



A N N

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REFLECTING ON

2022

WITH PAUL BENTLEY

WELCOME TO OUR REVIEW OF 2022, ANOTHER YEAR OF CONSOLIDATION AND GROWTH LEADING TO A BUSY 2023 – OUR BUSIEST EVER.

OUR ANNUAL REVIEW | This is the annual review of the Mott MacDonald Bentley Contracting (MMBC) Region of Mott MacDonald Group, including JN Bentley, Mott MacDonald Bentley and JBA Bentley.

OUR PEOPLE

Post-Covid our working culture has changed forever, and I think for the better. But the four behaviours we emphasised during the pandemic are still true today:

- Keep thinking of others and what you can do for them
- Be flexible when you need to be
- Take personal responsibility and do your bit
- Stay positive.

Agile working when done properly brings real benefits to the work/life balance of teams and the efficiency of the business. I also think it is important that agile working doesn't become just home working; there are still benefits of working in the office to build rapport across teams and aid collaboration. These build trust and in turn effective communication, all of which is essential to the safe and efficient delivery of projects.

Our support teams have really developed in the last 12 months, and I can really see an interdependent culture forming so we don't have the siloed working often seen in other organisations.

With growth comes opportunities for individuals in the business and these have never been greater, with a wide variation in work type and geography. It is still nice to see as many people starting their career with us than ever before – whether as an apprentice, graduate or experienced professional – and as many happy faces around the company.

It is important that people enjoy themselves at work and a lot of that is down to personal mindset. If it's not working for you, my advice is to please do something about it, life is too short. Construction is the biggest team game in the world – it is as much about what you do personally as what you do for your colleagues. As a business, this is something we keep getting better at, and it is one of the underpinning attributes of a company that people want to work for and enjoy doing so.

SAFETY

Safety continues to be the cornerstone of everything we do. 2022 was a hugely positive year for health and safety - our performance is the best it has ever been. We recorded our lowest ever all injury frequency rate and record numbers of people received health screening.

2023 will see us reinforce the message that when we care about our colleagues, choose safe behaviours and make safe habits, we can prevent injuries.

THE MONEY

The last 12 months saw our operational capacity and competency increase once again. The business returned to a strong place commercially and now feels like the £300m turnover civil engineering contractor that we are.

Looking ahead with the general economy in mind, tougher times are coming. However, in my experience, it is these times when we can prove our offering and improve our market position, so it shouldn't hold any trepidation. We always have to be good with money, but the need to be cost aware will be as important as ever; remember if you don't know what you're spending, you're probably spending too much.

The water sector remains our biggest market, and although the industry has its own challenges there is no doubt of the need for our skills in the next few years. What is important is that we concentrate on continually improving to meet that demand.

OUR CLIENTS

Thank you to all our clients, large and small. The reality of being a contractor is that we aren't anything without our clients. Many of them are having as difficult a time as they have ever had, so it is important to remember that we are there to support and serve them.

We worked on some exciting schemes during 2022, many of which are highlighted in this annual review, and there are more to come this year. We've already started looking forward to opportunities in AMP8 in the water sector. Success there will be a result of us delivering good projects now.

I'm looking forward to getting out to more sites in 2023 to see some of the great projects our teams are delivering, including those kicking off with some of our new clients like Canal & River Trust and Associated British Ports. It's part of an organisation's responsibility to provide new opportunities and these sorts of clients do that. We will continue to work safely, deliver value for money and a quality product in a timely manner to make working with our new and existing clients a success.

Embracing technical excellence, digital delivery and doubling down on carbon continue to be at the forefront of project design and delivery, particularly in helping to reduce time on sites, leading to efficiencies and better social outcomes.

50 YEARS

2022 saw the business celebrate its 50th anniversary. All of the above – looking after the money, developing great teams, and looking after our people – has been at the heart of reaching this milestone and reminds me of the company's strength and resilience. More on this on page 6.

CLOSE

2022 was a good year for the business, our clients, suppliers, and our people. It is going to be a busy 2023 and one to look forward to. We have the expertise, resources, and relationships to deliver a strong workload and there are lots of opportunities across the business.

Thank you to everyone, to all our 1,800+ JN Bentley and Mott MacDonald colleagues, as well as those supporting us from JBA Consulting, for your hard work and dedication. Without you, the business would not continue to thrive. My job is much easier when we're all working well together.

I hope you enjoy reflecting on your achievements in this annual review and continue to approach 2023 with enthusiasm and a smile – there is a lot for us to look forward to.



PAUL BENTLEY | MANAGING DIRECTOR

2022 WAS A GOOD YEAR FOR THE BUSINESS, OUR CLIENTS, SUPPLIERS, AND OUR PEOPLE. IT IS GOING TO BE A BUSY 2023 AND ONE TO LOOK FORWARD TO.

HIGHLIGHTS

A YEAR IN WHICH JN BENTLEY CELEBRATED ITS 50TH ANNIVERSARY, 2022 WAS PACKED FULL OF HIGHLIGHTS - HERE ARE JUST A FEW

▼ CELEBRATIONS!

Our internal reward and recognition scheme – Be Recognised – saw our people nominate 738 colleagues for going above and beyond. 10 colleagues celebrated 25 years of service and in December JN Bentley celebrated its 50th anniversary - marking the occasion with three company seminars that brought the entire workforce together.



▼ A GREAT PLACE TO WORK

One way of helping our people to be at their best is to support their development. Continuing our proud association with apprenticeships, we have 145 new apprentices on the books. They are enrolled on a range of courses, from engineering to quantity surveying to business support. 34 apprentices passed their qualifications in 2022 and we continued to support a further 28 colleagues through professional development qualifications - giving them time to study whilst they earn.

5,036 conversations were recorded on MMBC Connect – our platform that supports performance development, built on having regular employee-line manager conversations.



▲ RECORD YEAR FOR SAFETY

2022 was a record year for health and safety as we achieved our lowest ever number of injuries since recording began. We recorded a 0.93 all injury frequency rate, worked 2 million hours without a reportable RIDDOR injury, and had ZERO serious environmental incidents. Our positive reporting culture saw 43,940 safety, health and environmental positive interventions reported: that's 20,078 situations 'made safe' and a further 4,253 'made green'.



▲ PROFITABLE GROWTH

2022 was a financially positive year. Revenue grew by £50m (21%) and profit-share bonus payments returned to levels much closer to historical norms. For the first time the same scheme applied to everyone working in the organisation, regardless of whether they are a JN Bentley or Mott MacDonald employee.

Latest forecasts suggest we may break the £400m barrier for the first time in our history in 2023.

▼ LOOKING AFTER OUR PEOPLE

Our employee wellbeing support was made all the more accessible. Our community grew with the appointment of 11 qualified mental health first aiders, whilst our 16 wellbeing champions continued to support a range of wellbeing initiatives across the business, from mental health and emotional wellbeing to financial wellness and physical health.



▲ THE FUTURE IS BRIGHT

The regulated water industry might still be our largest sector but we added diversity to our portfolio as we secured contracts with brand new clients. Canal & River Trust (CRT) named JN Bentley sole supplier of complex civil engineering works across the north of its network, on a framework that could last up to 10 years. CRT also named JN Bentley as a supplier of minor works.

We were appointed to two new frameworks with Associated British Ports (ABP), and awarded a place on 48 lots with Pagabo - a new £1.5 billion civils and infrastructure framework.



▲ AWARD WINNERS

Repeat business is the recognition we look for - but it's nice to pick up an award or two along the way. We celebrated 29 award wins, commendations and shortlistings in 2022, from a variety of prestigious bodies including



the Institution of Civil Engineers and the British Construction Industry Awards.

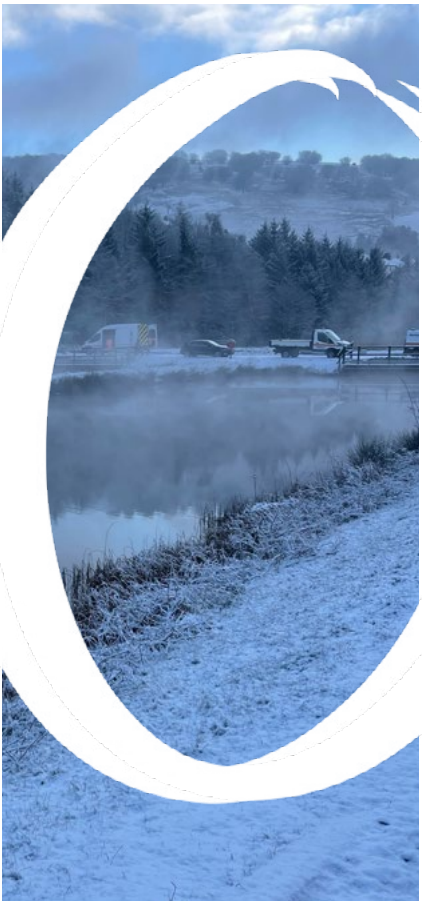
We bolstered our roster of accreditations as we achieved new certification for ISO 27001 for information security; Cyber Essentials Plus; ISO 19650 for Building Information Modelling (BIM); and Van Excellence Operator status.



▲ TECHNICAL AND DIGITAL EXCELLENCE

Technical excellence is all about improving what we deliver and how we deliver it. Our practice network grew by 40% in 2022 – we have 475 colleagues working as part of a range of practices focusing on themes such as wastewater treatment and digital delivery.

As an organisation we continued to embrace digital innovation - putting into practice a range of technologies to improve delivery. Our approach requires close collaboration with our supply chain and throughout 2022 a number of colleagues visited Komatsu's production factory in Durham, seeing first hand how this key supplier is developing innovative solutions for the construction industry.



◀ IN THE COMMUNITY

Our people and projects once again went beyond the call of duty to give a bit back to the communities in which they live and work. We launched our Corporate Social Responsibility (CSR) committee and appointed 7 local CSR champions to support colleagues' volunteering. Employees supported a wide range of charity events – raising over £30,000 for good causes.



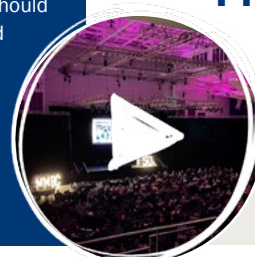
50 YEARS

“GOOD PEOPLE DELIVERING IMPORTANT PROJECTS FOR VALUED CLIENTS

History has shown that we have good people, delivering important projects for valued clients with whom we have built long lasting relationships. This will continue beyond 2023 as our focus shifts to AMP8 and framework renewals with several of our existing water sector clients.

Focusing on our existing clients remains as important as ever. Together with identifying and pursuing further opportunities with new and existing clients outside the sector should come an increasing amount of work and an exciting, and busy, future to look forward to.

PAUL BENTLEY
MANAGING DIRECTOR



2022 MARKED JN BENTLEY'S 50TH ANNIVERSARY.

WE CELEBRATED THE MILESTONE AT A SERIES OF COMPANY SEMINARS WHICH SHOWCASED AND CELEBRATED THE BUSINESS' SUCCESSES THROUGH THE DECADES.

<< CLICK TO WATCH A SHORT FILM ABOUT THE SEMINARS.

↓ DOWNLOAD OUR 50TH ANNIVERSARY BOOKLET



“WHY DO I THINK JN BENTLEY HAS STOOD THE TEST OF TIME?”

At its heart are its people. Really great people. It has a long history of attracting and retaining high quality colleagues and its directly employed operating model means that every penny invested in its people is an investment in JN Bentley's future.

Its approach to finding new clients sets it apart. JN Bentley looks for clients with whom it can build long-term relationships, based on the ability to add value to their business. Perhaps that's why its list of clients is so stable, with many enduring relationships spanning years and years.

JN Bentley continues to have a positive influence on the wider Mott MacDonald. The company has fundamentally changed Mott MacDonald for the better and I look forward to further supporting its growth and development into the future.



JAMES HARRIS
EXECUTIVE CHAIR
MOTT MACDONALD -
JN BENTLEY'S PARENT
COMPANY

1970s

Founded on 7th December 1972, the business began life principally involved in water and sewerage works for the water authorities in Yorkshire, UK, as well as civil engineering works with local councils. We added general building projects to our portfolio in the mid-70s before turning our attention to civil engineering projects such as pipelines and pumping stations.

1980s

We increased the range and scale of our building projects in the 1980s, working with the likes of Rolls-Royce and the Metal Improvement Company, with whom we delivered our very first £1m project. The late-80s also saw the company complete its first high-profile residential housing development, a scheme at Linton in the Yorkshire Dales.

1990s

The 1990s saw a more civil engineering-focused business once again, particularly through ever strengthening links with Yorkshire Water. It was in the 90s that the JN Bentley-Mott MacDonald relationship began through the formation of the hugely successful Mott MacDonald Bentley (MMB) joint venture in 1999.

2000s

The 2000s saw the company's biggest period of growth, both for employee numbers and turnover. We continued to strengthen our position in the water sector, adding Anglian Water to our client portfolio and winning our first AMP3 design and build framework with Yorkshire Water.

2010+

The business sustained growth throughout the 2010s, hitting a key milestone of delivering £300m in turnover in a single year in 2018. Our second joint venture was formed in 2013 - this time with environmental consultancy, Jeremy Benn Associates. As it closes in on its tenth birthday, JBA Bentley continues to focus on the safe and efficient delivery of low carbon solutions with the likes of the Environment Agency and Coal Authority.

MOTT MACDONALD **M** **M**

Our partnership with Mott MacDonald saw JN Bentley Ltd join the Mott MacDonald Group in 2014 after a successful 15 year relationship. Since then we have delivered over £1billion worth of work together for clients in the water sector and beyond.

THE MONEY

WITH
JON
RHODES

2022: A YEAR OF
PROFITABLE GROWTH
DESPITE CHALLENGING
ECONOMIC HEADWINDS.

By most financial measures 2022 was a positive year. The recovery of our profitability after some challenging years is now starting to become established and looking ahead to 2023 and beyond our workload prospects are strong.

Revenue for MMBC has grown by £50m (21%), increasing from £244m in 2021 to £294m in 2022; latest forecasts suggest we may well break the £400m barrier in 2023. This growth has been a composite of strong underlying growth in our work volumes as well as the pass through of the increased costs we are experiencing. However, in pure activity terms, disregarding the effect of inflation, we do expect to exceed our AMP6 peak workload towards the end of AMP7.

Our work volumes increased progressively during 2022 as meaningful amounts of AMP7 work were released by clients and delivery of this has been supported by the necessary headcount growth (increasing by 12% during 2022). We mobilised resources quickly for our fastest growing clients of Anglian Water, Thames Water and Northumbrian Water and are well positioned for further growth in 2023, notably with Severn Trent. Higher volumes allow our relatively fixed framework management costs and support overheads to be more efficiently spread and ensures we can optimise the utilisation of plant and look to grow our fleet.

Further growth in 2023 will be supported by the build-up of work with both Canal & River Trust and Associated British Ports and the maturity of the Thames Water frameworks secured at the start of AMP7. A reduction in revenue is expected with the Environment Agency as work associated with the WEM framework starts to conclude.

To deliver the volumes expected, further headcount growth is planned during 2023 taking our overall headcount back to around the 2,000 we had at the end of AMP6.

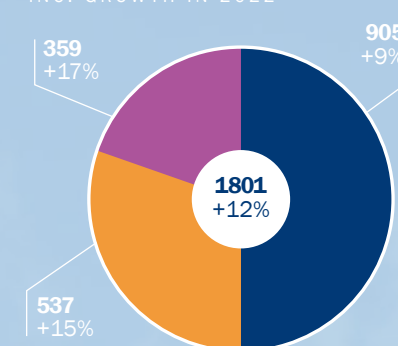
The benefit of operational improvements and enhancements to commercial controls has resulted in a far lower level of unprofitable work than was seen in the previous three years which in turn has improved our overall margin performance. Margins have recovered well in Severn Trent and Rolls-Royce. Volumes, and therefore the level of unprofitable work, are significantly reduced in United Utilities. Margins have also remained healthy in those frameworks that have delivered more of a consistent margin performance in recent years. A stronger underlying commercial performance has also allowed us to recognise a relatively conservative position on some legacy contracts and alliance arrangements where we still face some uncertainty over the eventual commercial outcome.

Whilst the pass through of higher costs (including the effect of pay increases) to clients has contributed to around half of our recent revenue growth, the current level of cost inflation also presents the peril of longer-term margin dilution as our contracts do not always allow for sufficient of these higher costs to be recovered. The inflation on material and subcontracts we

REVENUE BY QUARTER

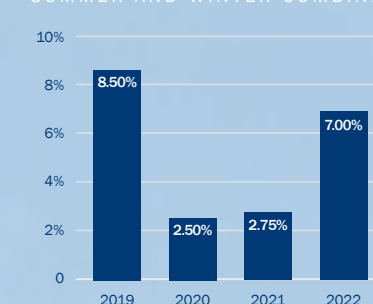


EMPLOYEE NUMBERS INC. GROWTH IN 2022

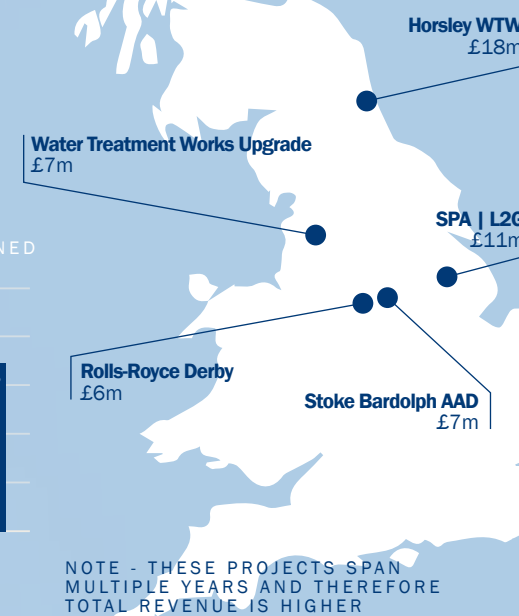


■ JNB staff ■ JNB construction workforce ■ Mott MacDonald

BONUS SUMMER AND WINTER COMBINED



FIVE LARGEST SCHEMES BY REVENUE IN 2022



experience is a combination of the headline price increases the construction sector is seeing and an additional scarcity premium for some products or subcontract packages where there are more acute supply chain challenges and we need to ensure we continue to meet client programmes. We now track the impact of inflation closely via the Bentley Price Index and our project and support teams are working hard to manage out the worst effects of the price increases we see. Indications are that construction inflation will start to ease in the second half of 2023.

**2022 WAS A POSITIVE
YEAR ...LOOKING AHEAD
TO 2023 AND BEYOND OUR
WORKLOAD PROSPECTS
ARE STRONG.**

Having cut back over 2020 and 2021, our overhead cost base has had to respond to both our volume growth and higher underlying costs. We have now returned to pre-pandemic levels of support headcount and training spend and we are also investing heavily in areas such as IT, recruitment, employee wellbeing and digital delivery initiatives. Other additional costs absorbed centrally this year have included the lost time associated with both the seminars and additional bank holidays.

Increased revenue and margins have delivered higher profitability which has allowed us to return our bonus payments to levels much closer to historical norms and for the first time the same scheme applies to all MMBC people, regardless of whether they are a Bentley or Mott MacDonald employee. We are cautiously optimistic of further profitability growth in 2023 but whilst we can see significant revenue growth ahead of us as we approach the later stages of AMP7 we face

some difficult economic headwinds and the effect of past inflation may not yet have fully worked its way through.

After a challenging 2021, from a cash perspective 2022 saw stronger cash generation as monies were unlocked from several legacy contracts. We have been free from all MM Group borrowings since early 2022 and expect to deliver further cash generation in 2023. We have also been helped by lower tax payments: firstly through involvement in two specific HMRC schemes to support business investment in both plant and equipment purchases and research and development activity; and secondly through measures we have taken to offset the impact of the introduction of reverse charge VAT for the construction industry.

2022 has seen significant replenishment of the plant fleet funded by our improved cash position, rather than any borrowing, allowing us to benefit from the HMRC 'super-deduction' scheme that was put in place at the time of the Covid pandemic. Total capital expenditure was £10.8m (2021: £8.0m). Key investments in 2022 have included enlargement of our fleet of intelligent excavators and expenditure would have been higher still, particularly van replacement, were it not for the impact of supply chain delays within the automotive sector. Plant profitability has seen a steady improvement over 2021 with the current fleet now operating at close to its maximum potential.

Prompt payment of our supply chain remains a key priority for us and is aided by our healthy cash position. Our latest published statistics demonstrate an average time to pay of 36 days (four years previously this was 53 days). Our current focus is on our smallest suppliers (those with 50 or fewer employees) and here we are actively targeting payment in under 25 days.



Jon Rhodes

JON RHODES | DIRECTOR

PEOPLE

WITH JUDITH JEFFERY

PEOPLE ARE AT THE HEART OF OUR BUSINESS. WE ARE COMMITTED TO CREATING WORKING ENVIRONMENTS ON OUR SITES AND IN OUR OFFICES THAT ENABLE OUR PEOPLE TO BE AT THEIR VERY BEST, DELIVERING BRILLIANT OUTCOMES FOR CLIENTS AND EACH OTHER.

HELLO AGAIN – returning employees bring valuable experience and knowledge from their time outside the organisation, together with renewed energy and enthusiasm. It's also a sign that we've made our organisation a great place to work. In 2022 we welcomed back more than 25 colleagues and are now benefiting from their diversity of experience.

AND GOODBYE – Long-serving retirees in 2022 include Alastair Binns, Steve Matthews, Tony Walker, Carl Hallam, Alan Bell, David Owen and Daniel Seaborne. All have played an integral part in making JN Bentley the company it is today. Thank you to you all.



ENGAGED EMPLOYEES

We held our latest employee engagement surveys in 2021/22, giving colleagues the opportunity to share their feedback with us. Participation levels were high and our overall engagement score of 65% (MM and JNB) is 9% higher than the UK average.

I'M PLEASED THAT, AFTER WHAT HAS UNDOUBTEDLY BEEN A DIFFICULT COUPLE OF YEARS, MANY OF YOU ARE FEELING POSITIVE ABOUT LIFE IN MMBC. THANK YOU ONCE AGAIN FOR TAKING PART AND HELPING US TO CONTINUOUSLY IMPROVE."

PAUL BENTLEY, MANAGING DIRECTOR

The results have given us four areas on which to focus our action plan:

Attraction and retention – to ensure we are an employer of choice, able to attract and retain great talent in our business.

Talent development – that career paths are better defined and opportunities more visible. We've mapped career pathways for our Mott MacDonald roles and will follow-up with JN Bentley roles in 2023.

Reward and recognition – that colleagues feel fairly rewarded and valued. Action in 2022 included an extraordinary pay-rise for all in the summer, improved remuneration for those working away from home and improved maternity and paternity benefits.

Agility – that our agile working policy is fully embedded, including greater agility for site-based employees. Trials for this, including staggered start and finish times, will get underway in 2023.

We've asked colleagues to help too – from sharing positive stories that will help us attract the best talent; to recognising and sharing examples of good performance by people within their teams.

Through the implementation of our action plan, we hope to see even higher engagement across our region.

TRAINING, LEARNING AND DEVELOPMENT

Focusing on the longer-term development of individuals, our dedicated learning and development team grew in 2022. This added impetus to our L&D programme, and contributed to us being one of just 107 UK companies awarded gold membership of the 5% Club, which recognises investment in early careers through 'earn and learn' schemes. 8.5% of employees are in such roles (including over 100 apprentices), which demonstrates our commitment to this area.

We kicked-off a new management development programme focusing on supporting managers and team leaders, giving them the skills required to get the best out of their team. Our first cohort of 12 completed in the autumn and we currently have two more programmes underway.

We remain committed to our own in-house construction workforce. Over 500-strong (with plans for further growth in 2023), we invested £1m in training as they spent over 34,000 hours on courses to ensure tickets are maintained and new skills developed.



AN INCLUSIVE WORKPLACE

Our approach to equality, equity, diversity and inclusion (EDI) took great strides forward in 2022. We set our vision, scope and business case which in-turn has informed our new action plan.

One area of focus is enhancing our 'family friendly' offering to make roles more accessible, and to make it easier for parents and carers to enjoy a better work-life balance. We increased our maternity, paternity, and adoption offerings in 2022; top of the list for 2023 is considering our approach to shared parental leave and how we can better support those with caring responsibilities.

A more diverse workforce brings together people from different backgrounds, showcases a variety of perspectives and leads to innovation and creativity.

[DOWNLOAD OUR LATEST EDI PUBLICATION](#)

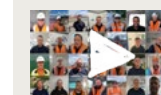
MENTAL HEALTH

Our employee wellbeing support is more accessible than ever. Our programme takes a holistic approach and saw us bring to the fore a variety of topics during the year, under the banners of emotional, financial, physical and social wellbeing.

We put particular emphasis on supporting

our colleagues' mental health in 2022. Campaigns were designed to raise awareness and remove the stigma, with new line manager training helping leaders spot the signs and understand the support available.

We have set-up a company-wide network of wellbeing champions whose role is to support wellbeing at work and raise awareness of positive wellbeing initiatives, whether it's organising local site and office events or supporting national campaigns to encourage conversations.



IT'S OKAY TO STOP AND ASK FOR DIRECTIONS

32 colleagues starred in a video promoting the benefits of asking for help with their wellbeing. It was viewed 100s of times.

KEEPING CONNECTED

Our approach to managing performance and development is all about regular, meaningful conversations between employees and their line managers. After launching our new platform to support our approach in 2021, last year saw MMBC Connect become fully embedded in the organisation at all levels as over 5,000 conversations were held. We launched a new Talent Snapshots feature to support our managers with talent development. It helps them make fact-based evaluations using the data captured throughout the year, as well as providing guidance on how to support their teams to develop further and achieve their goals.

FACE-TO-FACE

As an organisation we have found an increasingly good balance when it comes to office agile working. With more spaces made available for innovative teamworking, the buzz in our offices steadily increased through 2022 as colleagues met to collaborate on projects. We also began to explore what agile working might look like for our construction sites, building on feedback from the engagement survey. Trials get underway in 2023.

The years to come hold several challenges for us; in an ever-competitive marketplace we must make sure our organisation is an employer of choice, somewhere people want to work because it is inclusive, challenging, and enjoyable. With everything we achieved in 2022 – and more to come in 2023 and beyond – I know we have the people in place to make this happen.



JUDITH JEFFERY
HR DIRECTOR

HEALTH & SAFETY

WITH JAMIE FITTON

THERE IS NOTHING WE CARE MORE ABOUT THAN MAKING SURE WE ALL GO HOME SAFE AND WELL AT THE END OF THE WORKING DAY.

OUR STANDARDS AND PROCESSES HAVE HELPED US TO ACHIEVE INDUSTRY LEADING HEALTH AND SAFETY PERFORMANCE.

Our commitment for health and safety remains clear – to achieve ZERO injuries and prevent occupational ill-health – and will always be central to our Health & Safety Strategy.

Underpinning this is our Beyond Zero approach, where people make positive decisions and take positive actions to keep each other safe should something unforeseeable happen.

SAFETY

2022 saw our biggest improvement in performance. We achieved our lowest ever number of injuries since recording began and employee engagement reached record levels.

Whilst all these are fantastic achievements and we saw a record number of perfect days – days when positive interventions prevent injuries – we did not achieve a perfect year. This acts as a reminder that we must guard against complacency.

Our company seminars reminded us of what a great place to work this is, and how, by creating a positive safety culture and demonstrating that we care, we can make it even better. Caring about ourselves and each other to:

- improve safety performance by eliminating or controlling the hazards we face at work – preventing injuries now and forever
- improve long-term wellbeing by preventing and protecting ourselves from the effects our work activities could potentially have on our health

OCCUPATIONAL HEALTH

We introduced a new standard for the management of occupational health which will help our site teams understand how we manage potential health risks. Building on improvements made in 2021 to the way we help colleagues monitor and mitigate their exposure to occupational health, we rolled out wearable HAVS monitors and increased DSE understanding.

We also refreshed our Site Training Record app which has simplified the company and site induction processes, making vital health and safety information immediately available and improving accessibility of training records.

Overall, 2022 was a record year – but records are there to be broken – let's make 2023 even better.



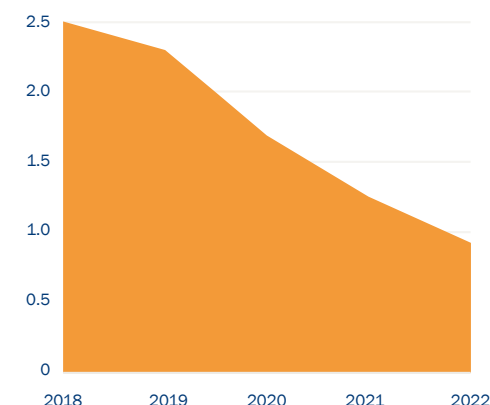
JAMIE FITTON
DIRECTOR

2022 PERFORMANCE

In 2022, we worked over 2 million hours without a RIDDOR injury and ended the year with an all injury frequency rate (AIFR) of 0.93, our lowest ever recorded.

CATEGORY	2018	2019	2020	2021	2022
Hours worked	5,307,422	5,240,281	5,100,597	3,673,706	3,984,561
Talk Safes/Made Safes	47,637	58,744	44,683*	32,751	38,303
Positive Interventions/Serious Near Misses	66	44	37	25	18
First Aid Injuries	112	94	60	26	17
MTI/LTI	15	20	17	14	17
RIDDORs	7	4	7	6	4
AFR	0.13	0.08	0.14	0.16	0.10
ALL INJURY FREQUENCY RATE (AIFR)	2.5	2.3	1.69	1.25	0.93
TOTAL NO. INJURIES	134	118	84	46	38

ALL INJURY FREQUENCY RATE (AIFR)



CAMPAIGNS

Our 2022 Beyond Zero campaigns focused on service avoidance and protecting ankles, targeting engagement across whole operational teams, from designers to site supervisors and operatives.

SERVICE AVOIDANCE

Our first campaign of the year – service avoidance – reinforced our best practice approach of Plan it, Prove it, Protect it and its relevance throughout the project lifecycle.

We shared a series of podcasts, talk safe prompts and hosted dedicated webinars, aimed at our design and operational teams. Following the campaign we saw a c.90% reduction in the number of high risk service strikes.

PROTECTING ANKLES

Targeting the main cause of our lost time injuries, our second campaign highlighted the importance of

protecting ankles from common hazards using our best practice approach:

- Right Foot – always maintain three points of contact
- Right Routes – always use pedestrian routes and make sure they are well maintained
- Right Boots – always wear the right footwear for the task and keep them in good condition

Senior managers visited sites to kick-off the campaign, followed by a series of talk safe prompts delivered by site supervisors to their teams. As a result, we saw a reduction in ankle and slip and trip related injuries.

DIGITISATION

Digital tools are improving safety on our sites and efficiency in our processes. In 2022, digitising information relating to the safe delivery of projects was a key area of focus. We launched a bespoke Site Training Record app to improve the level and quality of the communication of key health and safety messages. The app simplifies company and site induction processes, making vital information immediately available and improving the accessibility of training records.

We also introduced a digital permit system which will ensure everyone involved in a project has the most up to date information available, whilst reducing carbon by digitising a previously paper heavy process. Read more on embedding digital on page 36.

SEMINARS

We reflected on our safety journey at three company seminars in November. Colleagues from our design, operational and health and safety teams delivered presentations to some c.1800 employees, which looked back on the company's health and safety transformation and delved into the strides being taken to continue improving performance.

Technology was a focal point as we discussed how new developments will prevent, nullify and control the hazards of construction. From watches that monitor vibration and warn of proximity to known hazards to hearing protection that alerts you when noise trigger levels are reached and even exoskeletons that reduce the likelihood of back and shoulder issues from repetitive manual tasks.



CLIENTS

WITH IAN BESTER

CLEARLY, WE ARE NOTHING WITHOUT OUR CLIENTS – THEY ARE AT THE HEART OF WHAT WE DO.

We delivered a diverse portfolio of work for our clients in 2022 - from a scale, complexity, sector and a geography perspective, we did more and with great success! Workload across the majority of our clients increased, predominantly through AMP7 growth which ensured that we maintained our strong post-pandemic recovery, with revenue again back to pre-Covid levels.

With any client, our aim is always to build a long-term relationship and to be their trusted supplier of choice. Performance in 2022 was strong, and despite the ever-changing landscape in which our teams operate, collaboration continued to be at the heart of delivering fantastic outcomes. We continued to play a key role in the delivery of one of the UK's major infrastructure projects – the Strategic Pipeline Alliance for Anglian Water; our safety injury frequency moved to an all-time low; and we continued to invest time and effort into digital and technical excellence to deliver value for our clients.

EXTENDING OUR CLIENT BASE

As well as maintaining relationships with our long-term clients, 2022 also saw us strengthen links with new clients. In the water sector, our growing presence with Thames Water now means we operate for seven of the UK's largest water and wastewater companies – a market we very much specialise in. As well as water, we also extended our client base across the environmental, energy, industrial and highways sectors. This includes entering into long term framework

agreements with Canal & River Trust and Associated British Ports (ABP). Both these new clients are great examples of where we take what we already deliver in other areas of the business and apply it to their projects from the word 'go'.

SOLVING CHALLENGES

We pride ourselves on recognising the challenges that our clients are facing and providing them with solutions. The challenges are no bigger nor wide ranging than they are today, be it affordability, social, environmental, supply chain or resourcing.

In the water sector we're preparing ourselves for what we understand to be a 'back-end loaded' AMP cycle. Through 2022 and into 2023 we are building capacity and competence aligned with clients' programmes and work types.

Across the industry, and with the resource challenges that are immediately in front of us, we will have to learn to do more with less. This is where fantastic innovations through digital and technical excellence will come to the fore. Intelligent machinery will reduce the time an engineer needs to set out, for example, meaning they can be deployed on value-adding tasks elsewhere; digital rehearsals will mean we optimise the programme and get things right first time, minimising waste.

Many of the projects that we deliver for our clients offer an ideal environment for people entering the construction industry to learn, develop and progress. As a business we

introduced apprentices, placements and graduates onto our projects, became a member of the 5% Club, and were thrilled to see a number of employees become professionally qualified.

We've readied ourselves for sustainability challenges too – the projects delivered in 2022 have contributed wider social value benefit and we understand our role in driving carbon out of our solutions and supporting our clients in their carbon commitments.

AWARDS

Whilst it's not why we deliver our projects, validation for our efforts can come through award recognition. We were recognised in 29 categories in 2022, celebrating success with our clients at the likes of the British Construction Industry Awards and multiple Institution of Civil Engineers events.

DELIGHTING THE CLIENT

We will continue our trend of sustainable growth in 2023. We know there is a significant volume of work to deliver for our clients before the end of AMP7 and we are in good shape to achieve this. We will keep looking to delight our clients, be proactive when it comes to understanding their challenges and ensure that when a project is complete, our clients and the communities that they operate within are left happy with the outcome.



IB

IAN BESTER | DIRECTOR

SOUTHEND EMERGENCY ANGLIAN WATER

MMB was integral to a project in which an urgent response was needed following the failure of a 15m deep pipe feeding a water recycling centre. Initial emergency works included over-pumping 1200l/s from 14m below ground and making a hot tap connection into the existing inlet.

Work could then begin on a permanent solution – the construction of a 21m deep, 12.5m diameter caisson, with associated plant to enable pumping of 1500 l/s of raw sewage.

Operating on an extremely tight site, bordered by industrial units and a railway track, all-supplier monthly collaborative sessions have proved vital. SYNCHRO has identified clashes and helped adjust which suppliers are on site when – leading to decisions such as delivering the M&E by day, and then civils by night.

EXPEDITING PROGRAMME IN THIS WAY WILL SEE THE SCHEME DELIVERED AROUND 40% FASTER THAN TRADITIONALLY EXPECTED.

Bentley

MMB MOTT MACDONALD BENTLEY

JBA Bentley

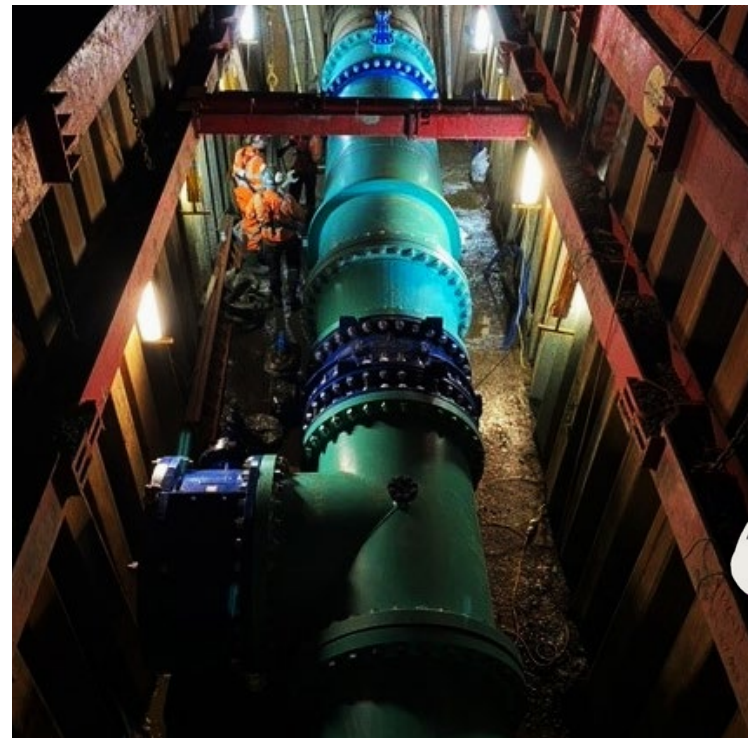
We operate through three primary delivery vehicles, taking a 'right company for the opportunity' approach. **JN BENTLEY** provides our clients with civil engineering contracting services, together with mechanical and electrical expertise; founded in 1999, **MOTT MACDONALD BENTLEY (MMB)** offers fully integrated civil engineering feasibility, design, construction, and commissioning services; and **JBA BENTLEY** – 10 years old in 2023 – delivers fully integrated water and environmental engineering, feasibility, design, construction and commissioning services, with a focus on low carbon solutions.

In 2022 we worked closely with clients to deliver innovative, efficient, low carbon, digitally-enabled, sustainable and affordable outcomes for projects across the UK. Whilst the water sector dominated the order book, significant work was undertaken in the environmental, energy, industrial and highways sectors too. The following pages feature a small selection of these projects that showcase JN Bentley, MMB and JBA Bentley at their very best.

CASE STUDIES >>

CLEAN WATER

Our water sector clients are responsible for ensuring the safe supply of potable water. We help them achieve this by engineering solutions that contribute to the water treatment process – from innovative improvements to existing assets to large-scale new builds that enable them to treat water more efficiently than ever before.



PLAN IT, PROVE IT, PROTECT IT – working over 161,000 hours on a large, congested facility, the team has achieved ZERO service strikes.

HORSLEY WTW UPGRADE NORTHUMBRIAN WATER

Identified as a key location for long-term water supply to Tyneside, we are delivering a multi-million-pound upgrade to Horsley Water Treatment Works. This includes the installation and commissioning of a new clarification process, six gravity filters, UV disinfection and pumping station.

The scheme is one of the largest we have ever delivered with Northumbrian Water, with up to 100 people on site at any one time. To fast-track works to increase water supply into the network during dry weather, we safely mobilised our supply chain to hit a challenging target date.

“...AN AMAZING AMOUNT OF CRITICAL WORK COMPLETED IN A VERY SHORT PERIOD.”

MATTHEW GRIMMOND,
PROJECT DIRECTOR, NWG

TINWELL EEL SCREENS ANGLIAN WATER

Eels are essential to the biodiversity of rivers and estuaries and as such are protected by legislation. As they travel upstream using the sides of the riverbank for navigation, they are at risk of being swept into pumping station intakes. This led to the installation of new eel screens at several sites in the Anglian region, including on the River Welland at Tinwell, in Rutland.

Benefiting 131km of river, a significant amount of steel structure build work was completed off-site, reducing disruption during the on-site installation, delivered by a specialised team of divers.

131

131km of river will benefit from the project solution



THE PROJECT WON THE NET ZERO AWARD AT THE INSTITUTION OF CIVIL ENGINEERS AWARDS IN YORKSHIRE & HUMBER FOR EMBEDDING THE CARBON REDUCTION HIERARCHY WITHIN PROJECT DELIVERY - ESTIMATING TO HAVE REDUCED EMBODIED CARBON BY 78% AND OPERATING CARBON BY 130t CO₂e PER ANNUM.

EMBSAY WATER TREATMENT WORKS YORKSHIRE WATER

We are undertaking a major upgrade of Embsay Water Treatment Works, including the construction of a new pre-cast concrete three-compartment, five-lane contact tank and modifications to existing structures for a new run-to-waste facility.

The project has utilised digital innovation. The latest VR technology shared options for the positioning of a chemical dosing lance with the client's project engineer, allowing them

to visualise how operators would physically access the equipment once built. This ensured the design was right first time.

A digital rehearsal using SYNCHRO during the investigation and tender stage improved understanding of sequencing on an extremely tight site. Outputs from the rehearsal led directly to programme improvements, saving 10 weeks and over £100,000 in preliminary site costs.

WATER TREATMENT WORKS UPGRADE UNITED UTILITIES

Upgrades to a major water treatment works in the north west of England are maximising its output, reducing the average 'unit cost to treat' to make it the most cost-effective water treatment asset in the area.

The project has seen us improve several key treatment processes through the installation of new rapid gravity filters (RGFs), lamella clarifiers and flocculation tanks, and upgrades to the pH correction system.

2022 saw the testing and commissioning of the RGFs and lamella clarifiers, all carefully co-ordinated with our client's operational teams and the day-to-day requirements of the functioning treatment works.



DIGITAL FLAGSHIP – THE PROJECT HAS BEEN AT THE FOREFRONT OF DIGITAL INNOVATION IN MMB. LEARN MORE ON P36.



HAMPDEN BOTTOM RUN-TO-WASTE THAMES WATER

To help our client dispose of high turbidity water, we're constructing a £1.5m run-to-waste facility at the existing water treatment works located at Hampden Bottom, Buckinghamshire. The purpose-built facility will allow the turbid water to be drained via an 80m deep soakaway borehole – designed and installed deeper into the ground than originally proposed to ensure the system will perform successfully.

Water is carried from the treatment works to the soakaway borehole via a 1km gravity pipeline to ensure sufficient distance from the abstraction location.

Utilising the Control Point quality system to carry out welding on the 1km pipeline ensured completion right first time, improved quality and avoided any re-work.

WASTEWATER TREATMENT

A significant proportion of the water sector's effort focuses on collecting and then treating wastewater. We support this process both from an infrastructure and non-infrastructure perspective - devising solutions that improve existing treatment processes in an ever more stringent regulatory environment.

WASHINGTON NORTHUMBRIAN WATER

At Washington Sewage Treatment Works we upgraded and extended the inlet works; increased final treatment capacity by adding three new 20m final settlement tanks (FSTs); and refurbished existing electrical assets across site.

Close collaboration between everyone involved in the £14m project was key to its success. It ensured our activities didn't impact on our client's live 24/7 operations on site. For example, we successfully managed a critical 72-hour shutdown with no disruption to the sewage treatment process by developing a robust over-pumping solution with our supply chain.

The collaborative approach also meant we could realise significant value engineering opportunities. This included being given the green light from the client to crush and re-use 1120 tonnes of concrete derived from the demolition of existing storage bays and hardstanding. The material was re-used as foundations for site roads as well as piling mats and laydown areas, saving £70,000 and over 4.3t of CO₂e.



STOKE BARDOLPH SEVERN TRENT

One of the largest schemes in our history, 2022 saw us complete the design and build of a new £45m advanced anaerobic digester (AAD) facility at Stoke Bardolph Sewage Treatment Works. The facility turns sewage into biogas that is exported to the gas network and treats remaining solids so they can be used as high-grade fertiliser.

To achieve an ambitious programme of contract award to completion in just two years, the project has championed DfMA, digital and innovative solutions. For example, a productivity saving of 26 weeks was made by manufacturing, assembling and testing the steam generating boiler house off site.

THE PROJECT PICKED UP RECOGNITION FROM THE BRITISH CONSTRUCTION INDUSTRY AWARDS AND THE INSTITUTION OF CIVIL ENGINEERS

STOKE BARDOLPH FEATURED IN WATERPROJECTSONLINE - [READ IT HERE >>](#)

WHITBY YORKSHIRE WATER

Located outside of Whitby town centre, improvements to the wastewater treatment works have upgraded ageing assets and reduced odour impact on nearby developments. We installed a new two-stage, off-site-manufactured, odour control unit (OCU) system and replaced existing concrete tanks with a new hybrid construction of reinforced concrete and glass fibre reinforced tanks.

The topography of the site provided a challenging working area with limited space for construction of the new tanks. By challenging the outline design, we eliminated requirements for a number of new elements, including retaining walls, service diversions and hardstanding.

We re-purposed existing assets where possible, minimising the demolition of existing tanks by utilising the lower half of the walls as permanent formwork and for earth retaining requirements; reducing excavations near services and removing permanent and temporary works requirements.



BANBURY CHP THAMES WATER

At Banbury Sewage Treatment Works, we have replaced the existing 190 kW combined heat and power (CHP) unit with a brand new containerised unit 2.5 times more powerful, doing so on a very constrained site interfacing closely with existing plant. We also constructed a new gas booster set, de-humidifier unit, and siloxane removal plant, delivering all associated civil, mechanical and electrical works largely in-house - the whole team demonstrating real collaboration between design and construction throughout.

PLAN IT - PROVE IT - PROTECT IT: OVER 125 CHARTED AND UNCHARTED SERVICES WERE UNCOVERED AND MANAGED ON SITE. EVERYTHING FROM GAS MAINS TO ELECTRICAL CABLES; RISING MAINS TO ABANDONED SEWERS AND CHAMBERS WERE NAVIGATED WITH ZERO INCIDENTS.



We kicked off a major £36m scheme at **NEWTHORPE**, replacing existing treatment with a new Enhanced Biological Phosphorus Removal (EBPR) system that will remove phosphorous from the water environment.

Whilst still in its early stages, the scheme - which includes two new inlet works, an ASP, sludge thickening, final settlement tanks (FST) and tertiary solids removal (TSR) - is being built using the low carbon PAS 2080 principles. This includes building less - re-using existing structures where we can; and building smart - including a 20% reduction in ASP volume, use of a lower carbon concrete mix, tapered wall designs and fewer internal walls to minimise materials. The project runs until the end of 2024.

NBS

NATURE-BASED SOLUTIONS

The natural environment provides unique opportunities to tackle societal challenges such as climate change, water security and pollution. Many of our clients are turning to nature to deliver innovative solutions that provide increased resilience to water supply networks and improve water quality. We have delivered various nature-based solutions including installing wetlands to naturally treat drinking water and installing sustainable drainage systems to alleviate flood risk in urban areas.

CINDERFORD WETLAND SEVERN TRENT

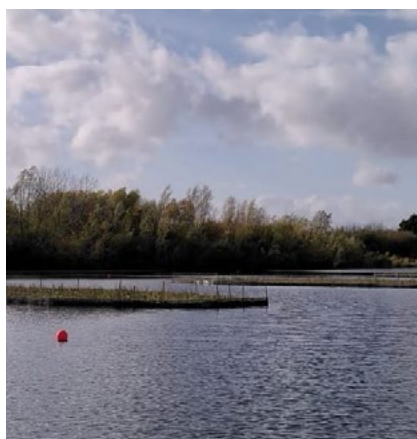
We transformed undeveloped land into a new wetland habitat in Cinderford. Situated next to an existing sewage treatment works, we developed a series of interlinked ponds that not only provide resilience to the Cinderford Brook by attenuating water flows but improve the visual amenity of the site for the local community.

Our plant operatives worked with a wetland expert to upskill in habitat creation works, giving a more natural shape to the ponds, with shelves, scrapes and microtopography to create better habitats.

With the main works on site completed at the end of 2021, we returned to site in Spring 2022 to complete the planting around the wetlands. New trees and plug planting will create habitats for a range of species, improving biodiversity.

With multiple environmental challenges, stakeholder engagement was key throughout the scheme. A collaborative effort from the project team, Severn Trent, Environment Agency, Gloucestershire Wildlife Trust and Forestry England helped to mitigate several risks including a coal mining legacy, high groundwater, difficult access and great crested newts on site.

CHAMPIONING A COLLABORATIVE APPROACH, CINDERFORD SCOOPED THE TEAM ACHIEVEMENT AWARD AT THE INSTITUTION OF CIVIL ENGINEERS (ICE) WEST MIDLANDS AWARDS.



WITCHES OAK GREEN RECOVERY SEVERN TRENT

We are supporting Severn Trent on an ambitious project in Derbyshire, part of a multi-million-pound Green Recovery programme that will help secure the region's water supplies for the future.

We implemented a number of floating wetlands across gravel beds at Witches Oak, which will pre-treat water naturally, something not seen before in the UK, and improve biodiversity. Three wetlands were built in 2022, with our client planning the launch of a further 27 in Spring 2023 and 2024.



ROUNDHAY SUDS YORKSHIRE WATER

At Roundhay Park Lane combined sewer overflow (CSO) we installed a form of sustainable urban drainage systems (SuDS) alongside undertaking traditional surface water separation from the combined sewer to reduce the frequency of sewage spills and ensure water quality targets were met.

Underused capacity in the existing large diameter combined sewer was identified which could be utilised to attenuate storm flows. To make use of this, we retrofitted three large diameter manholes onto the existing sewer and installed throttling pipework lengths between these chambers. The 16 rain gardens on Roman Avenue and new gully system on Kedleston Road transfer surface water flows to a nearby watercourse and not the combined sewer.

Working in a congested area of services, we trialed the use of augmented reality technology alongside utility mapping and service plans to identify the location and density of services without breaking ground and thereby reduced the risk of service strikes.

ROUNDHAY'S SUCCESS LED TO THE AWARD OF YORKSHIRE WATER'S MAJOR 'LIVING WITH WATER' PROJECT IN HULL AND THE EAST RIDING.



LUSTON WETLANDS HEREFORDSHIRE COUNCIL

To reduce phosphate levels in local rivers – namely the River Wye, Lugg and Usk – we are developing a series of three wetland cells. The cells will remove c.2000 kilos of phosphate from the water system every year, reducing the quantity of the pollutant to more acceptable levels.

The site will serve as an integrated phosphorous-reducing wetland as tertiary treatment for the nearby waste water treatment works. Flows will be diverted through the wetlands, before re-entering the watercourse through a small brook that feeds the River Lugg.

Across the three cells, around 85,000 plants of different species will be planted, each with distinct properties that will help to remove nutrients from the water passing through them. This will lower the phosphate level before it is released back into the watercourse.

P REMOVAL AND DfMA

IMPROVING THE HEALTH OF THE UK'S WATERS BY REDUCING LEVELS OF PHOSPHORUS (P) DISCHARGED FROM WASTEWATER TREATMENT PLANTS IS A MAJOR FOCUS FOR THE SECTOR.

We're playing a big role in helping our clients meet increasingly stringent regulatory requirements. We've already delivered 50+ P removal projects in AMP5, 6 and 7 and will deliver many more in this AMP and beyond.



WHAT IS OUR APPROACH?

Our vision is to deliver P removal projects for multiple clients with increasing efficiency by utilising our one team approach to design, procurement, commercial management, construction, and commissioning.

Our dedicated P Removal Working Group is making this vision a reality, working with colleagues across the organisation, including those based in Mott MacDonald's Global Delivery Service (GDS) in India. They are developing our standardised approach to the delivery of P removal projects together with driving the creation of standard products that suit the individual requirements of our water sector clients.

These standard products are at the heart of our approach. They cover the key assets - chemical dosing and tertiary solids removal (TSR) - plus other items such as showers, hose reels and hydrants, prefabricated interceptor tanks, and laboratory kiosks.

51

We currently have 51 standardised components and 16 assemblies developed collaboratively with our supply chain and our colleagues in Mott MacDonald Digital Ventures and GDS. Assemblies are collections of components – similar to how car manufacturers build their engines.

Our products take the form of 3D models and 2D drawings coupled with standardised supporting documents such as guidance, calculations, programmes and commissioning plans. Moata Intelligent Content (MIC) is our digital component catalogue, providing easy access to these standardised assets.

IN ACTION | INKBERROW STW | We were tasked by Severn Trent with adding ferric dosing into the rotating biological contactors (RBCs) - plus refurbishing and aerating existing reed beds - on a small area of site at Inkberrow. With the aid of our MIC standard chemical dosing assembly we developed a compact solution that incorporated learning from previous P removal schemes at Long Compton, Barrow and Quorn, Bottesford, Clive, and Colton. The approach unlocked significant time and cost efficiencies - it took our team just an hour to complete the layout using our MIC assembly.

SO, WHAT NEXT?

We are already seeing the benefits of our DfMA approach and the standard products produced. In 2023 we will continue to develop a suite of products and standard delivery pathways for all of our water clients to ensure the benefits of our standardised approach are realised across all frameworks.

IMPOUNDING RESERVOIRS

Impounding reservoirs (IREs) are man-made lakes constructed by building a dam across a river to store water that in the future will be treated and put into supply. Whilst situated in some of the most picturesque parts of the UK, projects aren't without their challenges. Invariably remote, our teams overcome difficult access and inclement weather to deliver improvements that ensure our client's assets remain compliant with the latest reservoir safety legislation.



RESERVOIR SAFETY IN WALES DŴR CYMRU WELSH WATER

The dam safety programme across the whole of Wales capitalises on our extensive reservoir experience. Projects vary in scope and scale but all ultimately ensure Welsh Water are left with an upgraded asset that meets stringent legal requirements.

We have increased scour capacity at **LLANDEGFEDD** so that the reservoir can be lowered faster should there be an emergency. Our solution utilised the existing infrastructure, installing three sets of twin valves to the tower and coring directly into the overflow shaft.

Together with costing just 20% of a traditional siphon solution, this methodology reduced carbon by 80%.

Working over water was a challenge – it required a scaffold access to be suspended from the top of the tower and each 1.5t valve to be transferred by barge to the base of the scaffold ready for lifting into position.

We constructed a new spillway at **LLUEST WEN**, following the alignment of the old one to minimise future maintenance requirements. Working three miles from the nearest surfaced road and around 1400ft above sea level, the new spillway required installation of reinforced concrete on gradients up to 1:2 and with some walls 6m high.

CFD analysis identified that forces on the walls were less than for a typical spillway wall, allowing us to optimise the wall design by making them slimmer with a lower reinforcement density. This significantly reduced the quantity of concrete and reinforcement needed, as well as subcontract and labour costs.

In 2022, we also infilled the tunnel beneath the reservoir embankment and installed siphon pipes at **CASTEL NOS** to enable emergency lowering of the reservoir; overhauled **UPPER CARNO** reservoir; and constructed a new reinforced concrete spillway at **YNYSYFRO**.



RESERVOIR SAFETY IN YORKSHIRE YORKSHIRE WATER

The hills of Yorkshire are where our historic association with impounding reservoirs began. We completed a scheme at **REDMIRE** to improve stability. This included a complete regrade of the mitre from crest to toe, and the construction of a new 7m berm running 320m across the reservoir's central embankment.

Compaction trials and nuclear density tests allowed for an agreed reduction in passes required to compact the fill on the embankment. This reduced the amount of time spent tracking across material with rollers and plates by 40%, and improved safety by reduced working at height activities.

A variety of improvements were made to **LOWER BARDEN**. We installed a new 700mm siphon pipe to aid drawdown of this category A reservoir;

refurbished the spillway; raised walls; installed under drainage; and relined the tumble bay.

The use of fibre reinforced concrete for parts of the spillway and tumblebay slabs and wall foundations – as opposed to steel – delivered time and carbon savings. It is faster to construct and the fibres have significantly less embedded carbon. With ~390m³ of fibre reinforced concrete used, we removed ~50t of steel reinforcement and its installation.

At **UPPER BARDEN**, we installed a 600mm siphon pipe through the embankment to increase drawdown capabilities. Multiple learnings from Lower Barden were applied, including anchorage and lifting improvements to the metal pipe supports. We also reused many design elements and shared resources and subcontractors to drive further efficiencies.



TREADING NEW GROUND | 2022 saw us tread new ground as we progressed work on our very first impounding reservoir schemes with **SEVERN TRENT**, plus a further project with **NORTHUMBRIAN WATER**. Across the schemes we are engaged on both a design and build and build-only basis. The first project completed was at Cae Llwyd, where we constructed a new overflow and spillway to upgrade the asset and help it achieve its safety certification. JN Bentley's new framework with **CANAL & RIVER TRUST** will also afford us opportunity to demonstrate our reservoir credentials.

SERVICE RESERVOIRS

Service reservoirs (SREs) store treated water ready to be put into supply, providing a critical source of clean water in the event of a burst or when demand on the network increases.

We have designed and constructed countless service reservoirs over the years, utilising design for manufacturing and assembly (DfMA) principles to maximise off-site construction and drive efficiencies. Combining the use of BIM with standard-products we can deliver quality solutions for our clients, at the right cost and delivered right first time.



BOSTON PARK YORKSHIRE WATER

We are replacing two service reservoirs at Boston Park in Rotherham to maintain supply to the local network, which includes a nearby hospital. Phasing construction to maintain minimum storage requirements, we are engineering a pre-cast concrete twin-cell 8ML structure - plus one 4ML structure – on the site of the existing reservoirs.

Working immediately adjacent to the historic Boston Castle and Park, with access only available down a narrow lane, community engagement has been pivotal. Meetings with a local action group, plus drop-in sessions for the community, built confidence surrounding how we would safely deliver the work with as little interruption as possible.

PENGARNDDU DŴR CYMRU WELSH WATER

Our works at Pengarnddu Service Reservoir started in 2021, with final landscaping and reinstatement planned for Spring 2023. The existing service reservoir on site is over 100 years old and has limited ability for inspection and maintenance. We built a new 9.8ML multi-million-pound twin compartment reinforced concrete structure to provide added resilience to our client’s distribution network. The use of pre-cast and in-situ concrete in construction helped to minimise waste and reduce installation times.

Situated off the Heads of the Valleys road in South Wales, testing weather conditions meant works had to be carefully planned, particularly with regards to installation of the pre-cast units and the major concrete pours associated with the structure. Added challenges came with the need to keep the existing reservoir operational throughout construction.

As part of the project, it was identified that the excavated material could be utilised on a nearby site, at Upper Carno impounding reservoir, where we were involved with the slackening of an embankment slope. We crushed and screened 10,000m³ of sandstone aggregate which was transported to Upper Carno. Across both schemes c.£500,000 was saved on purchase, processing, transportation and disposal costs.



Credit: DŴr Cymru Welsh Water



PENGARNDDU WAS AWARDED ‘TEAM OF THE MONTH’ BY DCWW’S LEADERSHIP TEAM FOR THE CONSIDERABLE COLLABORATIVE EFFORT INVOLVED IN THE DELIVERY OF THE PROJECT AS THE RESERVOIR HIT ITS REGULATORY DATE



NORTH WEST UNITED UTILITIES

We carried out works to enable the permanent isolation of the existing reservoir and allow temporary isolation of the lower reservoir for inspection and repair.

Navigating the challenges associated with a 100-year old network, making changes to a pump station in a listed building and working in tight residential areas, we completed upgrades to an existing pumping station and new network infrastructure, and built a booster pump station to aid the supply of water to the service reservoir catchment during peak demands.

WE UTILISED OUR SKILLS, TIME AND EXPERTISE TO GIVE A BIT BACK TO A LOCAL COMMUNITY FARM. WE BUILT A NEW FEED STORAGE SHED AND CONVERTED AN OLD STORAGE FACILITY INTO A SHEEP SHED ENABLING IT TO CONTINUE PROVIDING VITAL SERVICES TO LOCAL SCHOOLS AND THE WIDER COMMUNITY.

TRUNK MAINS AND PIPELINES

Trunk mains and pipelines distribute water across the UK, joining treatment works with customers. They clearly play a critical role in ensuring a reliable and continuous supply of water and in 2022 we continued to work closely with clients to maintain their networks – and even build new as the country increases its resilience against climate change and population growth.

STRATEGIC PIPELINE ALLIANCE ANGLIAN WATER

Anglian Water's Strategic Pipeline Alliance (SPA) is delivering one of the largest infrastructure projects in the UK for a generation. SPA – of which MMB is a key partner – is creating hundreds of kilometres of new, large-scale pipelines that will enable water to be moved from the wetter areas in the north of the region to the drier areas in the south and east. This will secure water supplies for customers for years to come. It is the largest project we have ever delivered.

In 2022 we completed the 35km Lincoln to Grantham pipeline, a £90m investment. Key to the success of this first section was a production mindset. Tracking progress digitally through BIM 360, the repetitive nature of laying a pipeline means that the team can every day analyse what has gone well, and then repeat.

We'll be taking this approach and our learning forward to the next two large sections of pipeline: Elsham to Lincoln and Grantham to Peterborough. Works begins in 2023 and, once complete in 2025, will mean we have laid over 120km of pipeline across the region.



SPA FEATURED IN WATERPROJECTSONLINE - READ IT HERE >>

INNOVATION | SPA is deliberately delivering differently. It has innovation at its heart as it looks to unlock efficiencies at every stage. We trialled and proved the validity of a 'low water' approach to commissioning that uses air to drive slugs of water between swabs to clean and disinfect the pipes. Traditional commissioning would have required over 1bn litres of water on SPA. Our approach will cut this by about 95% and is now being rolled out across the SPA network.

SPA is also embracing digital developments in plant technology: intelligent excavators are programmed with GPS for optimum accuracy; and a digital thumbs up improves safety when people are interfacing with plant.

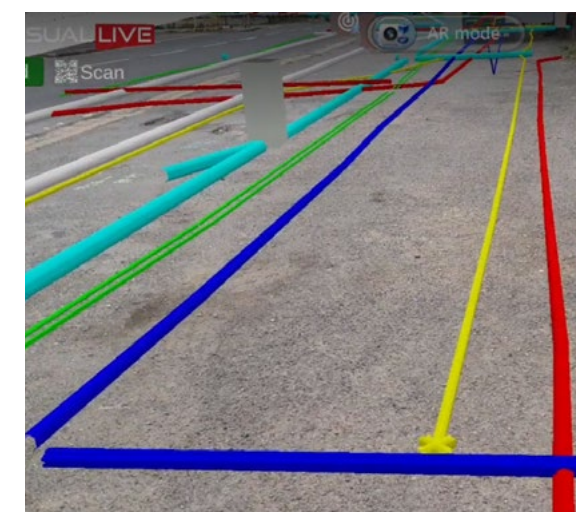
STOURTON RISING MAIN YORKSHIRE WATER

We replaced over 900m of rising main and built three new air valves and three new washouts, in Stourton, near Leeds.

330m of main was installed by trenchless technology. Eliminating the need for trenches along a busy highway enabled us to safely navigate underground services, keep traffic moving and maintain 24/7 access to local business. Early engagement with our directional drilling subcontractor resulted in a new bentonite slurry mix being incorporated into the design to minimise the risk of void collapse during the reaming process.

Significant carbon savings estimated at 84t were generated through the use of washout standard products, the re-use of road planings and capping rather than grouting the abandoned main.

WE ACHIEVED A 'RIGHT FIRST TIME' FINISH, SUCCESSFULLY INSTALLING AND TESTING THE RISING MAIN. WELDING WAS DIRECTLY DELIVERED IN-HOUSE AND SAW US WORKING SAFELY AMONGST MANY PREVIOUSLY UNCHARTED SERVICES.



GRIMSBY TRUNK MAIN ASSOCIATED BRITISH PORTS

When tasked by Associated British Ports (ABP) to deliver the first phase of a water main renewal in Grimsby, it gave us opportunity to showcase our water sector expertise in a new arena.

In installing 300m of potable water main, our team encountered 30 buried services, 40% of which were uncharted.

Visualisation of existing services was key in achieving zero service strikes. Augmented reality (AR) played a part here. Overlaying the buried services onto the 'real world' enabled our site team to 'see' the services on a tablet, before safely starting their trial holes.

ENVIRONMENT

2022 marked our tenth year working in partnership with the Environment Agency, delivering projects through JBA Bentley – our integrated design and build business that specialises in environmental engineering and low carbon solutions. We continue to deliver works for the Environment Agency through our engagement with their Flood & Coastal Erosion Risk Management (FCERM) and Marine & Coastal frameworks, as well as continuing to deliver several large legacy projects through the Water & Environmental Management (WEM) framework.



5000 • 275 • 23000 • 70%

5,000 trees and 1km hedgerow planted Provision of over 275 hectares of new habitat Designing out 40,000t of armourstone saved 23,000t of CO₂e alone 70% of site labour live within 15 miles of site; 67% construction spend within 75 miles

OUTSTRAYS TO SKEFFLING MANAGED REALIGNMENT SCHEME ENVIRONMENT AGENCY

In Summer 2021, JBA Bentley began the construction phase of a planned managed realignment scheme for the Environment Agency at Skeffling on the north bank of the Humber Estuary, within a designated site of nature conservation.

Our work involves building 5.5km of embankments, set back up to a kilometre inland to provide a new flood defence that will

come into use when the existing flood defence is breached in 2024.

The removal of the old embankment will enable the Humber Estuary to enter the area and help create over 200 hectares of intertidal habitat, with a further 75 hectares of supporting freshwater habitat created adjacent to the intertidal area.

The new areas of saltmarsh and mudflats

provide food and habitat for a variety of bird species native to the Humber Estuary, allowing for the natural migration of intertidal habitats in response to rising sea levels and habitat lost to coastal squeeze.

The works will continue through to late 2024, as we are only able to undertake construction works between spring and autumn, given the area's ecological importance.

In 2022 JN Bentley secured works with a new client – **CANAL & RIVER TRUST**. As part of an arrangement lasting up to 10 years, we were appointed as the sole supplier to deliver complex works on the north of the Trust's network of historic waterways and assets. Additionally, we were also selected for inclusion on the Trust's non-complex civil engineering frameworks covering Yorkshire, the North East and North West of England. Over the year we engaged with several new clients, delivering a host of environmental works for the **NATIONAL TRUST**, various **LEAD LOCAL FLOOD AUTHORITIES** and **INTERNAL DRAINAGE BOARDS**.



POLKEMMET MINE WATER TREATMENT SCHEME COAL AUTHORITY

JBA Bentley has designed and built an upgrade to Polkemmet Mine Water Treatment facility in Whitburn, Scotland.

The facility will be capable of treating 100 l/s of iron-rich mine water through a combination of active and passive processes, before discharging it safely into the local watercourse.

The works include the replacement of existing pipework, a new chemical dosing unit, aeration cascade, settlement lagoons, reedbeds and various upgrades to existing infrastructure.



OUR SOLUTION REUSES OVER 2000t OF SITE WON REPROCESSED ROCK WHILST AVOIDING THE IMPORT OF SIGNIFICANT VOLUMES OF CLAY, SAVING 900t CO₂e WITH A 48% CARBON SAVING AGAINST THE ORIGINAL BASELINE.

PROJECT MUNIO DERBY CITY COUNCIL

Project MUNIO involves the design and build of a new pumping station. Works commenced in the summer of 2021 to install large hydraulic lock gates (8.8m wide x 6m high), sheet piled river walls, a fish refuge area and a new pumping station capable of passing forward flows of 4,500 litres per second. The pumping station operates automatically via a new 15m long motor control centre, providing heightened flood protection in Derby city centre during periods of heavy rainfall.

The project is extremely challenging given its space-constrained city centre location and tight timescales for completion. Through diligent planning and our innovative approach – using augmented reality for planning, developing 3D models for build and 3D printed precast copings for the sheet piled walls, the JBA Bentley team are on course to meet completion in March 2023.



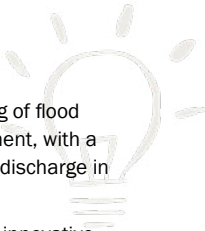
EAST HULL PUMPING STATION ENVIRONMENT AGENCY

We made significant progress constructing a new pumping station to reduce flood risk. Located on the Holderness Drain, the catchment is subject to fluvial, tidal and surface water flooding, and is protected by strategically placed pumping stations approaching the end of their design life.

By maximising the use of various modelling techniques (including 3D, hydraulic and computational fluid dynamics) as part of the early investigation works, we developed

a comprehensive understanding of flood mechanisms across the catchment, with a particular focus on the point of discharge in the lower catchment.

This enabled an integrated and innovative design and build solution, comprising an in-channel land-drainage pumping station combined with a 260,000m³ natural flood storage area that provides heightened flood protection to 850 properties in Hull, with minimum disruption to the local community.



ENERGY

IN 2022 WE SECURED SEVERAL NEW FRAMEWORKS WITHIN THE GAS SECTOR, PROVIDING US WITH THE OPPORTUNITY TO BUILD ON OUR FLOURISHING RELATIONSHIPS WITH CADENT GAS AND NATIONAL GRID.

The new arrangements help to secure works in the sector for RIIO-2 and beyond (the regulatory period 2021-26), allowing us to demonstrate our expertise in the design and construction of gas infrastructure.

MMB continued to build its presence with Cadent Gas – owners and operators of the largest gas distribution network in the UK – by securing a place on their Multi-Activity Framework. Through the framework we’ll support Cadent Gas with the design and build of above ground installations (AGIs), including preheat projects, capacity upgrades, works to pressure control systems as well as works associated with ‘non-piggable’ pipelines.



The arrangement, which could last up to eight years, covers the East of England, East and West Midlands and the North West. The framework is our third with Cadent Gas in RIIO2 having been appointed onto their Capital Construction Services framework for lots 1 & 3 on a design and build basis.

2022 also saw MMB secure further opportunities with the National Grid, through our appointment to both their Asset Health and Minor Civils frameworks. Both design and build arrangements cover large parts of the UK for RIIO-2, with the option to extend into RIIO-3.

MUCH LIKE THE WATER SECTOR’S FIVE-YEAR BUSINESS PLANNING AMP CYCLES, THE GAS SECTOR ALSO WORKS IN FIVE-YEAR CYCLES TOO – KNOWN AS RIIO (REVENUE = INCENTIVE + INNOVATION + OUTPUT)

The Asset Health framework includes works to gas pipelines, AGIs, structural and asset integrity and decommissioning, whilst the Minor Civils framework covers a broad range of civil engineering services and activities, as well as drawing on our mechanical and electrical expertise.



INDUSTRIAL BUILDING

FOR OVER 30 YEARS WE HAVE DELIVERED PROJECTS IN THE INDUSTRIAL BUILDING AND MANUFACTURING SPACE. HERE, DELIVERABLES ARE OFTEN COMPLEX AND THE NEED TO KEEP DAY-TO-DAY OPERATIONS UNAFFECTED VITAL.

2022 saw JN Bentley venture into the ports and maritime sector by securing two frameworks with an exciting new client, **ASSOCIATED BRITISH PORTS (ABP)**. ABP are one of the UK’s leading port operators, handling 25% of the nation’s seaborne trade. We are supporting ABP with the continued development of their 21 UK ports through our inclusion on all five geographical lots of their Industrial Buildings Framework, through which we can deliver large scale industrial building and civil engineering projects over the next five years.

We’ve already delivered several projects for ABP as their main contractor on the Minor Civils framework covering their Humber ports at Hull, Immingham, Grimsby and Goole. Read more about a trunk main we have engineered with ABP on page 27.

Throughout the year JN Bentley has delivered increasing volumes of works for some of our long-standing **BLUE-CHIP CLIENTS** – such as Rolls-Royce - across various sectors including nuclear, aerospace and defence. Through our existing design and build arrangements we carry out

a vast range of works, including new builds, refurbishments, civils, ground works, estate infrastructure, demolition, decommissioning, security systems and a host of mechanical and electrical installations. Projects in this sector often see us working in close proximity to live client operations under stringent conditions, which means our site operations are planned, communicated and delivered meticulously to minimise any disruption.

We have continued to grow our relationship with **MAGNOX**, who are responsible for the safe and secure clean-up of 12 nuclear sites under the ownership of the Nuclear Decommissioning Authority. Building on the successful delivery of our first project together, JN Bentley was awarded further design and build projects at Wylfa and Trawsfynydd, in North Wales.

Both schemes will see us continue to transfer our expertise from the water sector, in the form of increasing the capacity of an existing sewage treatment plant, installing multiple sludge storage facilities and upgrading a waste transfer station.

Note - specific client and project details have been withheld to maintain confidentiality



We strengthened our relationship with the **DEFENCE INFRASTRUCTURE ORGANISATION (DIO)** as we delivered further work to support Mott MacDonald. Utilising our construction experience to safely undertake intrusive surveys, in 2022 this included utility verification works at the largest US airbase in the UK, RAF Lakenheath; and ground investigation works ready for a new engineering training facility and helicopter hangar upgrade at RNAS Culdrose, in Cornwall.

HIGHWAYS

In 2022 we continued to expand our portfolio of highways works, providing design and build and build-only services for a host of local authorities across the UK.

The majority of projects were delivered through existing framework arrangements with Cumbria County Council, North Yorkshire County Council, Lincolnshire County Council, Warwickshire County Council and the North and Mid Wales Trunk Road Agent, an agency delivering works on behalf of local authorities in the region.



A494 ASTON HILL TO EWOLE ROUNDABOUT DENBIGHSHIRE COUNTY COUNCIL VIA NMWTRA

We delivered sections two and three of an Active Travel Route in Deeside, including the widening of footpaths to provide a shared use path adjacent to the A494 and paved surface ways.

Works included site clearance, earthworks, service diversions, the installation of new ducts, kerbs, edgings, footways, paved areas, pedestrian guardrails, lighting columns, lit signage, surfacing works and new retaining structures, with much of the work completed during the night to minimise disruption to the local community.

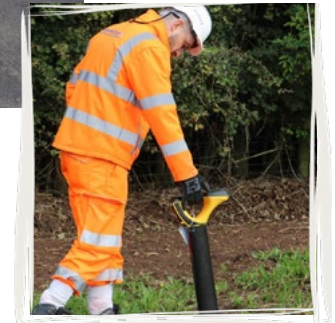
HAWES ROPE MAKERS CULVERT NORTH YORKSHIRE COUNTY COUNCIL

Repairs to Hawes Rope Makers Culvert involved replacing the fill above the culvert arch with concrete to increase its strength, important given it crosses an A-road.

Faced with environmental constraints, plus having to work amongst a multitude of buried services, our approach minimised the risk of damage to the existing structures and services. The project met a tight programme that ensured minimal disruption to the centre of the busy market town.



A JN BENTLEY BURIED SERVICES GURU ATTENDED SITE TO HELP MAP THE EXISTING SERVICES. BASED COMPANY-WIDE, OUR GURUS ARE HIGHLY TRAINED IN ALL ASPECTS OF SERVICE AVOIDANCE AND ARE THERE TO HELP AT ANY STAGE OF A PROJECT.



**HELSEINGTON MOSS BRIDGE PROJECT
ACHIEVED A 79% CO₂e SAVING AGAINST
THE ORIGINAL BASELINE.**



HELSEINGTON MOSS BRIDGE CUMBRIA COUNTY COUNCIL

Helsington Moss bridge is a single span masonry arch structure supporting a narrow road over a main drain. Suffering from significant structural issues, we replaced the bridge and its foundations.

Located in an environmentally sensitive area in Cumbria, our initial scope was to replace the bridge with new piled foundations. However, investigations into the poor ground conditions saw us opt for an alternative - a vegetated bag system. This meant we could retain reinforced earthworks to support the road and form the bridge opening with an Aquaspira pipe. This lightweight solution reduced the imposed load on the ground to minimise settlement, whilst reducing volumes of concrete and steel.

NEWTOWN ACTIVE TRAVEL FOOTBRIDGE POWYS COUNTY COUNCIL VIA NMWTRA

JN Bentley and Mott MacDonald are progressing with the detailed design of the River Severn Active Travel footbridge. The project will see us design and build a single span butterfly arch bridge comprising a steel framework and composite reinforced concrete deck, supported by reinforced concrete abutments and bored continuous flight auger (CFA) piled foundations. The parapet system will be formed from modular elements of shaped steel plates for the posts to support the infill panels. We've already realised several value engineering opportunities associated with the bridge length and bearing arrangements and look forward to construction commencing in 2023.



PUBLIC SECTOR FRAMEWORKS | JN Bentley is also present on a number of public sector frameworks through which we are able to deliver a range of works for clients across the UK. In 2022 we were appointed to several lots across Pagabo's Civils & Infrastructure, Medium Works 23 and DPS Frameworks, along with our continued participation on the Crown Commercial Services Framework.

SOCIAL OUTCOMES AND SUSTAINABILITY

WE ARE DRIVEN BY OUR MOTT MACDONALD GROUP PURPOSE: TO IMPROVE SOCIETY BY CONSIDERING SOCIAL OUTCOMES IN EVERYTHING WE DO.

Our approach is built upon six pillars that span both social and environmental elements, ensuring that we deliver sustainable solutions, invest in our people and support the communities we operate in. Here are some of the highlights from the last twelve months:

ENVIRONMENTAL ENGAGEMENT

In 2022, we recorded almost 7,000 'talk green' and 'made green' positive interventions – continuing to strengthen our environmental culture and preventing potential incidents.

BIODIVERSITY NET GAIN

Our environmental professionals, design managers and operations managers worked together to develop our Business Management System requirement for delivering Biodiversity Net Gain (BNG). This collaboration ensures BNG is considered in all aspects of the project lifecycle and maximises the potential for BNG delivery through design and build. The integrated approach will support our clients deliver their legislative requirements and aspirations.

DIVERTING WASTE FROM LANDFILL

To continue to drive improvement on waste management, we have increased our target of diverting waste from landfill from 90% to 95% - in 2022, we redirected over 97%.

97%

LOW WATER COMMISSIONING

One of the most innovative practices being used on some of our projects is low water commissioning. Once a new pipe is laid, it must be flushed with clean water and chlorine. With limited water supplies, collaboration between partners on Anglian Water's Strategic Pipeline Alliance (SPA) led to the development of an innovative technique involving using air to drive water between swabs to clean the pipes – resulting in a 95% reduction in commissioning water.

LOCAL BUSINESSES AND SMES

We make procurement decisions that support causes beyond just the immediate needs and operations of our business. As part of this, we seek to deliver social value through our supply chain by supporting local suppliers and SMEs. To demonstrate their importance to us, 22 local suppliers were invited to our company seminars in November, celebrating 50 years of JN Bentley. Colleagues engaged with suppliers, strengthening relationships and building foundations for future collaboration. In 2022, 79% of our expenditure for materials, plant hire and subcontract services was with SMEs.

ecovadis

In 2022, we achieved a silver sustainability rating from EcoVadis for the first time, placing us in the top 25% of participating organisations.

25%



GIVING BACK | Our corporate social responsibility (CSR) approach comprises three areas: charitable giving, volunteering and community support. Over £65,000 was donated to charity or given back to communities in 2022, through company donations, fundraising and volunteering hours. Our people raised a further £26,000 through their own activities, with the company topping this up by a further £4,000 through our matched fundraising scheme.

Our 'procurement with purpose' approach sees us actively look to reduce all streams of waste and packaging. A recent flood alleviation scheme at Redcar Lane, North Yorkshire, required the installation of a new drainage system that attenuated flood flows. Attenuation pipework was procured via Keyline for the Polypipe system that manufactures from recycled plastics – approximately 80% plastic bottles.

TECHNICAL EXCELLENCE

Our growing, recognised Social Practice provides a source of technical excellence and an in-house, connected network for sharing best practice, skills and knowledge across the business. In 2022, our Regional Practice Lead and Early Career Professional Lead were appointed. The Practice can help operational teams proactively consider social outcomes throughout the whole project lifecycle, delivering benefits to communities, not as an add-on service but as an integral part of our approach. Learn more on page 37.

EQUALITY, EQUITY, DIVERSITY AND INCLUSION (EDI)

In 2022 we launched our EDI approach – focused on key business goals and outlining our vision, helping us to open up new ways of thinking to deliver better social outcomes for the communities we serve.

LEARNING AND DEVELOPMENT

We achieved gold membership from The 5% Club, recognising our ongoing investment in early careers through 'earn and learn' schemes.



WELLBEING

We developed a wellbeing community of local champions and mental health first aiders to help embed our business wellbeing vision across the organisation and held line manager training sessions and carried out major updates to our digital wellbeing hub to improve access to information and support.

We are committed to being an equitable business where everyone has a chance to succeed. To be open, welcoming and inclusive in our approach, demonstrating inclusive behaviours and valuing the thinking, skills and knowledge that diversity brings. More on our people on page 10.

CARBON REDUCTION:
WE HAVE COMMITTED TO BE NET ZERO ACROSS ALL OUR OPERATIONS BY 2040.



2022 saw us move from carbon-intensive diesel fuel to the more sustainable alternative of Hydrotreated Vegetable Oil (HVO). By the summer, HVO accounted for 75% of our total site fuel use; by the end of the year we had used 1.9 million litres of HVO out of a total annual fuel usage of 3.4 million litres, saving approximately 5000t of carbon and supporting our commitment to be net zero by 2040.

On site at **SKIFFLING**, JBA Bentley is delivering a planned managed realignment scheme for the EA, creating new intertidal habitats for bird species. We installed a HVO smart fuel tank, optimising project delivery by sustainably powering plant and equipment – accounting for 92% of total fuel used. Learn more about the project on page 28.



Through engagement with our supply chain, we saved 25t of CO₂e in two months by operating a low carbon, solar smart set up at our Thames Water site in **BERKHAMSTED**. This comprised a solar pod hybrid backup generator, a solar smart frame and a smart distribution board.

IMAGE: We began working with the National Trust in 2022 - pictured is our site in Norfolk

DIGITAL DELIVERY

OUR APPROACH TO DIGITAL DELIVERY FOCUSES ON FOUR KEY THEMES: OPTIMISATION, TRANSFORMATION, DIGITAL LITERACY AND INFORMATION.

We use our innovation process to discover, incubate, upscale and consolidate new digital tools and processes to improve project delivery.

DIGITAL DELIVERY PLANS

We launched an integrated digital delivery planning (DDP) solution. This standard approach means our teams can easily identify opportunities early in the design stage where digital tools can be utilised to deliver added value, safety and commercial benefits.

We continued to explore the potential of augmented (AR) and virtual reality (VR). Integrating these extended realities into project design and delivery is helping us to better understand challenges on site and improve safety and efficiency in project delivery.

Completing a DDP at Embsay Water Treatment Works identified an opportunity to use VR to ensure the design choice was right first time. Read more on page 17.

We used Visual Live – an AR tool – to visualise the position of construction elements and efficiently plan works to construct a new pumping station in Derby. This helped the site team to better understand constraints and plan the works safely. More on page 29.

DIGITAL CONSTRUCTION

We continued to embed digital construction, focusing on creating a modern data environment, utilising the latest technology and maximising value from building information modelling (BIM)



data. With good information management underpinning our digital approach, we were proud to play our part in Mott MacDonald Group achieving ISO 19650.

To help embed these tools, we formed a community of digital construction champions who, armed with the right training and knowledge, support project teams in utilising appropriate digital tools.

DIGITAL REHEARSALS

We expanded our use of digital rehearsals to facilitate better planning on projects. At a water treatment works in Berkshire, we reduced the programme by 10-weeks, saving £148,000 by holding a digital rehearsal. Using SYNCHRO 4D software to review the construction programme and 3D model allowed the team to better understand concurrent construction activities and identify potential space constraints on the site.

MOATA

We continued to use our industry leading digital solutions platform, Moata.

We're deploying our Moata Carbon Portal across all our projects to standardise the way we calculate and reduce carbon in the assets we design and construct for clients. We used Moata Geospatial and Moata Inspect on Yorkshire Water's 'Living With Water' project to help collect digital survey data and present it on a GIS map platform with other geospatial data in a fully digital work flow. Providing a comprehensive view of the data collection has allowed the team to make informed, right first time decisions.



EXCELLENCE

EXCELLENCE IS ALL ABOUT IMPROVING WHAT WE DELIVER AND HOW WE DELIVER IT – IN ALL ASPECTS OF OUR PROJECTS.

TECHNICAL PRACTICES

At the core of our technical knowledge, our Practices help us to deliver solutions of appropriate quality in a cost and efficient way, right first time. Practice membership increased by 74% in 2022; we now have a diverse community of colleagues, representative of our design and build expertise.

We hosted monthly, themed sessions covering a range of topics to share best practice and improve our processes and approaches to project design and delivery.

CARBON REDUCTION

Practices have been instrumental in developing our approach to low carbon concrete and nature-based solutions – key areas of focus in our efforts to reduce scope 3 carbon emissions and become net zero by 2040.

At Newthorpe Sewage Treatment Works, the design team used knowledge within the Water Retaining Structures Practice to reduce carbon by c.400t CO₂e on the construction of the new ASP (activated sludge plant) lanes through understanding alternate actions.

PRODUCTION DELIVERY

With added focus on DfMA, MCC (modern methods of construction) and build off-site, we appointed a dedicated lead to drive our 'production delivery' ethos. This includes

the creation of standardised processes and products, adding to our existing industry-leading digital component library, Moata Intelligent Content. This leads to more efficient, higher quality and safer projects in construction. We adopted this approach on phosphorous-removal schemes – see page 21.

EVENTS

At the European Wastewater Management Conference & Exhibition colleagues presented on dissolved methane recovery at a wastewater treatment works and engineers Matthew Tokaryk and Sophie Murray shone in the Student & Young Professionals' poster competition.

We supported Holcim's Startup Accelerator Programme, which aims to speed up sustainable construction with disruptive solutions. Sponsoring the global low-carbon concrete initiative, we now look forward to working with participating companies to trial exciting new products and technologies.

EXCELLENCE WEEK

Annual Excellence Week showcased and celebrated professional and technical excellence through best practice presentations from design and construction teams covering low carbon design, semi-precast service reservoir construction and digital delivery.

ECP DAY WAS A GREAT WAY TO GET OUR ECPs TOGETHER FOR NETWORKING, COLLABORATION AND CELEBRATION."

CHRIS BOLTON, TECHNICAL EXCELLENCE LEADER

EARLY CAREER PROFESSIONALS

In September we hosted our first ECP Day – part of Mott MacDonald's Global ECP Week initiative. This saw a group of ECPs from across the business come together for a day of networking, including a Q&A with directors, and knowledge sharing.

Monthly knowledge sharing sessions continued, along with the organisation of ECP site visits, chats with senior managers and increased engagement in STEM and sustainability events. These initiatives will continue in 2023 as the network develops.



NORTH WEST WATER TREATMENT WORKS:

- BIM 360 to create a common data environment which provided a seamless flow of data between design, site and subcontractors.
- Extended realities to allow the site team to visualise works pre-construction.
- The latest hand held scanning technology to capture temporary works and as-built data allowing design verification prior to construction - pictured.
- Intelligent machine control (the machine working directly from design data) to increase efficiency and safety.
- Digital inspection and test records - progress measured and recorded in real time, allowing us to be proactive in dealing with outstanding works.



THIS PROJECT FEATURED IN WATERPROJECTSONLINE - READ IT HERE >>



IN THE PIPELINE

WITH JONATHAN BURTON

UNBELIEVABLY WE ARE NOW OVER HALFWAY THROUGH THE AMP7 PERIOD (2020-25) AND WE'RE NOW SEEING THE GROWTH IN WORKLOAD THAT WE HAVE BEEN EXPECTING.



“

THE OUTLOOK FOR THE COMPANY CONTINUES TO BE VERY POSITIVE. OUR APPROACH TO TARGETED GROWTH, DIRECT DELIVERY AND FOCUS ON OUR PEOPLE, SAFETY AND QC&E STRATEGIES PUTS US IN A VERY STRONG POSITION.



2022 saw us exceed our budget and deliver £294m as MMBC, 20% higher than 2021. We are forecasting growth within many of our frameworks in 2023 and have set a budget of £360m. What gives us confidence in setting this budget is that at the time of writing almost 100% of this is already secured, with the remaining value likely to be allocated through our existing frameworks.

The ramp up in our framework projects moving from design and planning to construction is being seen across the majority of our clients, and most noticeably with Anglian Water with @One and SPA, Northumbrian Water and Thames Water, where we are forecasting 50% growth, and not least with Severn Trent with over 90% growth currently forecast.

There is every chance, with further bidding activity and successful project delivery, we could exceed our budget for the year.

2023 FOCUS

Alongside all the design and construction work we'll be delivering in 2023, there are three main areas of focus to support our continued growth into 2024 and beyond.

- 1 Having successfully secured frameworks with new clients Associated British Ports and Canal & River Trust in 2022, we will look to build on the great start we have made and continue to develop long-term relationships and deliver an increasing portfolio of work. In addition to these clients, we are continuing to identify opportunities and secure work with our other non-water clients including Cumbria County Council, the authorities in North Wales and Bradford Metropolitan Borough Council.

Environmental work continues to be a key focus and we have recently extended one of our frameworks with the Environment Agency, all supporting the workload for both JN Bentley and JBA Bentley.
- 2 2023 will see us commence our AMP8 bidding in preparation for the new AMP period starting in 2025. Many of our existing water sector clients will be re-procuring their frameworks through 2023 and 2024, with each of them talking about significantly larger capital programmes of work.

With larger programmes of work and drivers from the regulator, OFWAT, to focus on longer term solutions, environmental and social value benefits and delivering improvements through innovation and efficiency, it's crucial that we continue to deliver our AMP7 projects safely, successfully, and efficiently to meet our clients and the community's needs.
- 3 Along with company growth, the scale of some of our projects has also increased. We are now regularly negotiating, bidding, and delivering projects valued in excess of £20m. Completion of

these larger, more complex projects affords us the experience, capability, and opportunity to target new work at this larger scale.

In 2022 we identified several large projects with new and existing clients that we will be tendering for in 2023. Each of these projects, if secured, would support our aim of continued sustainable growth, and provide us with the opportunity to further enhance our reputation as a leading civil engineering contractor across the water and environment sectors.

WHAT ARE OUR CLIENTS ASKING FOR?

2022 saw high inflation compounded by issues across the global supply chain, resulting in increased pressure across our clients on project delivery timescales and affordability. It is therefore important that we're able to continue to identify opportunities and find innovative and efficient ways to meet our clients' challenges and remain at the forefront of the industry across each of the sectors in which we work.

As a design and build organisation, we have a strong track record in value engineering and finding affordable ways to meet our client's needs. As contracting models evolve, and solutions become more defined, we must continue to identify ways to meet these affordability and programme challenges through efficient delivery.

Alongside time and cost drivers, developing sustainable long-term solutions for our clients and the communities we work in remains increasingly important. With our commitment to be net zero by 2040 and requirements for biodiversity net gain, reducing carbon and continuing to develop our portfolio of alternative outcomes - such as nature based solutions - will be central across our projects in 2023 and beyond.

Our Quality, Cost & Efficiency (QC&E) Strategy, approach to technical excellence and digital, and commitments to net zero are all crucial to ensure we continue to meet our clients' requirements and remain successful in securing future work across the UK.

Overall, the outlook for the company continues to be very positive. As we saw during the 50th anniversary celebrations, we have many fantastic engineering projects across each of our operational areas. Our approach to targeted growth, direct delivery and focus on our people, safety and QC&E strategies puts us in a very strong position for 2023 and the years ahead.



BURTON

JONATHAN BURTON | DIRECTOR



Bentley 

MMB MOTT MACDONALD
BENTLEY



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BACK TO START

For all the latest:



March 2023