor from their home city, the men encouraged the Lord Mayor to accompany them to the top of the tower for a look at the lamp itself. And so began a rather harrowing climb...

"That started the worst ordeal of my life. The ladder on the outside of the lighthouse was covered with slippery seaweed and what with that and a howling wind, plus the frightening waves beneath, the climb was a daytime nightmare."

Extract from article in The Liverpool Echo and Evening Express, 14th March 1959

The Mayor's bravery in tackling the trip and the climb impressed the men and they gave him a very warm reception. Upon their return to Liverpool with the job done, the Lord Mayor did just the same and entertained them at the Town Hall.

The Mayor of Liverpool, Alderman Reginald R. Bailey, congratulating our gunite team on a job well done.



The Refacing of
Four Concrete Dams with Gunite
Trawsfynydd Reservoir, N. Wales

A PAPER

READ BEFORE THE LIVERPOOL ENGINEERING SOCIETY

23rd November, 1955

BY

W. G. M. TERNAN,
B.A.I., M.I.C.E., M.I.Struct.E.

Excerpt from the
Transactions of The Liverpool Engineering Society,
by permission of the Council.

Liverpool
GEORGE REED & CO., PRINTERS 65-69 SOUTH JOHN STREET.
1956.

EDUCATING THE EXPERTS

1955

On 23rd November 1955 W.G.M. Ternan, the Chief Engineer of repair work on Trawsfynydd Dam, delivered a paper and slide show lecture on the subject to the Liverpool Engineering Society.

In more recent times we have shared our knowledge with the University of Liverpool, the Institution of Civil Engineers and the Concrete Society, and we continue to be involved in educating the next generation of engineers.

The 'Paper' produced for W.G.M. Ternan's lecture given to the Liverpool Engineering Society and the accompanying slides with notes from 1955.

MEETING THE CHALLENGE OF CHICKEN ROCK

1962

Designed by David and Thomas Stevenson, Chicken Rock lighthouse was the last of the great pillar rock towers to be designed by the Stevenson family. The lighthouse marks an isolated rock just south of the Isle of Man and was first lit in 1875.

Heavily damaged by fire in 1960, Whitley Moran & Co. Ltd was contracted to repair it in 1962 using gunite and pressure grouting. There was, however, a small logistics problem, due to its hazardous location it was impossible to approach by sea. Because of this all the men, plant and supplies required to complete the work were ferried to the lighthouse by helicopter. This meant an insurance bill of £200 for £100,000 of cover.

Board Meeting
29.8.67.

BALFOUR, BEATTY & CO. LIMITED

TELEPHONE No.
CITY 2046 (31 LINES)
EXTN

BOW BELLS HOUSE
BREAD STREET
LONDON E.C.4

TELEGRAPHIC ADDRESS
RUOFLAB, LONDON-E.C.4
CABLE ADDRESS
RUOFLAB, LONDON-E.C.4
TELEX 263822

YOUR REF
OUR REF DMB/JB:

16th August, 1967.

T. Whitley Moran, Esq.,
Whitley Moran & Company Limited,
6, Rumford Place,
Chapel Street,
Liverpool, 3.

Dear

I am writing to confirm the terms we have discussed by which my Company will acquire the entire £15,100 issued capital of Whitley Moran & Company Limited. The acquisition will be on the basis of a consideration of £30,000 payable in cash and our offer is subject to the following conditions :

(i) Completion of the purchase to be as at 1st October 1967 and the accounts of Whitley Moran & Co. as at 30th September 1967 ("the 1967 accounts") to be prepared and audited as soon as possible thereafter on the same basis (in particular as to valuation of fixed assets stock and work in progress) as the accounts for the year ending 30th September 1966 ("the 1966 accounts")

(ii) £5,000 of the purchase consideration to be retained by us after completion until the 1967 accounts have been audited and approved and if the net assets of the Company as shown by the 1967 accounts are less than £26,799 (being the net assets as shown in the 1966 accounts) the purchase consideration will be reduced by the amount of the short-fall.

(iii) Acceptance of the offer by all the shareholders of Whitley Moran & Company

(iv) Completion of a sale and purchase agreement in a form approved by our solicitors and containing the usual warranties and taxation indemnities

(v) The agreement of Mrs. Moran to retire as a Director upon completion without compensation for loss of office.

Continued/.....

Board Meeting
29.8.67.

T. Whitley Moran, Esq.

(vi) Agreement by you that your service agreement with the Company be cancelled upon completion without compensation and that you will remain in office for the time being as a non-executive Director being paid a consultancy fee on the basis we have discussed.

If your Board is prepared to recommend these terms to the shareholders of your Company and to accept in respect of their own shareholdings please confirm by signing and returning the enclosed copy of this letter. On the basis of our verbal agreement we have already instructed our solicitors to prepare the sale agreement and this will be forwarded to your solicitors.

Yours sincerely,

F. W. Balfour

Managing Director

I confirm my agreement to the foregoing subject to Contract

T. Whitley Moran

T. Whitley Moran 29.8.67

The Chairman proposed that the Board recommend the Shareholders of Whitley Moran & Co. Ltd to accept the terms of the offer. Mr. Long seconded the motion and it was resolved unanimously to recommend acceptance of the offer to the Shareholders of the Company.

A BUYER CALLS

1967

Whitley Moran & Co. Ltd was acquired by Balfour Beatty in 1967. Our main business was still gunite/shotcreting works, but we also started to carry out cementitious grouting, pointing and concrete repair works.

The offer letter from Balfour Beatty to Whitley Moran & Co. Ltd and the chairman's recommendation to accept.

Stills from the Tomorrow's World television programme shown in 1975.

INVENTING THE FUTURE

1975

In the early 1970s, James Milne was working for Balfour Beatty in East Pakistan and Bangladesh. Whilst there he developed a unique vacuum assisted process that was used to repair crumbling brick bridges.

Further development by Balfour Beatty Power Construction Ltd. followed and the Balvac Process was patented in 1973. It was so innovative that the BBC featured it on its flagship science television programme 'Tomorrow's World' in 1975.

Above: *Statue of Lady Jerningham following treatment with the Balvac Process.*
Right: *The missing ear.*

LADY JERNINGHAM AND THE CURIOUS CASE OF THE DOG'S EAR

1975

The memorial statue of Lady Jerningham and her dogs is an important feature in the town of Berwick.

As one of the first projects to benefit from the Balvac Process it was vacuum-injected with silicon resin to protect the marble from winter frosts. This meant that the practice of protecting the statue with tarpaulins and straw through the winter months was discontinued.

However, it's a little known fact that as we dismantled the scaffolding at the end of the project, a small part of one of the dog's ears was accidentally broken off.

Perhaps now is the right time to say "sorry ma'am".

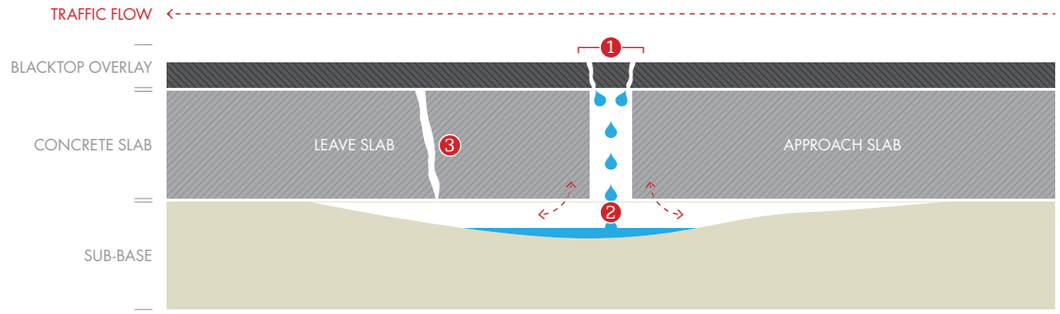
CREATING A NEW SYSTEM OF ROAD REPAIR

1977–PRESENT DAY

Watching the Tomorrow's World programme featuring the Balvac Process was a gentleman named J.M. Guthrie, a member of the Engineering Intelligence Division of the then Ministry of Transport.

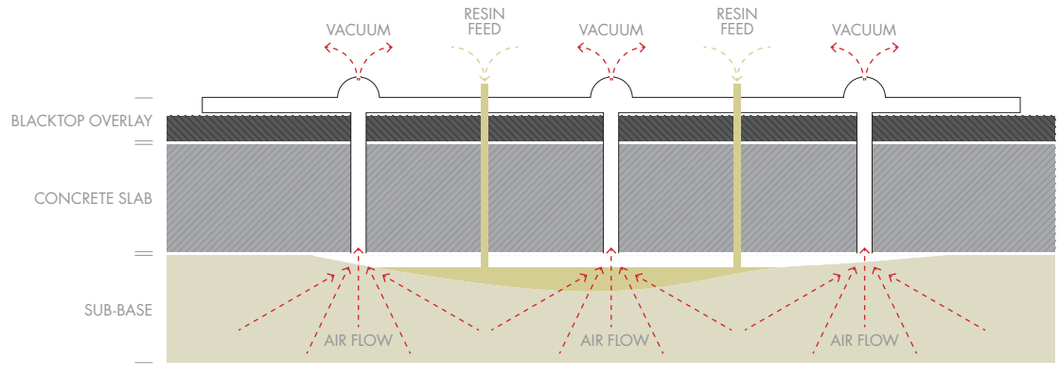
This chance viewing gave rise to a new idea concerning road repairs, particularly filling voids under rocking road slabs. This new technique, known as Vacuum Void Grouting, was patented by James Milne and Balfour Beatty in 1977 and is still used extensively throughout the UK on both Highways Agency and local authority roads.

THE PROBLEM



1. Water leakage through the joint leads to localised softening of the sub-base allowing the slabs to deflect.
2. Under repeated differential movement from traffic, washout creates a void which grows at an ever increasing rate.
3. Eventually the slab fails, typically cracking transversely, and leading to eventual breakup of the pavement.

THE SOLUTION



1. Lines of holes are drilled through the pavement to intercept the void.
2. Using a vacuum source, ducts and a polythene membrane an alternating sequence of vacuum and resin feed ports is established.
3. The vacuum causes air to be pulled from the sub-base, which holds the resin in, and draws it through, the void.

WINNING THE SPACE RACE

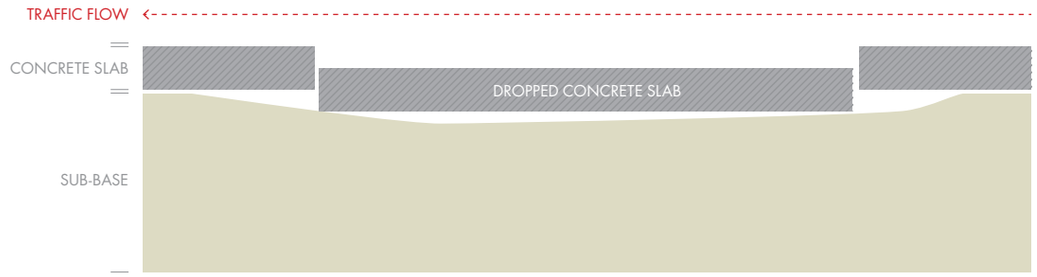
1979

One of the problems of road repairs is the upheaval it causes to road users.

Another first from Balvac was the use of a specially strengthened space frame together with vacuum void grouting.

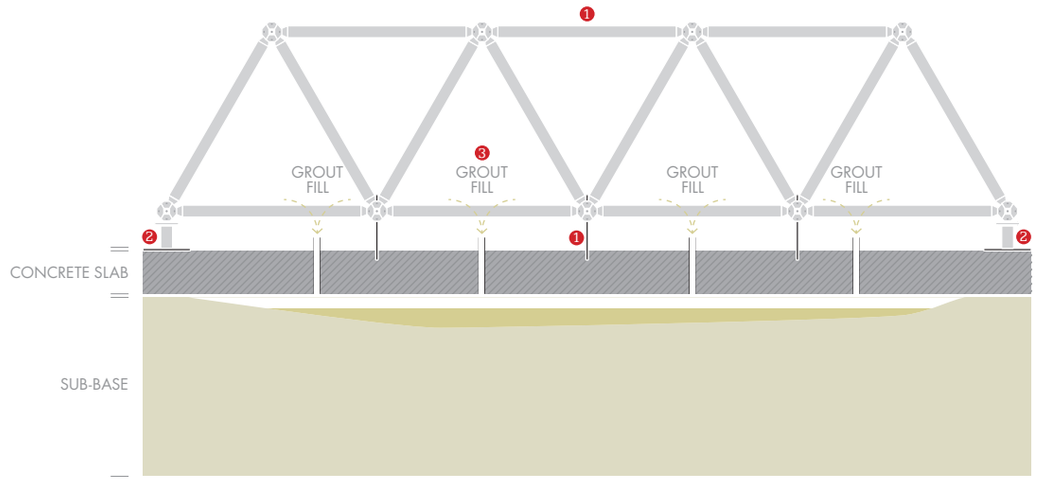
The technique allows a collapsed section of concrete road slab to be lifted level with the rest of the road. The void causing the slab to fail is filled with grout and 'tightened up' with a specially formulated resin, chosen for its high compressive strength and fast curing characteristics. Quicker and cheaper than breaking the road out and relaying it, the repair can be completed in a number of hours, in all types of conditions and with minimal disruption. A win-win for all concerned.

BEFORE



1. Differential movement between slabs.
2. Ingress of water into failed joint promotes localised sub-base failure.
3. Consequential slab movement under loading aggravates problem causing increased voiding.

AFTER



1. A purposed designed and built Spaceframe is positioned and bolts are fastened to the sunken slab.
2. Balanced hydraulic jacks are used to raise the slab to the correct level.
3. The large void left is bulk filled with a fast curing cement based grout. Once the cement grout has cured, the vacuum resin injection process is used to fill in residual minor voiding that may be present, particularly at the extremities of the affected area.

STRIKING GOLD IN THE HILLS OF WARRINGTON

1980s

Built in the glamorous location of Warrington this vault was commissioned by Barclays to house some of their extensive bullion reserves. The roof of the building was cleverly designed to prevent thieves landing a helicopter on it.

Given the sensitive nature of the project no contractor was ever given a complete building plan to work with and the client was the only one who had the full details. Our responsibility on this project was to build the cable supported roof using gunite.

Main: Spraying concrete to reinforced roof.
Top right: Difficult access arrangements for spraying concrete to sloping roof.
Bottom right: Completed project.

KEEPING THE BANK MANAGER HAPPY IN HONG KONG

1983–1984

Protecting the steelwork of the new headquarters building for the Hong Kong & Shanghai Banking Corporation was the largest project of its kind at the time. Designed by Sir Norman Foster the building was constructed adjacent to a marine environment and subject to extreme weather conditions. As a result the steel framework required permanent corrosion protection. A total surface area of 70,000m^2 of steelwork was given a sprayed-on cementitious barrier coating that was applied pre- and post-construction. The 14mm barrier coat consisted of cement, fine aggregate, stainless steel fibres and latex polymer.

And as far as we know it's still doing its job today.

Above: Work in progress photograph album, 1983-1984.
Right: The project approaches completion.

SUMMIT TUNNEL FIRE

1984

On 20th December 1984 a dangerous goods train derailed as it passed through the Summit Tunnel on the Greater Manchester/West Yorkshire border.

It was carrying more than one million litres of petrol. The resultant fire burned at around 1,530°C causing some of the tunnel bricks to melt and pillars of flame 45 metres high to shoot out of the tunnel vents. It was very fortunate that none of the train crew or first response fire crews were killed or injured.

Once the fire was safely extinguished our role was to repair the primary structure of the tunnel. Originally built in 1841 it was testimony to the tunnel's designer, George Stephenson, that while some bricks had melted in the inferno the majority remained intact.

As he himself said, "I stake my reputation and my head that the tunnel will never fail so as to injure any human life".

Main: Fire bursts from vents 8 and 9 during the Summit Tunnel fire, Greater Manchester/West Yorkshire border, 1984. We repaired the damaged tunnel using spray applied gunite.
Bottom right: The scene after the fire was extinguished shows the extent of the damage.
Bottom left: Crews from Greater Manchester Fire Brigade and West Yorkshire Fire Brigade on scene.

SCALING THE HEIGHTS AT THORPE MARSH POWER STATION

1989

Thorpe Marsh Power Station was a 1 Gigawatt coal-fired power station near Doncaster in South Yorkshire, England. Originally built in 1959 it was nearing the end of its life when we were asked to complete some challenging repairs.

Despite being coated with gunite to prevent their collapse, three cooling towers were found to have large vertical cracks. Our solution involved resin injecting the gaps and then externally prestressing the towers by wrapping them in corrosion proof Parafil cables that were supported on stainless steel brackets bolted to the towers. The cables could then be tensioned to the correct stress to secure the integrity of the towers. The low weight of the cables was essential as the whole system had to be assembled at the top of the towers by steeplejacks working from cradles.

Today we continue to undertake structured repair works to civil assets in the power sector.

The now demolished cooling towers of Thorpe Marsh Power Station, 1989. We repaired the cracks using vacuum assisted resin injection.

Aerial photograph of Albert Dock redevelopment during the 1980s.

RESTORING CONFIDENCE IN LIVERPOOL

1989

Albert Dock in Liverpool originally opened in 1846. Internationally acclaimed and highly innovative it was built to accommodate the most modern sailing ships of its day. However, by 1900 only 7% of ships using Liverpool were sailing ships and it closed in 1972. Despite achieving Grade I listed building status in 1952, and being made a conservation area in 1976, by 1981 the entire complex was abandoned and derelict.

Now transformed into one of Liverpool's top heritage attractions, the warehouse structures that are built entirely of cast iron, brick and stone still bear some of the scars of that earlier neglect.

Balvac spent five years on site at Albert Dock using vacuum assisted resin injection techniques to stabilise and strengthen extensive vulnerable areas of brickwork.

TURNING TO NUCLEAR

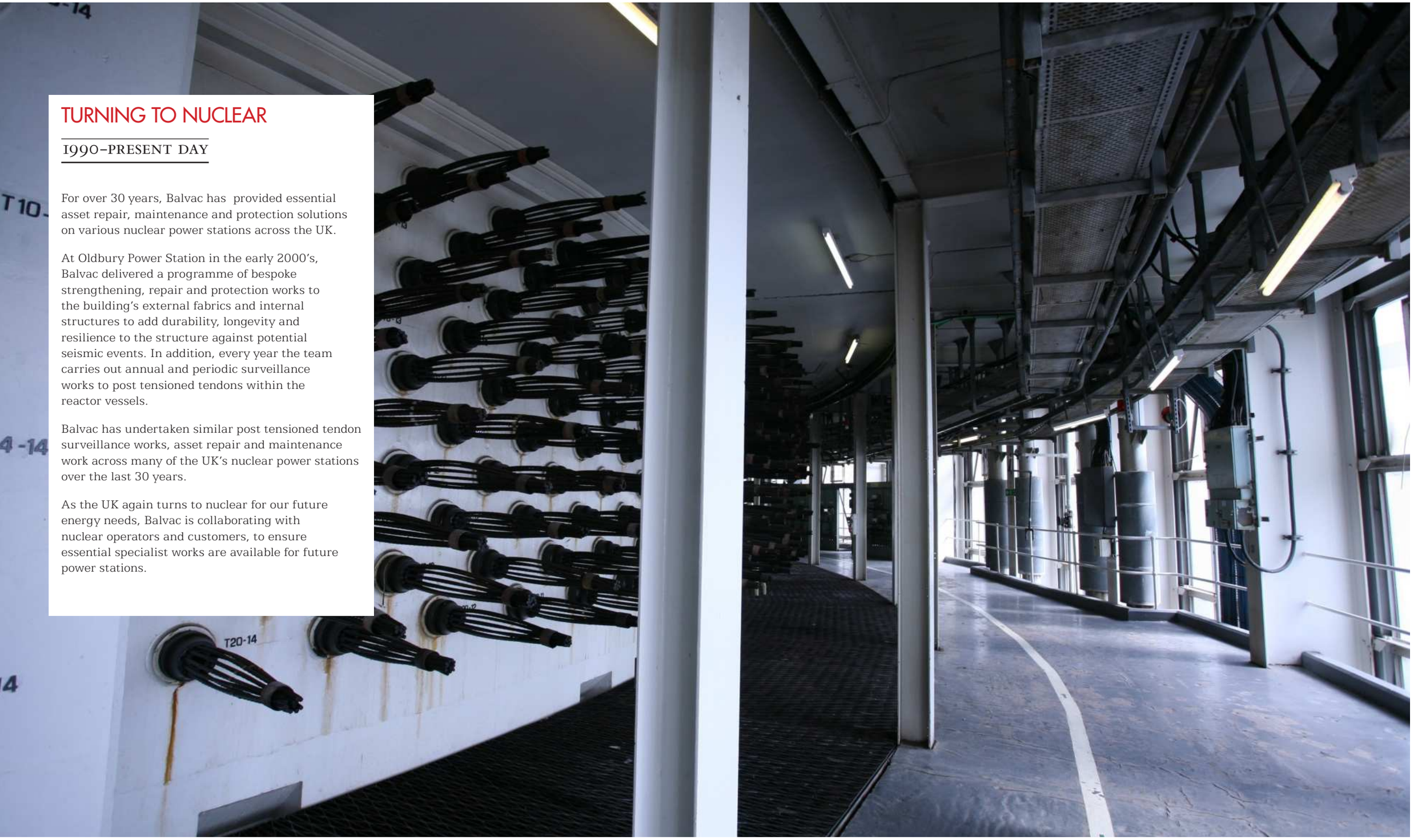
1990–PRESENT DAY

For over 30 years, Balvac has provided essential asset repair, maintenance and protection solutions on various nuclear power stations across the UK.

At Oldbury Power Station in the early 2000's, Balvac delivered a programme of bespoke strengthening, repair and protection works to the building's external fabrics and internal structures to add durability, longevity and resilience to the structure against potential seismic events. In addition, every year the team carries out annual and periodic surveillance works to post tensioned tendons within the reactor vessels.

Balvac has undertaken similar post tensioned tendon surveillance works, asset repair and maintenance work across many of the UK's nuclear power stations over the last 30 years.

As the UK again turns to nuclear for our future energy needs, Balvac is collaborating with nuclear operators and customers, to ensure essential specialist works are available for future power stations.



Oldbury Power Station, South Gloucestershire

CABIN FEVER AT LLYN STWLAN DAM, FFESTINIOG

1993

This project involved the application of humidity sensitive polyurethane coatings to a damaged dam wall. Unfortunately as the reservoir was still full of water and the surrounding mountains permanently shrouded in rain this became something of a challenge. In fact the Balvac team ended up spending much of their time in ancient cabins that were heated and lit by gas.

The only link with the outside world was a transportable cellular that required a magnetic aerial to be mounted on the cabin roof. The sophisticated communications set-up was completed with power from a car battery. It was little wonder the team could rarely get a signal.

However, despite the challenges to patience and personal space the job was finally completed. But not before the technical specialist from Irathane finally snapped, yelling in between the downpours to "just get that goddamn stuff on the wall!"

RECORD BREAKING BRIDGE LIFT

1996–1999

The Kingston Bridge is one of Europe's busiest river crossings, carrying 150,000 vehicles a day high over the Clyde in the centre of Glasgow. The bridge is a key link in the west of Scotland's motorway system and plays a vital role in Scotland's economic life.

Hailed as a remarkable piece of engineering when it was built in 1970, daily vehicle crossings totalled 31,000 that year. By 1990 excess vehicle movements coupled with poor design and construction meant major defects had appeared in the bridge.

A decade-long programme was initiated to repair, renovate and strengthen the bridge. This work involved strengthening the quay walls and jacking-up the 52,000-tonne deck of the bridge, while still operational, to allow the construction of new supporting piers, before lowering the bridge back onto the new, more robust supports. One of the most ambitious civil engineering projects ever to take place in the city it involved 128 hydraulic jacks, making it the biggest ever bridge lift and placing it in the Guinness Book of Records.

With our colleagues in Balfour Beatty we were involved throughout the design stage providing specialist advice and carried out post tensioning, plate bonding and vacuum assisted injection of resins.

On conclusion of the project we received a letter of commendation from Glasgow City Council noting our 'commitment to the successful outcome of the project which went beyond contract expectations and demonstrated the culture of their business to resolve problems and deliver solutions'.

KEEPING BRITAIN'S HERITAGE ALIVE

2008–2009

Thornton Viaduct opened in 1878 as part of the Great Northern Railway's route from Queensbury to Keighley – arguably, the most engineered section of railway in West Yorkshire.

It is Grade II listed, incorporates 20 barrel vaulted arches – each with a span of 40 feet – and its 300 yard length incorporates a rare S-shaped curve. The old trackbed crosses Pinch Beck at a height of 120 feet. The structure is formed of 17,000 cubic yards of masonry as well as 750,000 bricks.

In November 2008, Thornton Viaduct became part of the Great Northern Railway Trail, an initiative that aimed to create a foot and cycle path linking Queensbury and Cullingworth.

To keep the viaduct in a safe and serviceable condition, the Historical Railways Estate of the Highways Agency commissioned Balvac to carry out repair and strengthening works and we used a combination of fixed scaffolding and suspended cradle access platforms to complete the work on this stunning example of Victorian civil engineering.

The fully refurbished Thornton Viaduct from the West Span view, now open for cycling and walking as part of the Great Northern Railway Trail between Cullingworth and Queensbury.

STEELING THE SHOW IN HALTON

2009–PRESENT DAY

Originally opened in 1961, the Silver Jubilee Bridge is one of the largest steel arch bridges in the UK and was regularly exposed to traffic volumes of over 80,000 vehicles per day. In 1977, the bridge was widened and renamed to coincide with the Silver Jubilee of Queen Elizabeth II.

Balvac was first appointed to Halton Borough Council's Bridge Maintenance Partnership contract in 2009, delivering over 30 packages totalling £23 million of work to the Silver Jubilee Bridge and surrounding bridge structures.

Since 2015, Balvac has successfully negotiated and delivered a further c.£20 million of ongoing major maintenance works via the SCAPE Civil Engineering framework. Funding for the maintenance of the bridge was initially awarded by the Department of Transport, and subsequently via the Liverpool City Region Combined Authority.

Works have included structural concrete repair and impressed current cathodic protection installations, maintenance painting, steelwork strengthening, stringcourse reconstruction and new steel parapets.

In 2022, the project secured two industry accolades, winning both the Institution of Civil Engineers (ICE) Northwest 'Constructability Award' and the Bridge Design & Engineering 'New Life Award'.

Main: *Silver Jubilee Bridge, Halton*
Bottom left: *Lighting up Silver Jubilee Bridge with new LED lighting*
Bottom right: *Birdseye view, Silver Jubilee Bridge*

LAYING THE FOUNDATIONS FOR SUCCESS

2010–PRESENT DAY

Ballybane in Cork, Ireland is home to an onshore wind farm that uses turbines from one of Europe's leading wind turbine manufacturers. When an issue was discovered with the turbine foundation, the client relied on our knowledge and expertise of concrete repair to resolve it.

The turbine foundation design uses a steel 'can' that is embedded into the concrete foundation. Occasionally problems can occur with movement of this embedded 'can' inside the foundation. This can cause the turbines to be stopped for safety reasons.

When excessive movement was detected at Ballybane we undertook specialist repairs to resolve the problems, helping to maintain the smooth operation of the turbines.

Balvac has provided specialist foundation repairs to many types of turbines across the UK and Ireland.

EXTENDING THE LIFE OF OUR NATION'S INFRASTRUCTURE

2016–PRESENT DAY

Inspections, testing and structural health monitoring are essential to sustainably manage, maintain and future-proof our nation's infrastructure assets for years to come.

Via successive frameworks, Balvac has worked closely with National Highways to undertake inspections and condition surveys of their assets, to gather vital data and identify improvement or repair requirements.

In 2022, Balvac was awarded a programme of asset inspections and testing across the M1/A1, A30/35 and A50/A564 Design Build Finance Operate (DBFO) concessions.

Under a separate arrangement with National Highways, we also commenced further asset inspection works on bridge structures in 2023, including specialist post tensioning inspections and buildability reports.

Balvac continues to deliver an impressive portfolio of structural repair, strengthening and protection projects across the strategic and local road networks, remaining focused on sustainably extending the life of our nation's infrastructure.

Top: M60 Barton Bridge
Bottom: Balvac colleague on M60 Barton Bridge

CRITICAL CONCRETE REPAIR FOR THE M60

2019–2022

Balvac delivered critical concrete repair, strengthening and impressed cathodic protection works to the M60 Palatine Road Bridge, which carries M60 traffic over the River Mersey, future-proofing the bridge for the next 25 years.

Working collaboratively with National Highways, Balvac developed and installed a temporary propping solution to relieve both the dead and live loads on the bridge decks, to facilitate the repair and the strengthening of 15 pier crossheads. The project team successfully repaired seven crossheads using a combination of flowable, sprayed and hand-placed repair materials, as well as using a titanium mesh anode cathodic protection system. To protect the reinforced steel within non-accessible areas of the crossheads, daisy chain anodes were installed through 16m-long holes cored through the centre of the crosshead to a +/- 50mm tolerance.

Balvac worked closely with the principal designer, Amey, to establish the condition of the remaining eight piers, and by undertaking trials to demonstrate the dimensional accuracy of concrete removal using hydro demolition. These trials provided confidence for the innovative unpropped solution to be implemented, providing huge time and cost savings.

In addition, the team developed an alternative scaffold access solution which was part suspended from the deck structure and part supported on gallows brackets attached the bridge piers. This innovative approach mitigated the need for cofferdams to be installed within the River Mersey.

The changes to methodology, sequencing and access eliminated significant risk, improved the working environment and workforce wellbeing, and resulted in overall savings of c.£8 million and almost 1 year of programme time on site.

In May 2023, Balvac proudly received the Institution of Civil Engineers (ICE) Northwest ‘Constructability Award’ for the M60 Palatine Road Bridge project.














A MODERN COMPANY. BUILT ON TRADITIONAL VALUES.

1933–PRESENT DAY

Looking back at some of the images in our archive, it's clear that many things have changed for the better since the early years of the company.

Health and safety legislation and practices have, quite rightly, undergone a revolution and we are committed to ensuring the elimination of all workplace injuries, lost time incidents and ill health because of our activities.

We continue to be a more sustainable business in everything we do, and the work that we choose to undertake. We are committed to building and maintaining long-term customer relationships based on successful project delivery, collaboration, trust and mutually outcomes.

We look forward to the opportunities that the next ninety years will bring. But as we do so there is one thing that we are certain will stay the same, and that is our commitment to delivering technically brilliant solutions combined with quality, value and outstanding service.

CREDITS

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