BRITPAVE NEWS

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The British Cementitious Paving Association

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The British Cementitious Paving Association

IN THIS ISSUE:

CHAIRMAN'S WELCOME

Welcome to the Winter 2024 issue of Britpave News.

The theme of this year's Britpave industry conference was 'Delivering the Next Generation'. Delegates heard from a wide range of industry speakers on what is required to deliver future infrastructure from new industry standards to new construction products and processes. Importantly, the conference examined how to attract the workforce necessary to deliver this new infrastructure. Judging by the questions and answers, many of the issues examined by the presentations hit a chord with conference audience. A report on the conference is contained within this issue of Britpave News.

The theme of 'Delivering the Next Generation' is not limited to just the annual conference. It is the basis upon which Britpave members aim to deliver infrastructure solutions that are ever more cost effective and sustainable. For its part, Britpave aims to support this with the development of industry best practice, providing a forum for the exchange of ideas, the dissemination of information, and forwarding the benefits of cementitious and concrete solutions.

The need for this is highlighted by the continued growing demands being placed on our infrastructure not only in terms of growing traffic and passenger numbers but also with the expectations of long-term performance with reduced carbon emissions and minimum maintenance. This issue of Britpave News highlights a number of infrastructure proposals and expansion plans where those demands and expectations can be met by the myriad of construction and operational benefits that concrete solutions can provide.

Delivering the next generation should also be about celebrating excellence and this is why I am delighted to announce that registration is now open for the new Britpave John Ferguson Civil Engineering Graduate and Apprenticeship Awards. Launched at this year's conference, the Awards are designed to recognise and reward the next generation of civil engineers and are in recognition of the tremendous positive impact that John had upon the civil engineering industry and upon Britpave of which John was a founder and long-term member. I call upon all Britpave members to enter and help us celebrate delivering the next generation.

Joe Quirke
Britpave Chairman and Engineering Manager, VolkerFitzpatrick

Britpave, the British Cementitious Paving Association, promotes the better and greater use of cementitious and concrete infrastructure solutions. Members include major contractors, specialist equipment and material suppliers, consulting engineers and interested trade associations. Together, Britpave provides a single industry voice for the in-situ cementitious and concrete infrastructure sector.

For further information visit: **www.britpave.org.uk**

UK FACES £700BN INFRASTRUCTURE SPENDING SHORTFALL

A new report from EY has identified that the UK is facing an infrastructure spending shortfall of £700bn by 2040. The report, 'Mind the (Investment) Gap', says that closing this deficit without government spending would require private sector investment to more than double from current levels by 2040.

The report attributes the funding shortfall to a combination of the increased cost of capital projects and the extensive investment required to meet the UK's long-term economic, social, strategic, environmental and defence priorities.

EY analysis suggests that if the UK maintains historical levels of capital spending up to 2040, adhering to current fiscal rules capping borrowing and debt, then it would be in line to commit £1.8trn in cumulative capital spending over the next 15 years. However, the report identifies an additional £1.6trn of projects and programmes that are currently unfunded by 2040.

Using historic patterns of government spending on existing versus new projects, EY estimates that only around half of the £1.6trn could be covered by government investment by 2040, leaving a potential funding shortfall of at least £700bn.

Based on the projections, meeting the remaining shortfall without government spending would require private sector investment in UK infrastructure to more than double from the £568bn currently projected to be required by 2040.

The report assesses the UK's existing and forecast capital spending commitments identified by the National Infrastructure Commission, the Department for Health and Social Care, and the Ministry of Defence.

This includes a wide range of projects, from new road and rail projects to decarbonising public buildings and funding social infrastructure like hospitals and schools. It also includes increased defence commitments including the UK seeking to meet a target of spending 2.5% of GDP on defence.

Future risks could also see the £700bn deficit increase. If the same level of infrastructure project cost overruns of the last decade recur in the coming 15 years, almost £1trn could be added to the shortfall, with a further £390bn if further geopolitical tensions escalate to economic strains like inflation and more defence spending.

The report identifies three key measures that, if deployed at a project level in the UK, have the potential to plug the investment gap.

These include leveraging a range of alternative investment models that have worked successfully on individual projects worldwide, from value capture models in Japan to charging models in Austria. The report also recommends that infrastructure projects incorporate a series of efficiency improvements, with particular focus on the design phase, which could reduce the average cost of a capital project by 20-25%. Finally, it highlights the benefits of deploying AI and other technology to produce accurate cost analysis and highlight savings opportunities.

To download a copy of the report, visit:
https://go.ey.com/3BAUBLp

NEW INFRASTRUCTURE BODY

The Government is set to abolish two key bodies that oversee infrastructure projects. The National Infrastructure Commission (NIC) and the Infrastructure Projects Authority (IPA) are to be restructured and merged to form a new body responsible for monitoring all major government-funded projects. The move follows concerns over costs overruns and programme delays of several major UK infrastructure projects. The new body will be called the National Infrastructure Service Transformation Authority, or NISTA.

The plans to replace NIC and IPA with a new body were confirmed by Darren Jones, Chief Secretary to the Treasury, at a recent Labour Party forum where he pledged to deliver a 10-year infrastructure programme, to be announced shortly, with every department told what it could spend up to five years ahead.

It is expected that the new body will provide greater clarity and leadership and provide a point of authority that will have better buy-in from the Treasury, the Cabinet Office and government departments.

GOVERNMENT DELAYS LOWER THAMES CROSSING DECISION

A coalition of businesses has called on the government to commit to the £9bn Lower Thames Crossing to avoid "another 15 years of uncertainty". The decision on the application by National Highways under the Planning Act 2008 for the A122 Lower Thames Crossing development consent order was due in October 2024. The Transport Secretary Louise Haigh has now extended the deadline for making a decision to 23rd May 2025.

Contractors and construction trade bodies were among 73 organisations that had previously signed a letter to the government – coordinated by trade body Logistics UK – supporting the road scheme.

The major road project, which aims to alleviate traffic at the critical Dartford crossing, has suffered a series of planning setbacks since plans were first submitted in 2020. In March 2023, former transport secretary Mark Harper delayed the project by two years in a bid to spread out government spending.

The letter says: "If consented, the [Lower Thames Crossing] will become one of the UK's largest construction projects. Within months, there could be spades in the ground and workers being upskilled, with the new road potentially operational by 2030/32."

National Highways has already awarded main-works contracts to Britpave member Balfour Beatty, including a £1.2bn north roads package, and to a Bouygues-Murphy joint venture for £1.34bn worth of tunnelling.

THE CONCRETE SOLUTION

Britpave is to publish a new series that will forward the benefits of concrete solutions for specific transport problems. The first of these is how reduce road transport CO_2 emissions. Further reports will examine major issues such as carbonation, noise reduction, long-term performance. Each report will examine a problem, research into what can be done and offer a concrete solution.

Reducing vehicle fuel consumption is instrumental to reducing CO_2 emissions. Transportation accounts for 26% of the UK's total CO_2 emissions. In 2021, cars made up 75% of the of the total road vehicle miles travelled within the UK and produced 57% of transport emissions. Heavy goods vehicles (HGVs) although making up a far smaller proportion of vehicle miles at 6% were responsible for 21% of emissions. Given the smaller proportion of vehicle miles this means that HGVs have a far higher CO_2 impact.

A number of international research projects have found that concrete roads offer the potential to reduce fuel consumption compared with asphalt roads. This is because concrete roads have a greater stiffness and rigidity that reduces the rolling resistance between a vehicle's wheels and the road surface. The deflection and rutting of a flexible asphalt road surface increases the roll resistance and, therefore, the fuel consumption. In a similar way that properly inflated tyres can improve a vehicle's fuel efficiency, reduced rolling resistance impacts not only ride quality and safety but also fuel consumption.

The research shows that the potential fuel savings for HGVS travelling on rigid concrete roads range from 4% to 11%. Based on these findings and given the significant milage travelled by HGVs the resultant reduction in CO_2 emissions would be considerable.

These savings could be easily delivered by the installation of concrete truck lanes. Designed specifically to cope with the 48 tonne weight of HGVs and placed on the inside lanes of dual carriageways and motorways, trucks lanes offer a range of benefits not least of which is the rigidity required for reduced fuel consumption.

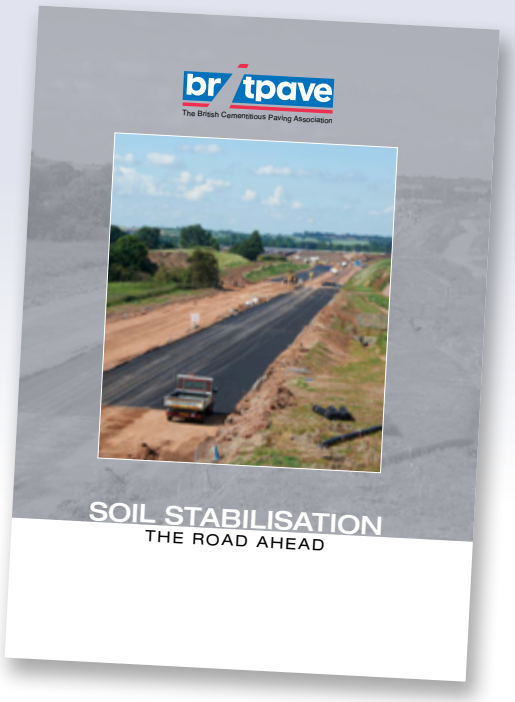
In addition to providing a deflection-free surface concrete truck lanes would provide a road solution that offers long-life performance and minimum maintenance with impressive whole life cost and whole life CO_2 reduction.

When it comes to road transport, it may prove worthwhile to look beneath vehicles' tyres for an immediate and readily available concrete solution. The Britpave report will be available by the end of 2024.

HGV traffic is expected to grow

SOIL STABILISATION: THE ROAD AHEAD

The Britpave Soil Stabilisation Task Group has published a new report outlining the benefits of using soil stabilisation for improving and strengthening road and heavily trafficked area foundations and subgrade.



'Soil Stabilisation: the road ahead' explains how the use of soil stabilisation addresses the potential problem of inadequate soil strength – which is subject to a range of physical characteristics such as mineral composition, particle size, shape and distribution and water content. It also addresses the problem of excessive soil settlement which can lead to soil deformation and compression under load.

Soil stabilisation is a well-established civil engineering technique that treats and strengthens poor or unsuitable soils that may feature high compressibility, high water content, low shear strength or low permeability. These often require engineering measures to improve performance and avoid potential serviceability and ultimate limit failures.

The stabilisation or improvement process involves the use of hydraulic binding materials such as cement, lime, fly ash or ground granulated blast furnace slag (GGBS) that are mixed-in on site thereby providing a potentially more sustainable and cost-effective alternative to solutions which require the excavation and replacement of unsuitable materials and the potential importation of aggregates to site.

In addition to the overall benefits of soil stabilisation including the saving of natural resources, reducing material sent to landfill, reduced number of lorry movements and faster construction programmes, there are benefits that are specific to roads and heavily trafficked areas. These include:

- The creation of a strengthened and more stable load-bearing foundation in turn increases the road surface traffic load bearing capacity, durability and stability,
- A stable road and area pavement that minimises the risk of cracking and rutting,
- The increased durability enables the pavement surface to be more resilient to extreme weather impacts including freeze/thaw impacts of winter, the soil erosion of extreme rainfall and flooding and the shrink impact of extreme heatwaves.
- Increasing the long-term performance and durability of a road or trafficked area reduces the need for repair, maintenance and replacement thereby reducing costs and increasing sustainability.

Achieving the above benefits is subject to the correct implementation of industry best practice. Soil stabilisation involves a lot more than simply churning up the ground and scattering over some binder. Soil types and possible contaminants need to be assessed and tested so that the correct binder can be administered. Handling binders correctly requires a proper health and safety protocol. It also requires the use of specially developed plant to ensure that the mixing and placement of soil and binder is efficiently undertaken.

The report includes a number of case studies that prove taking a 'ground-up' approach by using soil stabilisation to improve and strengthen foundations and subgrade provides roads and other heavily trafficked areas that are stronger with better long-term performance at reduced cost and offering improved sustainability.

Copies of 'Soil Stabilisation: the road ahead; may be downloaded free of charge at: **www.britpave.org.uk/publications**.
For a printed copy, contact: **info@britpave.org.uk**

PROVING THE VALUE OF SOIL STABILISATION

Combined Soil Stabilisation Ltd (CSSL) have proven the worth of soil stabilisation with a range of contracts on the large Omega industrial development on the old airbase at Burtonwood adjacent to the M62 near Warrington. The contracts includes warehouses for Amazon, Asda, Travis Perkins, Iceland to name but a few.

Traditional engineered specifications were adopted for the earlier warehouses constructed on the development, which were built on piled foundations. But geotechnical consultants WSP forwarded a cost-effective solution to turn over and treat the made-ground and fill soils removing the requirement for piling: soil stabilisation.

The stabilised option allowed for the ground bearing loadings of 150kN/m^2 to be placed on the stabilised fill. For this option, a full depth of treatment to the made-ground removal was required. Following the made-ground removal, the exposed subgrade was assessed and tested. The made-ground and any additional fill was placed in engineered layers and lime modified / improved to achieve 95% compaction of a 4.5kg rammer less than 5% air voids and an Eu' value of > 18MN/mm^2.

All the plots on this development both the external areas and building footprints have been stabilised by CSSL with lime and cement to provide a strength of 30% CBR. This option also guaranteed non-frost susceptibility. Once stabilised, the layer was sealed with a bitumen curing emulsion and then a 100mm of imported Type 1 stone was placed on top. This was then used as working platform for the follow-on trades until final construction of the pavements or pouring of the floor slabs was undertaken.

In total, on this development, Combined Soil Stabilisation have lime stabilised over 500,000m^3 of engineered fill / made ground turnover and approximately a 1,000,000m^2 of lime and cement surface stabilisation to achieve 30% CBR. This also included the use of lower carbon hydraulic binders.

The soil stabilisation solution provided savings of over 700,000t of imported aggregates, plus approximately £11m saved across the whole scheme and reduced wagon movements from 35,000 for stone import to only 725 for the hydraulic binder deliveries for the surface layer.

NEW BSI FLEX 350 HIGHLIGHTS DECARBONISED CONCRETE POTENTIAL

The Institution of Civil Engineers (ICE) and the British Standards Institution (BSi) have published a new version of a BSI Flex standard designed to highlight the potential of lower-carbon concrete options.

With cement production accounting for an estimated 8% of global carbon dioxide emissions, concrete has a significant CO_2 footprint. BSI Flex 350 – Alternative Binder Systems for Lower Carbon Concrete is a code of practice setting out the best way to identify possible decarbonised substitutes for traditional concrete and demonstrate their suitability. It's designed to help infrastructure designers and contractors to recommend that their projects use concrete technologies that are lower in carbon than traditional mixes.

The standard is performance-based, meaning that mixes that may not have been covered by British standards before can be more readily considered for use as long as they meet the stringent criteria set by BSI Flex 350.

The ICE and the Construction Leadership Council's Green Construction Board published the Low Carbon Concrete Routemap (LCCR) in 2022. Since then, the cross-industry UK Lower Carbon Concrete Group (LCCG) has been working to accelerate the decarbonisation drive. The updated BSI Flex 350 is an important milestone in this effort.

BSI Flex standards are designed to be reviewed and updated to reflect technological advances and potentially be turned into international standards. The first version of BSI Flex 350 was published in October 2023 and underwent a public consultation. This second version was revised in light of the feedback gathered and has been peer-reviewed by an advisory group.

Comments about it can be submitted via the BSI Flex 350 webpage, **https://bit.ly/480TTDr**

COSTAIN TRIALS CARBON TRACKER

Britpave member Costain has successfully trialled a carbon tracker platform that aims to standardise and improve carbon emissions reporting across its projects.

The tracker, visualised via an interactive, online dashboard, will enable project teams to capture construction related emissions, including Scope 3 emissions, from across the supply chain. It is part of Costain's decarbonisation strategy and will help continue to drive emissions reductions across the organisation.

The tracker is designed to improve the accuracy and frequency of data reporting through enhanced data analytics and integration with technical baselines. This includes collating emissions data in real-time from both materials and resources used on-site, such as concrete, steel or water, as well as those produced from waste and transportation. 'Hotspots' – materials or products that are generating a high volume of carbon emissions – are highlighted to enable project managers to track progress against emissions targets and identify further areas of carbon reduction. Data is benchmarked against a range of industry and government standards so it can be used in broader ESG-related disclosures.

During an initial testing phase, the tracker has been successfully implemented across several of Costain's projects in road, water and integrated transport, and will be rolled out across all relevant projects over the coming months.

It is expected that data shared by suppliers will be used to inform future project planning and provide vital insights to reduce Scope 3 emissions, a key directive of the PAS2080 standards.

Geraint Rowland, group environmental director at Costain, said: "Environmental data reporting is critical to making net zero a reality, particularly in the construction sector which has a dependency on carbon intensive materials and fuels. It is vital the data we are using is accurate and consistent across our projects and sectors."

BRITPAVE 2024 INDUSTRY CONFERENCE:

DELIVERING THE NEXT GENERATION

The Britpave 2024 Infrastructure Conference 'Delivering the Next Generation' examined how new industry standards, materials and technologies will help to deliver the next generation of concrete infrastructure projects. Importantly, it also examined how to attract the next generation workforce needed to deliver those projects.

The next generation of infrastructure requires a new generation of updated industry standards. Dr Yi Xu, Senior Pavements Advisor, National Highways and Joe Poulsom, Principal Engineer, AECOM, kicked off the conference with an update on the new Specification for Highways Works. National Highways is committed to updating the Manual of Contract Documents for Highway Works (MCHW) in Road Period 2 and has been working with AECOM to development the new pavements series. The result is a specification that is now more user-oriented with a digitally-enabled suite of documents.

The pavement documents have been restructured into a format that reflect the asset lifecycle. Two new maintenance specific documents have been created with new requirements that reflect how pavement works are now delivered on the SRN. The new documents incorporate performance-based requirements and lower carbon materials. The new structure allows for the rapid update of standards, which enables the transition of Net Zero through prompt introduction of lower carbon products, construction methods and technologies. Work specific requirements templates have been standardised into schedules, which enhances consistency and clarity for users and opens the door to automated generation of the schedules.

The run-through of the new documents provided by Xu and Poulsom was much appreciated by the conference delegates. The new MCHW and accompanying DMRB documents are due to go live in 2025.

An underlying theme of the conference was how to address future challenges not least of which is climate change. Donna James, Technical Director at AtkinsRéalis, focused on the possible impact of increased summer temperatures.

Compression failures (also known as blow ups) are a particular type of defect unique to concrete pavements

Delivering the next generation includes examining the potential of concrete solutions successfully being used abroad but yet to be taken up in the UK

Future climate change impacts could include increased concrete pavement compression failures

The next generation of concrete infrastructure must address sustainability and make a meaningful contribution towards achieving net zero.

which occur during periods of hot weather. They occur suddenly and without advance warning. Although the occurrence of such failures in the UK has been very limited to date, James explained that there potential for such events to occur more frequently in future with rising temperatures and extreme weather events.

In response to this, AtkinsRéalis have been commissioned by National Highways to develop essential strategies for predicting the road sections where compression failures have the highest risk of occurring on the Strategic Road Network (SRN) and to develop asset management strategies to mitigate those risks.

The presentation provided an overview of the techniques used to analyse the data and how to develop a tool to identify the sections of network at most risk based on climate change projections. James explained that the risk of compression failures is influenced by wide range of factors relating to the pavement construction, material properties, joint performance, climatic condition and maintenance history. That is why the cause of compression failures is complex making them difficult to predict. A range of mitigation methods have been developed internationally for managing compression failures. This includes both preventive and reactive measures (e.g. additional expansion joints, pressure-relief joints and relief cuts). However, James pointed out that the performance of such techniques has been varied.

Delivering the next generation includes examining the potential of concrete solutions successfully being used abroad but yet to be taken up in the UK. Jack Bull, Technical Principal at Mott Macdonald, provided an introduction to the Optipave concrete slab system and its possible UK application. The Optipave system and concrete pavement design software, Optipave 2, has undergone extensive trials and is widely used in South America and the United States. Applicable for a range of applications including industrial hardstandings, concrete roads, and parking lots, the basis of the system is that short slabs are stronger than large slabs. Slab panels are typically reduced using 1.75m joint spacing. This allow for reduced slab thickness, increased fatigue life and mitigates the risks of curling damage – a significant problem in South America. The system is applicable for both plain concrete or macro synthetic fibre reinforced concrete. The small joint spacings ensure that joint opening due to concrete shrinkage is minimal, keeping joints tight and able to transfer load effectively through aggregate interlock without the need for joint sealing.

In addition to the potential benefits of increased strength with reduced slab thickness, Bull added how the Optipave system is being trialled with the Kiacrete permeable paving concrete highlighted at last year's Britpave Conference. This is a positive step for such an innovative infrastructure solution.

The next generation of concrete infrastructure must address sustainability and make a meaningful contribution towards achieving net zero. Michael Watson, Senior Materials Research Scientist at First Graphene, presented on how carbon additives can reduce environmental carbon. Graphene cement additives have been shown to improve the strength of cement meaning that concrete's embodied carbon can be reduced by careful selection of cements which harness these new additives. Watson presented on the use graphene additives at scale on the A12 - a collaborative project between Breedon Group, Morgan Sindall Infrastructure, The University of Manchester, and First Graphene.

The field trial of a graphene enhanced concrete slab at a wheel washing facility on the A12 has had positive results. The concrete slab was prepared using a graphene enhanced CEM II A/L concrete mixture. It has maintained strength and integrity, with a complete absence of defects, damage or deterioration despite being subjected to more than 150 heavy vehicle movements each day, as well as considerable abrasion and wetting from washed wheels. It has also undergone exposure testing across a wide range of weather conditions. Core samples extracted from the graphene enhanced concrete indicate good compressive strength performance for the grade of concrete specified.

Watson explained how the graphene enhanced cement offers an immediate 15% reduction in CO_2 emissions during production as a result of its lower clinker factor and delivers early-stage strength gain, with the slab meeting specifications for the concrete pad (37 MPa after 28 days, based on cube strengths) and continuing to perform well after successive core tests.

He concluded that the success of the trial underlined the potential of graphene enhanced cement as an emission reducing and higher performing solution for concrete infrastructure.

Keeping to the theme of low carbon cement, Simon Boulter, Director at Cemblend, discussed how over the last decade French company Hoffman Green Cement Technologies has developed a range of zero clinker, low carbon cements. Available in the UK via Cemblend, the cements are produced using industrial wastes and provide a significant carbon reduction. Boulter highlighted the proof of their carbon reduction performance with reference to real life case studies, in particular the recent Eau Brink Road project at Wiggenhall, Kings Lynn.

As an alternative to traditional reconstruction or extensive patch repairs, the existing carriageway material was recycled and finished with a surface dressing. Recycling to a depth of 150mm, the existing road layers were pulverised, compacted and re-shaped before the introduction of a cementitious binder. In order to reduce CO_2 emissions, the project trialled the use of an Ordinary Portland Cement (OPC) alternative. The OPC was replaced with an alkali-activated binder clinker free cement H-EVA. The OPC in the initial proposed blended cement binder had a high carbon figure of 604Kg.CO_2 eq/T due to its use of clinker. By comparison, H-EVA cement does not include clinker and has a carbon footprint that is a fifth of that of traditional cement. The H-EVA embodied carbon came in at 272Kg.CO_2 eq/t. Its use reduced the project's stabilisation carbon by 35 tonnes, saving 161 tonne over a traditional asphalt approach and amounted to 11.2kg.CO_2 eq/tonne – a decrease of 43%. H-EVA cement has a mechanical strength of up to 60 MPa within 28 days. As a trial, the project's soil stabilisation contractors SPL and Norse Laboratories will monitor the H-EVA performance in order to determine the longer-term use of the product across the UK as a low carbon alternative to blended cement products containing OPC. In addition, the use of Cem 2, for the road surface dressing, resulted in further CO_2 savings. Amounting to just 17.7kg.CO_2 eq/tonne, the carbon footprint was 56 tonnes - a significant 141 tonne saving over the traditional asphalt road surface alternative.

The need for new carbon reduced cements and concrete was emphasised by Richard Kershaw, Technical Manager at Cemex. He explained how ready-mix concrete is the most used man-made material in the world and plays an essential role in society's development and growth. However, according to the Global Cement and Concrete Association (GCCA), the cement industry is responsible for about 5% - 8% of the world's CO_2 emissions. This has set the stage for Cemex's Future in Action Strategy aimed at reducing CO_2 emissions in production processes, as well as the entire life cycle of the Cemex cement products.

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The revision of BS 8500 allows for many more different cement combinations using ternary blends. It allows for increased options for achieving lower carbon concrete and represents one of the most significant changes to the traditional 'recipe' for making concrete since the 1980s.

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Kershaw explained that amendments to BS8500 Parts 1 & 2, published in November 2023, provide new options for cement manufacture and concrete suppliers in the critical area of reducing embodied carbon. The revision of BS 8500, allows for many more different cement combinations using ternary blends. It allows for increased options for achieving lower carbon concrete and represents one of the most significant changes to the traditional 'recipe' for making concrete since the 1980s. This includes the replacement of carbon-intensive Portland cement with low-carbon additions such as natural pozzolana, natural calcined pozzolana, high-reactivity natural calcined pozzolana and a new range of ternary cements that include up to 20 per cent limestone fines.

Kershaw concluded that concrete infrastructure has inherent durability and resilience that is long-lasting, requires minimum maintenance, offers significant whole life cost benefits, whole life CO_2 reduction and climate change resilience. The ongoing development of new low carbon cements means that this durability and long-term performance can be delivered with reduced carbon emissions.

... it is time for the industry to show Gen Z that construction provides fulfilling careers that are about shaping the world around us and offers the opportunity build a legacy for generations to come.

The second session of the conference examined the issue of who will deliver the next generation of infrastructure? How will the construction industry attract and train the necessary work force? The conference learnt how the background for these questions is alarming:

- 251,500 extra construction workers needed by 2028 (CITB Construction Skills Network 2024 – 2028),
- Construction and trades industry needs 937,000 new recruits over the next decade (UK Trade and Skills Index 2023),
- 31% of construction employers report difficulties in recruiting skilled staff,
- An ageing workforce as more workers leave the industry than join. Only 19% are under 25,
- 33,600 apprenticeship starts in construction in 2022/23, a 5% decrease on the previous year.

Natasha Johnson, Founder of Organic P&O Solutions, explained the challenges faced by the construction industry in attracting and training Generation Z – those born from 1997 to 2012. This is the first generation to have largely grown up using the internet and social media and perceives construction as outdated and lacking diversity. This has contributed to a decline in apprenticeship starts. However, for the construction industry Gen Z represents a significant opportunity, bringing fresh perspectives and essential skills.

In order attract to attract this generation, construction employers must showcase the true potential of a career in construction, highlighting innovation, problem-solving, and sustainability. Key strategies include developing soft skills, implementing mentoring programs, fostering diversity and inclusion, investing in upskilling and technology adoption, promoting apprenticeships, and actively listening to employee feedback. Above all, employers must seek to connect with this generation.

Johnson explained that by embracing these strategies, the construction industry can build a brighter future, attracting and retaining the skilled workforce needed to tackle the challenges of tomorrow. She ended with a clarion call that it is time for the industry to show Gen Z that construction provides fulfilling careers that are about shaping the world around us and offers the opportunity build a legacy for generations to come.

Continuing the theme of how to attract and retain workers, Joanna Hitchin, Head of Social Value and EDI Roads and Costain, focused on what construction employers can do the harness and develop the potential skills of often overlooked sectors of society. The need to do this is highlighted by the 2023 ONS figures that showed those with disabilities represented only 2.8% of the construction

industry workforce, 13.6% are from ethnic minority groups and 2.04% are from LGBTQIA+.

Focusing on those with disabilities, Hitchin pointed out a wide range of initiatives aimed at attracting people to the construction industry such as the Disability Confident initiative. She explained what can be done to attract disabled candidates and the value of joining disability organisations for best practice support such as The Valuable 500, The Hidden Disabilities Sunflower Lanyards scheme and the Business Disability Forum. Recruitment processes should be reviewed and updated to be more inclusive. This to include offering an interview to any candidate who wants to be considered under the Disability Confident scheme and providing disability and inclusivity training to hiring managers. In addition, the workplace may require adjusting in order to accommodate disabilities. For example, IT software, accessible office equipment and accessible toilet facilities. There is a vast, untapped market of talented people who just happen to have a disability. It is in the industry's interest to listen, adapt and realise their potential.

The final presentation was delivered by Steve Phipps, Head of Materials Engineering at Balfour Beatty Vinci. He highlighted how attracting and developing the next generation of talent is essential to ensure the continued success of the construction industry and that of the wider supply chain. Included within this must be planning for succession and having a sustainable plan to promote progression within the business. This is key to de-risking external recruitment needs, particularly where specialist skills may not be available off the shelf.

Phipps forward the recruitment approaches undertaken at Balfour Beatty such as developing a long-term partnerships with apprentices that includes workplace learning, specific training and working with training providers. For graduates there are fast-track development programmes and he recommended the benefits of early involvement, i.e., being thrown in at the deep end! Trainees should be given a range of progression options and employers should be open to transferable skills from other industries.

Phipps explained the benefits of producing standard business management processes and accompanying guidance, that includes best practice and lessons learnt captured for future learning and reference. Of particular interest was the examples of knowledge share programmes and how these can be delivered effectively via internal and external expert. The construction industry is challenged by the shortage of new recruits and of experienced people. Specialist skills are not available off the shelf. Employers have to work hard to not just attract new talent but also develop, train and retain that talent.

This proved to be a well-received conference where a wide range of industry speakers examined new thinking for construction materials and processes for delivering the next generation of infrastructure and how to attract to workforce to construct it. Britpave would like to take this opportunity to thank all the speakers for their time and valued insights.

For copies of the powerpoint presentations please contact the Britpave office at: **info@britpave.org.uk**. A full recording of the conference is available on the Britpave Youtube channel.

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BRITPAVE 2024 INDUSTRY CONFERENCE: EXHIBITORS

A number of companies exhibited at the Britpave 2024 Industry Conference. They included: **Lafarge; Blue Phoenix Group; Cemblend; Ecocem; Gomaco**. Britpave would like to thank the companies for their support.

THE BRITPAVE JOHN FERGUSON EARLY CAREER AWARDS

Launched at this year's industry conference, the Britpave John Ferguson Award for Early Careers are designed to recognise and reward the next generation of civil engineers. The Awards are in recognition of the tremendous positive impact that John had upon the civil engineering industry and upon Britpave of which John was a founder and long-term member.

The Awards cover both graduates and apprentices covering the annual period of July 1st to the following June 30th. They are designed to reward outstanding graduates and /trainees who demonstrate top characteristics that will allow them to thrive in the construction industry. These include: curiosity; creativity; ability to problem-solve; being a team player; good interpersonal skills; attention to detail. All nominees must be working for a Britpave member. There will be one overall winner and two runners-up who will be expected to attend the Britpave annual conference in October to celebrate and receive their award. The judging will be undertaken by the Britpave Council members.

For further details on how to enter the awards, email **info@britpave.org.uk** for an Awards information brochure.

JOHN FERGUSON

John started his career in the construction industry in 1973 where he joined Messrs Sandberg as a materials testing technician. After a year there learning the fundamentals of materials testing, John joined the Transport and Road Research Laboratory where he would spend a year in their bridge construction division investigating concrete failures on structures on the M1 motorway and researching new test methods.

In 1975 John took up a position within Surrey County Council where he spent the next two years carrying out their highway's maintenance testing programme. This involved operating complex equipment during road surveys. He joined Bovis Civil Engineering in 1977 taking up the position of Regional Materials Engineer where he spent the next 5 years. John worked on multiple projects in the southeast including constructing parts of the M25 motorway between Chertsey and Egham, and some local roads around the southeast that he would drive regularly in the years to follow.

In 1982 John joined Balfour Beatty where he worked on many of the UK's highest profile projects across multiple sectors including roads, rail, airfields, and nuclear. He provided numerous innovative and cost-effective solutions contributing to a significant number of winning bids for new projects. He also supported project-based teams in the delivery of those solutions to great effect.

In 2021, Balfour Beatty named John as their Major Projects 'Make a Difference' Behaviour Champion. This was in large part in recognition for his passion for nurturing the next generation of materials engineers. He was committed to helping others develop their skills and expertise so his impact will continue to endure. It is this legacy that the Britpave John Ferguson Awards aim to honour.

HS2 ALTERNATIVE PROMISES SAME BENEFITS AT REDUCED COST

Following last year's cancellation of HS2 Phase 2 (Birmingham to Manchester), ambitious proposals for a new Midlands-North West Rail Link have been revealed by the Mayors of Greater Manchester and the West Midlands.

Their report 'Opportunity through connectivity: catalysing growth through a Midlands-Northwest Rail Link', forwards recommendations exploring the role that the private sector can play in accelerating growth between the Midlands and towns and cities in the North. The project has been chaired by industry expert Sir David Higgins, led by Arup, and supported by a private sector consortium including Arcadis, Addleshaw Goddard, EY, Dragados, Mace and Skanska.

The report concludes that the private sector must play a new role in delivering and financing infrastructure projects and that a new 80km rail line connecting Lichfield to High Legh is a golden opportunity for the West Midlands and the North West. The link will connect towns and cities across the Midlands and the North, providing critical capacity and better service for passengers and freight across the UK.

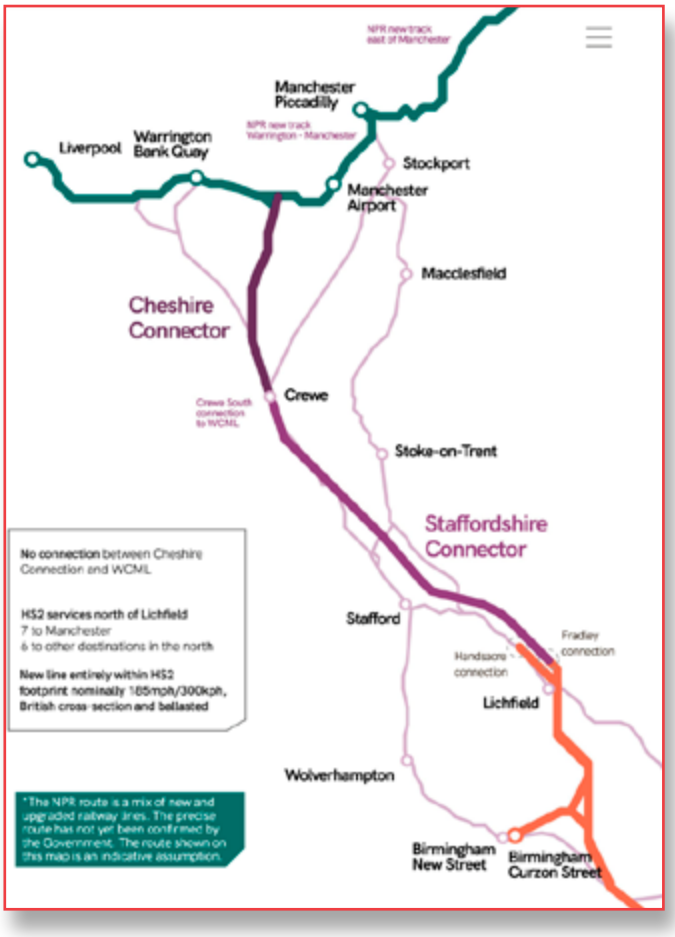
The report calls for the Midlands-North West Rail Link (MNWRL) to be built, in stages and in partnership with private investors and it provides a transport solution that would provide the capacity and connectivity benefits of HS2, but at a far lower cost.

It is envisaged that the new rail line will substantially reduce costs from the previous HS2 scheme through lower design speeds, ballasted track, UK rather than European standard cross sections, and simplified interfaces with the existing rail network. The review team analysed these concepts through 'traditional' criteria such as costs, benefits, and deliverability finding that the new line has the potential to deliver roughly 85% of the benefits of HS2 Phase 2, at a fraction of the costs (c.60-75%). The project could deliver the transformational outcomes in capacity and connectivity that the original HS2 line would have delivered (equivalent seat numbers and train frequencies), with only marginally slower journeys (approximately 15 minutes longer on the London-Manchester route – which is still 30 minutes faster than today's services). The team also found that a new line is the only suitable option for attracting private finance. It is also thought that it could also save the taxpayer £2bn on costs from the HS2 Phase 2 cancellation through re-use of much of the land, powers, and design work that has already been secured through public investment. Additionally, the creation of a new rail link between Birmingham and Manchester will move some passenger services to this new line, opening additional freight paths on the West Coast Main Line – the most heavily-used freight corridor in the nation. This will greatly contribute to the Government's target of 75% rail freight growth by 2050, a key pillar in reducing carbon emissions from transport.

Rt Hon. Andy Burham, Mayor of Greater Manchester, said: "There is a viable option to build a new rail line between Lichfield and High Legh, connecting HS2 to Northern Powerhouse Rail, with almost all of the benefits of HS2 delivered quickly and crucially at a significantly lower cost. "Doing nothing is not an option as demand for rail services on the West Coast Main Line is set to exceed capacity within a decade".

Richard Parker, Mayor of the West Midlands added: "This report confirms what we've been saying – additional rail capacity to and from the North is vital for the West Midlands. It's about more than quicker journeys; it's about connecting people, communities, and businesses to jobs and opportunities. Without this extension, we will continue to be reliant on the West Coast mainline, which is already maxed out and impacting on the people of this region and wider. We need to free up capacity and we need to get this right - for our future and our economy."

To read the report visit: **https://bit.ly/4gJBazT**



ICE SETS OUT HS2 LESSONS

The Institution of Civil Engineers has published a report setting out lessons it says need to be learned from the decision to cancel the northern phases of the High Speed 2 project.

'The cancellation of HS2 Northern's leg — learning lessons' draws on interviews and written submissions from key decision-makers involved throughout High Speed 2's life cycle. ICE says many of the lessons are applicable to infrastructure projects of any type.

Key lessons include:

- Intended outcomes must be clear, and the benefits of projects must be clearly defined and communicated so there is clarity and consistency for politicians and decision-makers, media and the public. In the case of HS2, the lack of clear transport objectives meant the strategic need was not clear.
- It must be clear who is in charge, how decisions are made and who makes them and when. Corporate governance and technical understanding in sponsoring government departments should be improved
- Large-scale infrastructure projects must spend more time in development. Contracts need to be based on mature designs, not concepts, and sufficient time is needed to assess different options and best-practice approaches. In the case of HS2, a standardised design could have been used for things like bridges, which would have helped to keep costs down, but this was not clearly agreed in the development process.

The report concludes that the number one lesson is that governments need to think long-term, select and prioritise projects based on strategic needs, and follow through.

Visit: **https://bit.ly/4ewBnF3**

LAGAN FLYING HIGH

Britpave member Lagan Aviation and Infrastructure is making good progress on the £44 million refurbishment of the secondary runway and airfield ground lighting at RAF Valley in Ynys Mon (Anglesey). The works are of part of the Defence Infrastructure Organisation (DIO) Aircraft Operating Surfaces Framework and are due to be completed by July 2025.

PILING BEGINS FOR A38/HS2 INTERSECTION

Balfour Beatty Vinci has begun foundation work for a structure that will take the A38 trunk road over the HS2 rail line near Lichfield.

Engineers have started work directly underneath the A38 carriageway at Streethay in Staffordshire to build the foundations of the Rykneld Street bridge. A total of 88 piles will be sunk to depths between 20 and 27 metres to support the weight of the structure. Ahead of works, a temporary 320-metre stretch of the A38 has been put in. Once piling has been completed and the bridge deck is installed in late 2025, the realigned section of the road will be moved back to its original position where piling is now taking place – allowing space for the high-speed railway to pass underneath.

At 90.5 metres long, HS2's Rykneld Street bridge is the last of three retaining structures to be built at Streethay and contained within a 455-metre-long cutting through the ground. The trio of bridges, which also includes the

A38 Southbound Slip Overbridge and the Streethay Overbridge, will enable the HS2 line to pass under the A38, its slip lanes and the existing South Staffordshire freight railway. Around 750,000 cubic metres of earth will be excavated during the process of building the three bridges and reused to form embankments along the HS2 route locally.

AIRPORT EXPANSION

With passengers numbers going up and beyond pre-pandemic figures, airports' plans to expand are being dusted down and revisited.

Heathrow is working on a revised blueprint for its third runway while Gatwick is considering plans to turn an emergency landing strip into a full runway. Plans for this are expected to be forwarded to the Government early 2025. Among Britain's other leading airports, Stansted and Manchester are both expanding their terminal facilities. They both reported their busiest-ever month in August.

It is not just the major airports, regional and local airports are expanding too. Bournemouth has announced that airline and tour operator Jet2 is set to offer flights to five new destinations from 2026. The airport has seen a 25% growth in passenger numbers and has surpassed 2019 pre-pandemic levels. It has applied for planning permission to expand its terminal buildings and parking. Southend Airport has announce plans to accommodate up to 10 million passengers up from capacity of 3.5 million and putting it on a par with Bristol Airport.

The new Chancellor, Rachel Reeves, has indicated that airport expansion will be looked upon favourably. Speaking before the General Election, she said that Labour would consider all the evidence and "had nothing against expanding airport capacity", while a spokesman for the Prime Minister Sir Keir Starmer has since said "he is not opposed in principle to new or longer runways or to people flying more."

Indeed, one of the first major infrastructure planning decisions made by the new Labour government was to approved plans to expand capacity at London City Airport by an additional 2.5 million passengers. The decision overturns a previous local-level decision but keeps a ban on Saturday afternoon flights. However, it is not all turbulence free. A decision on whether to grant a development consent order to Luton Airport, which would lift its passenger cap from 19 million a year to 32 million, has been delayed until February 2025.

Despite showing a favourable view towards airport expansion, schemes must still satisfy four major tests. These are: delivering nationwide economic growth; meeting climate obligations; complying with both noise and air pollution requirements.

With Labour wanting to show that it is keen to forward economic growth, the arguments for airport expansion are considerable. Heathrow, for example, accounts for a fifth of all UK trade by value. However, there are also the negative views concerning CO_2 emissions and climate change. Britain's "jet zero" strategy, from the previous government, aims to deliver an aviation industry with net zero carbon emissions by 2050. The new government will need strike a balance between economic growth and CO_2 emissions.

NEW MASTERPLAN FOR THE PORT OF BARROW

Associated British Ports (ABP) has announced its news plans for the Port of Barrow prompted by a wave of new investment in the region by 2040 and beyond.

The new masterplan will allow the port to take advantage of this investment driven by the UK's obligations under the AUKUS partnership and in achieving net zero emission by 2050.

The masterplan sets out three core objectives. These include forwarding

- The advanced engineering cluster,
- The net zero cluster,
- The local economy, environment and community.

Under the first objective, which aims to help build Barrow's capabilities in advanced engineering, ABP has outlined how the port will respond to new demand created by the AUKUS deal, which will make it critical for the port to expand its capacity to support the manufacturing and shipping of submarine sections. ABP has been working alongside BAE Systems to transfer land that will allow a major increase in BAE Systems' production capacity.

Then, ABP will be working on the first major project from the masterplan – the Barrow EnergyDock – which will soon be going to public consultation. This project will set the stage for a significant shift in green energy capacity primarily intended for Barrow's advanced engineering sector. The Barrow EnergyDock floating solar project would be a pioneering initiative designed to meet the growing demand for zero-carbon energy. The project proposes a floating solar array in Cavendish Dock, which can generate up to 32 MWp of green electricity, enough to power the equivalent of 10,300 homes each year.

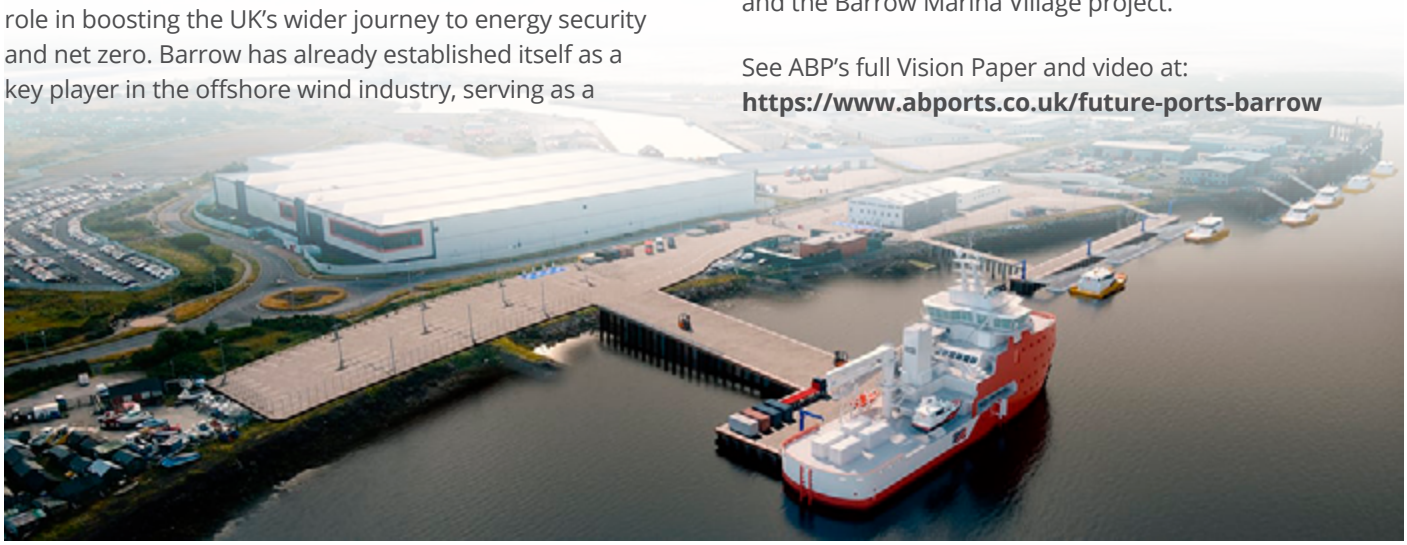
The second objective focuses on how the port will play a role in boosting the UK's wider journey to energy security and net zero. Barrow has already established itself as a key player in the offshore wind industry, serving as a home to five Operations & Maintenance (O&M) bases. ABP is planning for the construction of new O&M bases to accommodate the growing offshore wind sector, along with berths capable of handling larger Service Operation Vessels (SOVs). One such development is the Walney Channel O&M Base, where ABP has identified 4.7 acres of land adjacent to Ramsey Way. This site will provide the facilities necessary to support future wind energy projects, including warehousing, crew facilities, and marine access points for SOVs and Crew Transfer Vessels (CTVs).

Alongside these O&M facilities, the port expects to provide facilities for the construction process of the windfarms themselves, supporting the expected £17 billion investments in wind energy expected to come to the Eastern Irish Sea under the Round 4 process. The expansion of these facilities will ensure that Barrow remains a leading hub for wind energy, anchoring high-skill jobs and growth in the local economy.

In addition, the masterplan includes exciting new proposals for maritime connections to support hydrogen import and carbon storage. As part of its broader commitment to achieving net zero, ABP has undertaken early feasibility studies on developing a new jetty capable of accommodating incoming gas carrier vessels up to 200m in length and with a capacity of 25,000 cubic metres. This jetty would be an essential piece of infrastructure will help to position Barrow as a key player in the UK's energy transition.

The third objective sets out ABP's specific plans to reinforce the local economy while moving to net zero, building biodiversity and strengthening communities. This includes supporting proposals for a new 'Skills Quarter' and the Barrow Marina Village project.

See ABP's full Vision Paper and video at:
https://www.abports.co.uk/future-ports-barrow



MEMBERS' NEWS

WEDGEWOOD GROUNDWORKS JOINS BRITPAVE

Wedgewood Groundworks Ltd has joined Britpave. Established in 2013, Wedgewood Groundworks is a family owned groundworks and construction company based in Devon. The company is well known in the West Country and is expanding throughout the UK. The company offers a wide range of groundworks, construction and contracting services. It hopes that its membership of Britpave will allow it to further develop its soil stabilisation services.

Director Ian Friend said: "We are delighted to become a member of Britpave and are looking forward to sharing and exchanging our expertise and experience with others in order to forward not just our knowledge but to help with developing soil stabilisation industry best practice and design guidance.

Their membership is welcomed by Joe Quirke, Britpave Chairman, who said: "We are pleased to welcome Wedgewood to Britpave and look forward to working with them in developing and initiating initiatives that will benefit the soil stabilisation sector."

JACOBS AND MOTT MACDONALD JOINT VENTURE

Thames Water has appointed a Britpave members' Jacobs Mott MacDonald joint venture as its technical partner to lead development proposals for vital new infrastructure to tackle the risk of drought in London.

The water company forecasts that it will need an additional one billion litres of water every day for its customers by 2050. It is working in partnership with Jacobs Mott MacDonald joint venture to help deliver a brand-new drought resilience project, known as Teddington Direct River Abstraction (TDRA). If approved for construction, the nationally significant project will begin operation in 2033, providing up to 75 million litres of water each day during periods of prolonged dry weather.

The Jacobs Mott MacDonald joint venture provides expertise in major infrastructure, including consenting programmes such as Thames Tideway Tunnel. Separately, both organisations have supported the design and delivery of High Speed 2 and Jacobs is currently providing professional engineering services for the development of the new Kranji Water Reclamation Plant in Singapore. The joint venture will now play a pivotal role in ensuring that Thames Water is ready to submit a Development Consent Order (DCO) for the TDRA project in 2026. If granted, construction is forecast to begin in 2028.

BRITPAVE MEMBERS

As the focal point for in situ concrete and cementitious infrastructure solutions, Britpave offers its members a recognised industry voice, market sector development and beneficial industry networking opportunities. Britpave members include clients, consultants and engineers, contractors, material and plant suppliers and academia.

AECOM Ltd - www.aecom.com

Aggregate Industries - www.aggregate.com

Atkins Ltd - www.atkinsglobal.com

Balfour Beatty Ltd - www.balfourbeatty.com

Blue Phoenix Ltd - www.bluephoenixgroup.com

MPA Lime - www.mpalime.org

Cemblend Ltd – www.cemblend.co.uk

CEMEX UK - www.cemex.co.uk

Combined Soil Stabilisation Ltd - www.combinedssl.co.uk

Costain Ltd - www.costain.com

Gomaco International Ltd - www.gomaco.com

Heidelberg Materials UK Ltd - www.heidelberg.co.uk

Jacobs - www.jacobs.com

Lagan Aviation and Infrastructure - www.laganaviation.com

Morgan Sindall Construction and Infrastructure Ltd - www.morgansindall.com

Mott MacDonald – www.mottmac.com

Norder Design Associates Ltd - www.norder.co.uk

PJ Davidson (UK) Ltd - www.pjd.uk.net

Power Better Soil Solutions – www.powerbetter.biz

RJT Excavations Ltd - www.rjtexcavations.co.uk

Roadgrip Ltd - www.roadgrip.co.uk

SGE - www.sgeworks.co.uk

Smith Construction (Heckington) Ltd - www.smithsportscivils.co.uk

Tarmac Ltd - www.tarmac.com

Tata Steel Shapfell - www.tatasteeleurope.com

Techjoint Ltd www.techjoint.co.uk

TKL Earthworks - www.thetklgroup.co.uk

VolkerFitzpatrick Ltd - www.volkerfitzpatrick.co.uk

Wedgewood Groundworks - www.wedgewoodgroundworks.co.uk