

ANNUAL REVIEW 2020



CLICK
TO
START



MMB MOTT MACDONALD
BENTLEY



WELCOME

Welcome to our 2020 Annual Review, a look back on 12 months that I think we can all agree were far from ordinary.



When I reflect on last year, I feel a sense of pride in all that our people achieved. We continued to engineer great solutions for our clients and their customers whilst making improvements to our own business, all with the backdrop of unprecedented challenges posed by the global pandemic.

The care we have for our clients, our people and the communities we serve – embodied in our core values of happy people, staying safe and making some money – has shone through during this turbulent period and is demonstrated on each and every page of the Review.

Where else to start other than Covid-19? A year ago, few had even heard of coronaviruses; 12 months on and we're all experts. When the nation responded to the pandemic in March, no-one would have expected that we would still be in its grip now. Even with the advent of a vaccine, recent lockdowns have shown that we should all expect the virus to impact us all for a good while yet.

What we know for sure is that by following our controls on sites and in offices, we have been able to continue to support our clients in safely delivering essential services - and will continue to do so in 2021.

In my video updates through 2020, I reiterated the importance of demonstrating the right behaviours: thinking of others; being flexible; taking personal responsibility; and staying positive. I am pleased just how many examples of the behaviours I saw in our people, demonstrating extraordinary adaptability, be it shifting overnight from office to home working or remaining productive on site despite the restrictions of social distancing. This means that the business has coped relatively well through Covid-19 and will even take away some positives – especially when it comes to agile working. Whilst home working is not without its challenges, many people have said how their wellbeing and work/life balance has improved and I look forward to launching our own agile working guidelines soon.

In the water sector, 2020 represented the end of AMP6 and the beginning of AMP7. We had naturally planned for the potential slowdown in work that the transition from one AMP to the next brings, but this was exacerbated by Covid-19. This meant that company turnover was lower than expected

and we were left with no choice but to undertake a right-sizing activity to help safeguard the future of the organisation. I am always sorry to see people go and I genuinely wish them all well for the future. Now with 2020 behind us, the future looks brighter and from the summer of 2021 we anticipate contracts in the water sector to begin in earnest.

It is essential that our people return home safe and well at the end of the day – or as was the case for many colleagues, keep themselves safe and well whilst working at home. The importance of safety was heightened last year with the additional measures we asked everyone to take to keep themselves and each other safe. The response was excellent and during the year health and safety performance improved such that the chance of getting injured at work reduced to its lowest level since the launch of our Safety Strategy in 2008. This improvement was the result of the on-going roll-out of our 'I Care' Leadership Programme that encourages colleagues to make the right personal choices and engage with team mates to make positive discussions 'business as usual'. You can read more on this later.

I continued to visit sites during the year to see first-hand how hard everyone was working to construct first-class projects. It was only natural to see productivity dip as the first new Covid-related safety



I am optimistic about what the future holds for our business and can see the next few years being our busiest yet.

measures were embedded; the important thing was to return ourselves to pre-pandemic levels of production as soon as possible, something we achieved without compromising the health of our people.

Video calls have been my main way of speaking with staff. I've met countless times with our management triangles (operations-commercial-design) and am filled with confidence with the development and teamwork I witness. We have grown into a £300m business and these triangles are well set to lead us through the next period of what promises to be an exciting future.

However, it will only be exciting if we remember the mantra 'what is good for our clients is good for us'. Despite challenges of their own, our clients were extremely supportive in 2020. The water sector faces big affordability challenges so now is our time to step up and find solutions that help clients not only deliver their outputs, but deliver them in increasingly affordable ways. We must be innovative and harbour the power of the digital world to find efficiencies in every part of our business offering.

As well as securing AMP7 frameworks with all of our existing water clients, a highlight of 2020 was adding Thames Water to our portfolio. As the contractor of choice for the UK water sector,

we have more opportunity than ever to share efficiencies across frameworks and provide clients with the services they need.

Outside of water, it was pleasing to secure new frameworks in the environmental sector with the Environment Agency and the Coal Authority, making headway on a number of low-carbon projects led by JBA Bentley. We also delivered some excellent outputs with Cadent Gas and continued to work on busy operational sites with blue-chip clients Rolls-Royce and Procter & Gamble.

It was excellent to receive such strong support from Mott MacDonald Group during 2020. The year signalled the start of a new era for the business as we formed a new region within Group, called MMBC. This prompted increased integration between JN Bentley and Mott MacDonald colleagues: the healthy contractor/consultant tension makes MMB perform at its best.

I will close with a heartfelt 'thank you' to colleagues for your efforts and dedication in 2020. I am optimistic about what the future holds for our business and can see the next few years being our busiest yet. Enjoy the read.

PAUL

Paul Bentley | Managing Director

INSIDE

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WELCOME
WELCOME
WELCOME

HIGHLIGHTS

2020 was anything but ordinary. And whilst it proved a challenging year in many respects, it wasn't without its highlights...



OUR ANNUAL 'BE RECOGNISED' WINNERS ARE CHOSEN. The 'Be Recognised Awards' are our internal awards that highlight people and teams that have gone that extra mile. Learn more about life in our organisation on p8.

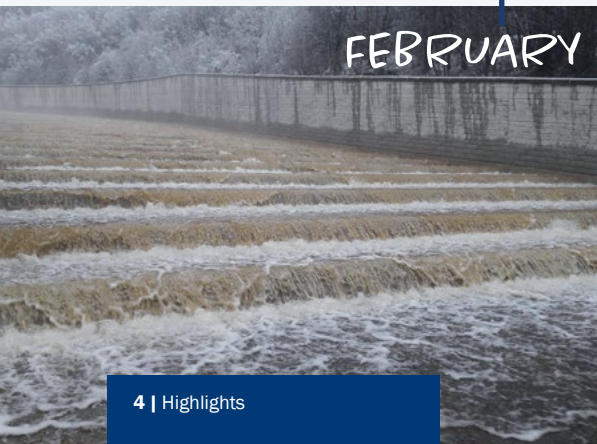


THE COVID-19 PANDEMIC HITS THE UK AND WE ALL HAVE TO FIND NEW WAYS OF WORKING. Sites kept running with new measures in place and offices closed with colleagues setting up workspaces at home. We're really proud of how everyone has adapted to this most challenging time. Read all about our response on p22.



WE HELP OUR PEOPLE ADAPT TO LIVING IN THE 'NEW NORMAL' BY SHARING WELLBEING GUIDANCE, RESOURCES AND TIPS. Supported by our Wellbeing Champions, the aim is to make sure people have access to the help and support they might need. Read more about employee wellbeing and engagement on p8.

2020 >>



MMB IS NAMED AS A FRAMEWORK CONTRACTOR FOR YORKSHIRE WATER'S AMP7 £650M INFRASTRUCTURE NETWORKS. We are proud to have secured places on AMP7 frameworks with seven water companies in total. Read about some of the projects we are delivering together from p26.



WITH THE COUNTRY PULLING TOGETHER TO WEATHER THE EARLY DAYS OF THE PANDEMIC, WE SEE EXAMPLES OF COLLEAGUES AND TEAMS DOING THEIR BIT: from donating face fit testing kits to a colleague giving up 175+ hours to carry out duties as an Acting Special Constable. Read about our work in the community on p20.

WE SIGN ON THE DOTTED LINE WITH ANGLIAN WATER AND PARTNERS TO JOIN THE NEW STRATEGIC PIPELINE ALLIANCE. The £350m programme forms a major part of Anglian Water's 25-year Water Resources Management Plan. Learn more about SPA on p28.



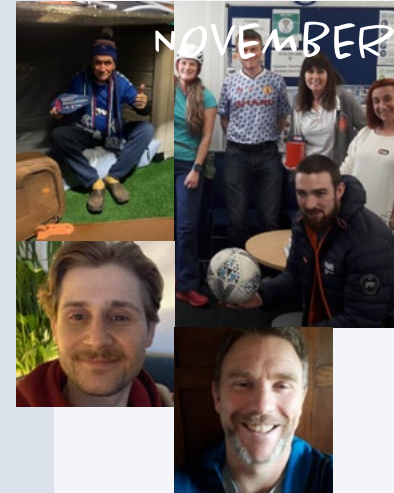
MMB IS RECOGNISED AT THE PIPELINE INDUSTRIES GUILD ANNUAL AWARDS, WINNING THE 'UTILITY PIPELINE PROJECTS AWARD' FOR THE SECOND YEAR RUNNING.

Repeat business is the recognition that we're looking for - but it's nice to pick up an award or two along the way. Read all about our 2020 award success on p25.



WE ARE APPOINTED TO THE FIRST OF THREE MULTI-MILLION-POUND AMP7 FRAMEWORK AGREEMENTS WITH NEW CLIENT, THAMES WATER.

Over the next five years we will deliver non-infrastructure and infrastructure projects, bringing to the region what MMB does best – the complete design and build of brilliant engineering projects. Read more on p27.



WHILST MANY OF THE MORE TRADITIONAL CHARITY EVENTS WERE CANCELLED, THIS DIDN'T STOP OUR TEAMS DOING THEIR BIT FOR GOOD CAUSES. Throughout the year, people raised money in all sorts of ways, including bike rides, sponsored sleep-outs and the Mombember campaign. Read about our charitable efforts on p21.

2021 >>



JBA BENTLEY HITS TWO BIG MILESTONES: 1 MILLION HOURS WITH ZERO REPORTABLE INJURIES AND 12 MONTHS WITH ZERO ENVIRONMENTAL HARM. The Environment Agency present us with an 'Exemplar Health, Safety & Environmental Performance Award' for our efforts. Read all about JBA Bentley and the EA on p40.

WE WORK WITH UNITED UTILITIES TO PULL OFF WHAT OUR CLIENT DESCRIBED AS "THE BIGGEST PLUMBING JOB IN THE NORTH WEST."

Read more about the flagship project and all our work with United Utilities on p36.



SOCIAL DISTANCING MEANT COLLEAGUES COULDN'T COME AND COLLECT THEIR USUAL CHRISTMAS TURKEYS, EVERYONE INSTEAD RECEIVING A GIFT VOUCHER AS A SMALL THANK YOU FOR HELPING THE BUSINESS NAVIGATE A CHALLENGING 12 MONTHS. As you'll see in the Annual Review - we achieved a lot last year - here's to 2021!

BECAUSE WE

CARE

We believe that because we care about what we do, we do things better.

Caring brings social value. It means our people make sustainable positive differences to our clients, their customers, our communities and the environment by delivering projects that we are all proud of.

Because we care about our clients and their customers...

...clients award us repeat-business. They sign up to long-term frameworks with us and call on our services when deadlines are tight, when they need an emergency response, and when the work needs a team of people willing to go that extra mile. And whilst working together, we always care for the environment.

Because we care about our people and keeping them safe...

...there is nothing more important than our people going home fit and well at the end of the day. We want our people to thrive and invest heavily in their development. We want them to be part of their communities, supporting volunteering, charitable endeavours, and social events – albeit virtually and socially distanced in 2020.

Because we care about the bottom line...

...we've put the tools in place to help ensure we deliver efficiently for our clients. Our Cost & Efficiency Strategy focuses on innovation, collective effort and making those small savings that all add up. This means our clients' investments deliver as much for society as possible.





2020

IN NUMBERS

£302M

TURNOVER FOR THE MMBC REGION
100% OF INCOME GENERATED VIA MMB IS INCLUDED, INCLUDING THAT ATTRIBUTABLE TO MOTT MACDONALD DESIGN - AN INTEGRAL PART OF OUR OFFERING

5.1M

HOURS WORKED - MOST OF WHICH WERE THROUGH THE COVID-19 PANDEMIC
TEAMS PULLED TOGETHER TO WORK WITH NEW MEASURES AND KEEP EACH OTHER SAFE AND WELL

89

APPRENTICES ON THE BOOKS
WHEN THE PANDEMIC HIT, WE WORKED WITH TRAINING PROVIDERS TO ESTABLISH NEW WAYS OF LEARNING - LOTS OF WHICH WAS ONLINE

19

AWARD WINS, COMMENDATIONS AND SHORTLISTINGS
GLITZY CEREMONIES CAME TO A HALT IN MARCH, BUT RECOGNITION FOR JN BENTLEY, MMB AND JBA BENTLEY DIDN'T!

53,411

SAFETY, HEALTH AND ENVIRONMENTAL POSITIVE INTERVENTIONS MADE
EVERY INTERVENTION IS A POTENTIAL INCIDENT PREVENTED

17,202

COST & EFFICIENCY EVENTS REPORTED
OUR STRATEGY ENCOURAGES COLLEAGUES TO ACHIEVE QUALITY IN A COST & EFFICIENT WAY - REPORTING NUMBERS LIKE THIS SHOWS EXCELLENT ENGAGEMENT

1.69

ALL INJURY FREQUENCY RATE (AIFR)
OUR AIFR - NUMBER OF 'ALL INJURIES' PER 100,000 HOURS WORKED) IS AT ITS LOWEST RATE SINCE THE LAUNCH OF OUR FIRST HEALTH & SAFETY STRATEGY IN 2008. OUR WORKPLACE IS SAFER THAN EVER BEFORE

65%

OF OUR SUPPLY CHAIN IS MADE UP OF SMEs
THE WHOLE SUPPLY CHAIN - REGARDLESS OF SIZE - PLAYED A VITAL ROLE IN HELPING THE ORGANISATION NAVIGATE 2020. THEY ADD GREAT VALUE

A KEY FOCUS FOR US IS



PEOPLE

A key focus for us is 'happy people' - people who enjoy coming to work, who feel valued and who take pride in what they do. In what was a year like no other for everyone, having this focus on happy people embedded in the company served us well.

And whilst Covid-19 dominated the agenda, it didn't stop us pressing forward on tackling other people-related themes, in many cases taking learning from our response to the pandemic to help us develop workplace improvements.

RESPONDING TO COVID-19

Those particularly challenging early days of the pandemic brought out the best in our people. The narrative was about social distance, but our people 'came together' to support one another, be it establishing safe home work environments or implementing new measures on site.

Classed as essential workers, our people showed great dedication in travelling to and from sites and in adapting working practices to ensure water kept flowing, sewage continued to be treated, and important environmental and gas engineering work was undertaken.

Workplace improvement: Our people told us they'd experienced many benefits of the change in working pattern style: for office-based staff this included shorter commutes and an increase in personal/family time. In 2021 we will launch the first phase of agile working guidelines, focusing on our office settings. Phase 2 will include consultation with site-based colleagues to explore ways we can accommodate agile working for those on the 'front-line' too.

WELLBEING

We put in place a number of important wellbeing building blocks in 2019, which helped us to support our people during 2020. It was a tough year at home and at work, full of uncertainty and change – all things that can impact wellbeing. Supported by our Wellbeing Champions, we hosted virtual tea breaks, built a wellbeing hub on our intranet, circulated newsletters and opened Yammer forums – all avenues for people to access support they might need. We backed Movember, sharing information to raise awareness of mental and physical health and raise over £6,000.

93% of office-based employees told us they would like to continue to spend at least some of their working week at home long-term. 67% said their wellbeing had improved since working more remotely.

Classed as essential workers, our people showed great dedication in travelling to and from sites and adapting their working practices in 2020.



Wellbeing Champions: Our Wellbeing Champions help support employee mental health and wellbeing, whether it's organising local events and activities or promoting national campaigns to encourage positive conversations.

TRAINING AND DEVELOPMENT

Having a pipeline of talented people coming into and then up through the business is vitally important, be it hands-on apprenticeships to support our self-delivery model, or professional development to prepare our future leaders. We worked closely with our training providers to pivot to significant amounts of online learning in 2020. We've seen a host of creative approaches taken by the likes of Leeds College of Building and Cardiff and Vale College to ensure our apprentices could continue their qualifications and attend training – including practical site-based experiences.

Workplace improvement: Training, learning and development will look a lot different going forward. 2020 demonstrated just how

effective remote learning can be and we will continue to harness the power of technology in our approach to offer the right balance of blended learning.

RECOGNITION

2020 showed us the great teams we have in the business and how they pull together in the face of adversity. It would have been easy to forget to say “thank you” in the midst of everything going on, but through a series of videos from leadership and the ‘Be Recognised’ Awards programme, we made sure efforts were recognised.

‘Be Recognised’ celebrates colleagues and suppliers who have gone above and beyond; a special edition highlighted those who had specifically helped the business through the pandemic. This included MEP Engineer Chris Hewitt, who created our Covid-19 Golden Rules (since rolled-out company-wide) and the team responsible for making our 300-strong fleet of vans Covid-secure.

TO THE FUTURE

On top of those themes I've already touched upon – agile working and a shift to more remote learning – 2021 will see exciting opportunities for people open up in both the Thames Valley and the East of England following significant framework wins with Thames Water and Anglian Water, respectively.

We're in the process of building new, dynamic teams in these areas, teams that will provide our clients with the design and build expertise MMB brings to the table.

We will also launch a new performance development platform to provide colleagues with greater visibility of targets and development plans and will roll-out improved career paths for our operatives and other site-based employees.

By making these improvements, we will keep the company vibrant, full of happy people and teams and a great, rewarding place to work.

JUDITH

Judith Jeffery | HR Director



MONEY:

FINANCIAL REVIEW

In this year's Annual Review we are presenting financial information for the MMBC region as a whole. From a revenue perspective this means that 100% of the income generated via Mott MacDonald Bentley is included - including that attributable to the Mott MacDonald design input (which amounts to 9% of the total).

£302m of revenue was delivered in 2020 which was 11% lower than the £340m achieved in 2019 on a like-for-like basis. Some of this reduction was allowed for in our 2020 budget and reflected the dip normally seen when we transition between AMP periods. Two issues have compounded this, however, meaning we have seen a much slower start to AMP7 work than we expected at the time of the budget.

Firstly, the impact of delay caused by some water and sewerage company clients appealing their Ofwat final determination with the Competition and Markets Authority (CMA), and secondly, the inevitable disruption arising from the Covid-19 pandemic. As shown in the chart on the next page, there was a reduction in revenue quarter-on-quarter as we progressed through the year, following a record level of turnover in quarter one; we had expected stronger revenue in both quarter three and quarter four once AMP7 work commenced in earnest.

Across the client portfolio there were, however, increases in revenue for some clients. Severn Trent (+33%) saw a significant back-end loading of their AMP6 programme and the commencement of our largest current project at Stoke Bardolph. The Environment Agency (+29%) saw continued high volumes of work to complete the WEM framework, with a key contributor being our second largest current project at Great Yarmouth.

With the exception of Anglian Water (+9%), all other water and sewerage company clients saw revenue

reductions of around 20-30% due to the impact of the factors described above. United Utilities (-32%) was most pronounced due to the absence of any AMP7 work, at this stage. Overall, our six main water and sewerage company clients contributed 82% of annual revenues (2019: 85%).

Margin performance has been disappointing for a second successive year and, coupled with the reduced revenue, this has had a significant detrimental impact on our profitability levels. Whilst in some parts of the business we have achieved healthy margins despite the challenging Covid-19 backdrop, in other areas operational challenges have been encountered, resulting in some sizeable project cost overruns which have caused us considerable pain.

The Covid-19 pandemic has also caused disruption and additional costs and not all our clients have been willing to accept these costs. However, whilst low by our own standards, our margins still compare favourably to many of our peers in the contracting sector and we have been able to deliver some profit at a time when a number of competitors have experienced financial challenges and are expected to deliver losses.

Contribution from the plant department remained an important foundation to business profitability in 2020 and despite our lower volumes its contribution has held up with the team doing a fantastic job of managing utilisation levels and off-hiring third party equipment wherever possible, to help to deliver this. We have also continued to

invest in the fleet despite the challenges faced.

Our response to the pandemic in the Spring of 2020, and reduced workload, required us to take some tough action on our cost base. A staff pay reduction was in place for three months of the year and workload levels dictated much less overtime was available for weekly paid employees. We also undertook a headcount reduction in all parts of the business to reflect the lower demand levels we now face (headcount reduced by 15% during the year) and decided against an annual pay increase for the same reason.

Non-staff costs, particularly training, are also much reduced on last year. All of the above, and the reduced level of JN Bentley bonus pay out, have been difficult choices for the management team but they were necessary to ensure we were able to avoid making a loss over the past year. As we hopefully return to sustainable growth and profitability in the near future, pay and bonus levels can respond accordingly.

2020 saw further progress on our Xpedeon ERP system despite the challenge of many of the team working remotely. A key milestone was the roll out of the HR and payroll system in May. Additionally, significant new areas have been introduced for the Form Builder tool and, supporting this, we have made hand-held devices available to sites to help to simplify as much of our administration processes and incident reporting as possible, reducing

Whilst low by our own standards, our margins still compare favourably to many of our peers in and we have been able to deliver some profit at a time when a number of competitors have experienced financial challenges.



traditional paperwork wherever we can. The final phases of new development are scheduled for 2021 and the important new functionality we will see introduced to the business this year surround the commercial management processes of client application for payment and commercial valuations, and the introduction of a new cost-to-complete database. Completing these roll outs will be a great achievement for the business and will lay the foundation for significant operating efficiencies to be delivered in the future.

Our software providers at Xpedeon recognise the enthusiasm with which we embrace this new technology and see our approach as being more ambitious than their other UK customers. This gives many mutual benefits – they are willing to invest time to develop the ideas we want to progress and they also get the benefits of these developments within their core product offering.

JON

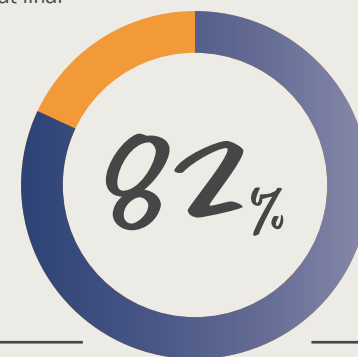
Jonathan Rhodes | Finance Director

OUR CLIENT BASE

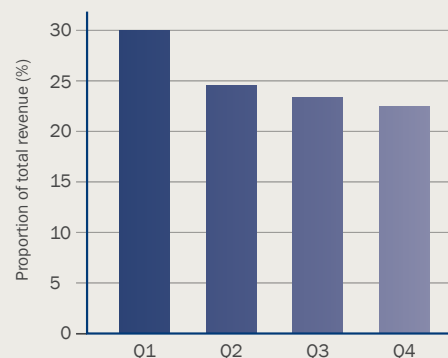
Client	2019 (£m)	2020 (£m)	↑↓
Severn Trent	55	73	33%
United Utilities	68	46	-32%
Dŵr Cymru Welsh Water	59	42	-29%
Yorkshire Water	49	37	-24%
Northumbrian Water	46	37	-20%
Anglian Water	11	12	9%
Environment Agency	34	44	29%
Rolls-Royce	8	6	-25%
Coal Authority	6	1	-83%
Cadent/National Grid	3	2	-33%
Other	1	2	100%
Total	340	302	-11%

◀ Whilst total company revenue reduced by 11% in 2020, there were notable increases in turnover with both Severn Trent and the Environment Agency. However, with the exception of Anglian Water, all other water and sewerage company clients saw revenue reductions of around 20-30% caused by some appealing their Ofwat final determination with the CMA and, of course, the pandemic.

▶ 82% of revenue was generated with our water and sewerage company (WASC) clients - the remainder is generated largely through the environmental, gas and commercial building sectors.



REVENUE ANALYSED BY QUARTER

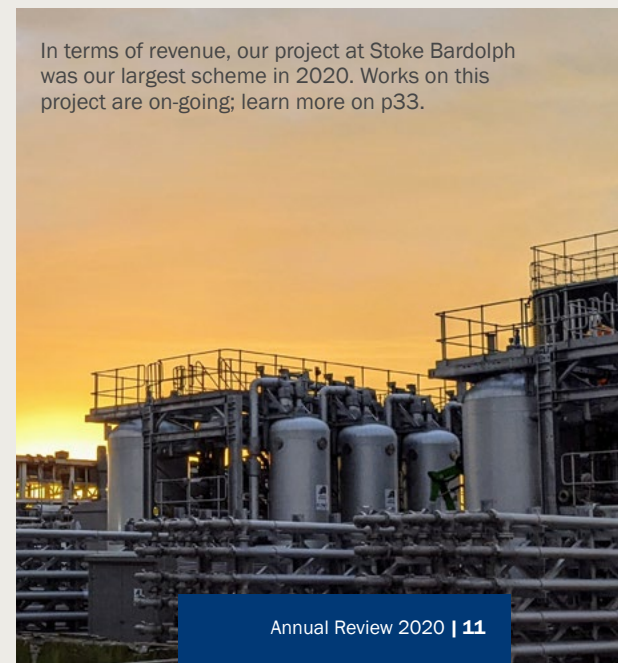


◀ After a record level of turnover in Q1, there was a reduction in revenue quarter-on-quarter caused by WASC appeals to the CMA, and Covid-19. We had expected stronger revenue in both Q3 and Q4 once AMP7 work commenced in earnest.

THE TOP 10 - PROJECTS BY REVENUE IN 2020

Project	Client	£m
Stoke Bardolph	Severn Trent	23
Great Yarmouth Tidal Defences	Environment Agency	17
Hull WwTW	Yorkshire Water	17
Ribble Valley Batch	United Utilities	9
Hallbank Tunnel	United Utilities	9
Berwick and Fowberry WTW Batch	Northumbrian Water	8
Groundwater Maintenance Batch	Severn Trent	6
Cheshire Batch	United Utilities	6
Bewdley Bank Service Reservoir	Northumbrian Water	6
Regional WTW Deployed UV Enabling	United Utilities	5

In terms of revenue, our project at Stoke Bardolph was our largest scheme in 2020. Works on this project are on-going; learn more on p33.



A VISION FOR

ZERO INJURIES

There is nothing we care more about than making sure we all go home safe and well at the end of the working day. The standards and processes we have developed and implemented have helped us to achieve industry leading health, safety and environmental performance.

“

In order to achieve zero injuries, we have to aim 'Beyond Zero'.

In the year since I became the Director responsible for quality, environment and safety (QES), the QES team has sought to redirect our focus towards injury prevention rather than looking to correct compliance issues raised from incident investigations or inspection findings.

Our health and safety performance is already comparable with the best in our industry. Industry leading does not, however, mean we do not injure people, and as long as you accept some injuries you will have to accept serious injuries. Within our business, we do not.

Therefore, our focus last year was on developing and implementing a programme targeting the attitudes and behaviours required to prevent people getting hurt – understanding that in order to achieve zero injuries, we have to aim 'Beyond Zero'.

Making time to have more positive conversations around safety, health and the environment was a key focus throughout the year. We implemented processes that will save our operational teams time, giving them the opportunity to have more behaviour-based conversations and coaching

opportunities where positive reinforcement of team working is made a top priority.

We have done this by changing the process we have for reporting unsafe acts and conditions, and the way we investigate incidents, and perhaps most significantly, by reviewing the language we use. For example, the addressing of unsafe acts and conditions no longer focusses on the negative terminology but rather on the positive response to them.

I believe that in 2021 we will start to see the benefits from these changes, as the new 'I Care' Leadership Programme and new technological advances make having positive conversations about safety, health and the environment 'business as usual' and reinvigorate the teamworking required to drive us towards world class safety performance and most importantly, zero injuries.

JAMIE

Jamie Fitton | QES Director



2020 PERFORMANCE

In 2020, our health and safety statistics showed a continuation of positive safety behaviours. Our AIFR (all injury frequency rate – the number of ‘all injuries’ per 100,000 hours worked) fell consecutively for the six months from July to December to 1.69; the lowest rate since the launch of our initial Health & Safety Strategy in 2008.

We saw injuries requiring first aid drop again, by 35% on the previous year; injuries requiring medical treatment resulting in working time lost fell by 15%; and the same decrease was seen in the number of serious near misses recorded. Overall, fewer people were injured working on our sites in 2020 than in the previous 12 months, a notable 28% decrease.

Our industry-leading levels of engagement remained prevalent. Moving to a new digital way of reporting, the focus was on having quality ‘Talk Safes’ and ‘Made Safes’. This, coupled with a small reduction in hours worked due to the early effects of Covid-19, accounted for the small drop in the number of safety, health and environmental events reported.

Category	2016	2017	2018	2019	2020
Hours worked	3,373,644	4,475,605	5,307,422	5,240,281	5,100,597
Talk Safes/Made Safes*	20,359	31,359	47,637	58,744	44,683*
Positive Interventions (SNM)**	25	75	66	44	37
First Aid Injuries	55	90	112	94	60
MTI/LTI	10	13	15	20	17
RIDDORs	3	7	7	4	7
AFR	0.09	0.15	0.13	0.08	0.14
ALL INJURY FREQUENCY RATE	2.01	2.33	2.5	2.3	1.69
TOTAL NO. OF INJURIES	68	110	134	118	84

* previously known as unsafe acts/unsafe conditions / ** previously known as serious near misses
+ lower number due to change in reporting/classifications

Although our safety performance for 2020 is something to be proud of, our pursuit of an injury-free workplace is on-going. Our goal is to reach a place where we are operating ‘Beyond Zero’ where safety is team-led with everyone looking out for each other. Year-on-year improvement brings us closer to this, but we need to remain focused for the year ahead and beyond.

1.69

Our AIFR (all injury frequency rate – number of ‘all injuries’ per 100,000 hours worked) is at its lowest rate since the launch of our first Health & Safety Strategy in 2008.



A POSITIVE RESPONSE TO COVID-19

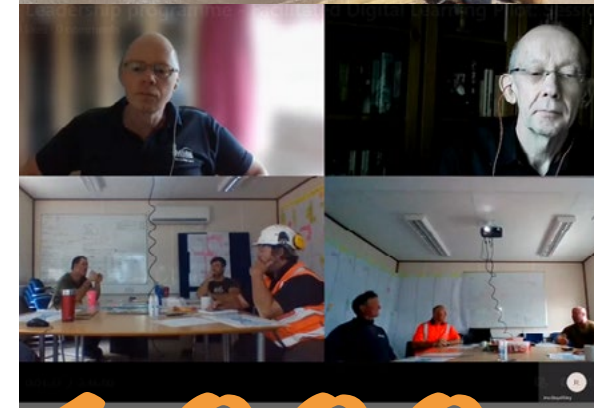
Covid-19 brought about new health and safety obstacles, requiring changes to the way we work to ensure we could continue to deliver works safely for our clients and their customers. We adapted working practices to allow for social distancing and introduced new Occupational Health Standards and Risk Assessments. The response from our workforce has been wholly positive: they embraced the ‘new normal’, something testament to the positive safety culture across the business. Read more about our response to Covid-19 on p22.

JOURNEY TO ZERO

In 2020 we continued our work with Setters – specialists in coaching safety performance improvement – to progress the roll-out of our ‘I Care’ Leadership Programme.

Designed to support our existing Health & Safety Strategy, the training turns safety into a positive experience where people make better choices with the help of their teams. It introduces the concept of operating ‘Beyond Zero’, a place where people regularly make positive safety interventions by ‘talking safe’ and ‘making safe’ to significantly reduce the chance of injury.

We have delivered safety coaching training to over 1,000 colleagues (70% of total workforce), from senior managers to site operatives to office staff. With more sessions in the calendar for this year, our aim is for every single employee to have participated in safety coaching at a level appropriate to their role by the middle of 2021, making everyone in the business a safety leader.



1,000

1,000 colleagues have already attended their ‘I Care’ Leadership coaching - with more to follow in 2021. Some courses were facilitated remotely when the pandemic hit, but were equally successful.

CARE FOR THE BUILT AND NATURAL ENVIRONMENT

Without care for the built and natural environment, we wouldn't have a sustainable business.

They clearly care about what they do, keeping each other safe and safeguarding the environment.

Jonathan Jones, EA Senior Health, Safety & Wellbeing Business Partner

For us, it's not just about minimising our impact on the environment but reducing the potential for harm and enhancing our surroundings - leaving behind a positive legacy.

We treat environmental management with the same rigour as we do health and safety: processes, standards and procedures are complemented with training and the sharing of best practice so that our people are equipped with the skills and knowledge they need. Our colleagues are engaged and empowered to confidently challenge and make positive interventions so they 'Talk Green' and 'Make Green' every day.

2020 PERFORMANCE

We measure three key areas of environmental performance: pollution prevention, waste, and energy and emissions.

POLLUTION PREVENTION

Pollution prevention is measured by the number of positive interventions we make. 2020 was another year of great engagement as we recorded 8,728 'Talk Green' and 'Made Green' events (formerly unsafe acts/unsafe conditions), 16% of all safety, health and environmental events reported. Every intervention made is a potential pollution incident prevented.

8,728

Talking and making 'green': 8,728 environmental events were reported in 2020

WASTE MANAGEMENT

Our waste management target is to divert >90% of the waste we generate from landfill, doing so by following the waste hierarchy: prevent - minimise - re-use - recycle - recover - dispose. In 2020

we achieved our target, diverting 93% of waste generated from landfill.

93%

Following the waste hierarchy enabled us to divert 93% of waste from landfill in 2020

ENERGY AND EMISSIONS

Energy consumption and associated emissions are key areas for demonstrating environmental impact. This includes Scope 3/embodied emissions (such as concrete and steel), indirect emissions, grid-supplied utilities, and direct emissions, such as on-site generation.

2020 was another year of improvement on carbon (CO₂-e), with all key scope 1 and 2 carbon sources either reducing or remaining consistent. Some areas have seen slight increases; a result of adjustments made to the way we work in light of Covid-19 - limiting the number of colleagues

travelling in company vans and an increase in commuting rather than lodging away - as well as the inclusion of grey fleet and other operational factors out of our control.

Despite most of our offices being relatively unpopulated for the majority of the year, the fact that big ticket items such as servers have been running in the background means that we have not seen a massive reduction in utility figures. The differences associated with home working have also meant we have been unable to accurately substantiate the impact of this on 'unreported' energy and carbon, but this will have been at least in part been offset by a reduction in business travel.



2020 was year of improvement on carbon (CO₂-e), with all key scope 1 and 2 carbon sources either reducing or remaining consistent - see table for details ▶

Environmental highlights

CARBON

Carbon reduction is an important issue for us and our clients. 2020 saw the formation of a dedicated Carbon Task Group to drive our vision 'to be a sustainable organisation which preserves natural resources, delivers low carbon infrastructure and is fully committed to mitigating the effects of global climate change.'

The task group is responsible for helping to develop our Carbon Strategy, which will support the business and our clients in meeting the aim of the 2015 Paris Agreement to keep global temperature increases well below 2°C, and the UK Government's aspiration of achieving net zero carbon by 2050.

CARBON CASE STUDY: OPERATIONALLY GREEN

Becoming 'operationally green' is one area of focus for our Carbon Strategy. To reduce the levels of carbon we emit as an organisation, we are:

RENEWABLES Converting to renewable energy supplies in all of our offices, where possible	TRAVEL Reducing business travel and encouraging virtual meetings - building on behavioural change prompted by Covid-19	GREEN FLEET Continuing to make our fleet greener – we already have 60 items of green plant including eco cabins, hybrid and intelligent excavators
--	--	--

We have also set out an Electrification Road Map with the aim of having a fully electric company vehicle fleet by 2030. We have introduced a CO₂ emissions cap of 150gkm⁻¹, introduced hybrid and fully electric vehicles to our company car offering and installed electric vehicle charging points at some offices.

ISO 50001

In 2019 we achieved certification against ISO 50001 for Energy Management for the design, construction and commissioning of building and civil, mechanical and electrical projects; one of the first design and build contractors in the world to have achieved this.

In 2020 work continued to implement our Energy Management System, working with colleagues across the business including our Environmental Advisors and dedicated Carbon Task Group.

PROJECT CASE STUDY | Many projects focus themselves on enhancing the environment:

WATER INDUSTRY NATIONAL ENVIRONMENT PROGRAMME (WINEP)

The Water Industry National Environment Programme (WINEP) will see up to £5bn invested in the natural environment by 2025. With Severn Trent, we supported a batch of 'Restoring Sustainable Abstraction' (RSA) projects, mitigating the impacts of high groundwater abstraction.



Rather than remodelling channels or undertaking hard engineering, we focussed on measures that enabled channels to recover naturally and become more resilient to low flows. This included:

- **Small woody material deflectors** to create variation in flow, help maintain small pools in the channel, and push water onto the floodplain in high flows.
- **Floodplain scrapes** to help water to spill into remaining floodplain ponds in high flows
- **Inflow and outflow to existing ponds** to open shallow sloping banks suitable for birds.

As a result of our work, which included close collaboration with landowners, our client gained Outcome Delivery Incentives set by Ofwat for mitigating the impact of low flow and biodiversity.

◀ OPERATIONAL ENVIRONMENTAL STANDARDS

Operational Environmental Standard (OES) Visuals and Checksheets are enforced on all projects. They cover ecology; waste; pollution prevention; and invasive species. They outline the standards we expect to see on all our sites.



EXEMPLAR HEALTH, SAFETY & ENVIRONMENTAL PERFORMANCE

JBA Bentley celebrated working 12 months with ZERO environmental harm on its projects in 2020. This milestone reflects the commitment and hard work of colleagues who collectively recorded 1,311 'green' interventions. After achieving this milestone, the Environment Agency presented us with an Exemplar Health, Safety & Environmental Performance Award.



TO THE FUTURE

We will continue to drive environmental management in a positive way because we know that when our people regularly 'Talk Green' and 'Make Green', the chance of causing harm is greatly reduced.

Our vision to eliminate all instances of environmental harm on our projects and premises remains our goal – one that with a positive approach and willingness to care for one another and the environment – is achievable.



	T carbon/£M turnover	2016	2017	2018	2019	2020
Scope 3	Turnover (£M - JNB only)	165	257	310	312	280
	In-situ concrete	41.97	35.81	38.05	41.97	34.90
	Rebar	15.35	8.91	11.78	16.66	8.83
	Designed precast concrete	7.05	7.00	6.97	6.64	1.66
	Rebar supplied in PCC	4.68	3.42	3.41	2.98	0.75
	Manholes and covers	0.83	0.83	0.86	1.61	1.09
	Aggregates	9.81	6.47	6.89	6.60	6.18
Sub-total	79.7	62.4	68.0	76.5	53.41	
Scope 1	Gas oil	28.75	28.83	28.38	31.30	27.67
	Diesel	13.28	8.98	7.58	7.48	7.86
	Petrol	1.32	0.99	0.61	0.60	0.44
	Natural gas	0.12	0.15	0.07	0.07	0.24
	Grey fleet (2020+)	n/a	n/a	n/a	n/a	4.32
§ Electricity	2.24	1.24	1.07	0.61	0.41	
Sub-total	45.7	40.2	37.7	40.1	40.94	
TOTAL	125	103	106	117	94.35	

We measure embodied, direct and indirect emissions before normalising them against turnover so the figures take into account growth as a business. We have included grey fleet for the first time in 2020. We define this as business mileage claims from company-owned and employee-owned vehicles without a fuel card.

ACHIEVING QUALITY IN A COST AND EFFICIENT WAY

Delivering quality products and services in a 'cost and efficient' way is always a priority: it means that we can realise value for our clients. With a focus on achieving 'right first time, every time' we are committed to delivering quality outcomes for our clients and their customers.



2020 IN REVIEW

The restructure of our quality, environmental and safety (QES) function saw the creation of a dedicated quality team. Their focus: bringing greater cohesion and collaboration to our quality management approach across the business.

CONTINUALLY DRIVING QUALITY STANDARDS

Working with our clients, and framework and alliance contract partners, we have developed and implemented initiatives that drive the right quality standards. These include measures of quality control on site, check and approval processes and standardising aspects of project delivery.

DIGITAL TRANSFORMATION DRIVING EFFICIENCY

As part of our business-wide digital transformation, we are developing and implementing a digital system for inspection and testing, allowing key information to be captured efficiently in real time using smartphones and tablets. Having this digital data improves accuracy, means we can react quicker to quality issues, and provides insight into trends across different activities on a project.

Our Xpedeon platform also enables data capture of quality, cost and efficiency discussions and learnings through intervention reporting, providing insight into areas requiring improvement.

Development of an internal hub is underway, a digital library housing all documentation, resources and information relating to our processes and procedures. The digital capabilities of the hub, alongside the use of tablets on sites, will improve access to the information our people need, driving operational efficiencies and delivering quality assurance that translates into added value for our clients.



TEMPORARY WORKS | Temporary works are a vital element of our engineered solutions, helping support and protect successful project delivery. As members of the Temporary Works Forum (TWF) we connect with the wider industry and contractors to share our successes and learn from our challenges.



At the TWF, we shared insight into our Foss Barrier project and the speed at which we developed and deployed critical temporary works to protect the city of York from future floods. The scheme won the Civil Engineering Temporary Works Initiative of the Year at the British

Construction Industry Awards in 2019, and in 2020 our works at Llyn Brenig Reservoir in Wales (pictured above) was a finalist in the same category.



TAKING PIPELINE JOINTING SERIOUSLY | Across the water sector, Ofwat has set the challenging target of reducing leakage by 15% or more by 2025. To deliver on this and provide quality assurance across our pipeline projects, we have implemented ControlPoint's BlueBox System. Utilising their industry-leading system and artificial intelligence, our workforce is now well-equipped to create quality pipeline joints that are right first time, every time.

◀ We engage regularly with the Pipeline Industries Guild which allows us to share best practice and lessons learned and keep up to date with all technical aspects of the industry. A number of colleagues are represented within the Guild.

SUPPLY CHAIN



Our supply chain plays an integral role in our success – delivering work outside our own core-competencies and supplying specialist subcontract expertise, materials, plant and equipment to ensure we remain our clients' supplier of choice.

With yearly spend of c.£77m and over 1,600 fully-approved national and regional materials, plant, subcontract, agency and training suppliers on our books, maintaining close collaborative relationships across this supplier network is key.

COVID-19: NEW CHALLENGES AND LEARNING

Communication and strong relationships have been key throughout the pandemic. Our supply chain remained resilient, working with us to keep sites running. We worked closely with our SMEs to maintain the sustainability of their businesses, often paying suppliers early to maintain their cashflow and mitigate any disruption.

Our suppliers are a great source of innovation. With AS Pickering we developed a Perspex van screen (right) that enabled our teams to still travel to site together in company vans, whilst keeping them safe. Read more about our response to Covid-19 on p22.



DIGITAL TRANSFORMATION

2020 saw further development of our state-of-the-art ERP system, Xpedeon, with the addition of a Form Builder functionality and services such as a 'Site Call Off Order' function that enables our site and project teams to self-serve; fully utilising existing supplier trading agreements.



We are proactively working with the supply chain to identify opportunities for standardising product and service offerings; doing so will ensure we consistently deliver on quality for our clients, at the best price. We already have a catalogue of digital components and standard products we call Moata Intelligent Content, which enables data-ready components to be incorporated into project models in design.

▲ We have 310 suppliers enrolled on our online Xpedeon Supply Chain Portal. The platform acts as a central management hub for all enquiries, quotations, orders, invoices and payments. We've added functionality to enable suppliers to see their performance, with a fully transparent scoring system, helping to improve service quality. It also enables suppliers to record safety, health and environmental positive interventions. In 2020, our suppliers logged 10% of all interventions.

2021 will see the launch of a new online travel portal. Developed alongside accommodation provider Insight Booking Solutions, it will enable colleagues to better self-serve for travel and accommodation, whilst securing the best rates and without compromising on quality or duty of care.

TO THE FUTURE

In 2021, we will continue to support and work with our trusted supply chain to manage the lasting impact of Covid-19; focus on driving innovation, openness and transparency through digital; and deliver positive social outcomes throughout our supplier network.

As the business expands into a new geographical regions we also look forward to establishing new long-lasting relationships with SMEs in these new parts of the country.



PROJECT CASE STUDIES | Collaboration across our procurement, design and project teams, subcontractors and the supply chain allows for early visibility of requirements and a more efficient procurement process, supporting the delivery of successful solutions. There are many examples of quality improvements, increased efficiencies and cost savings driven by engaging closely with our supply chain early, including:



1 **PASS FORWARD FLOW (PFF) SCHEMES**
89 sites across Wales, split into six project types with varying levels of civil works, provided the opportunity for early supplier engagement. With schemes short in duration, careful logistical planning was key. Collaboration between the procurement and project teams - plus supplier, Keyline - saw us establish supply chain partnerships early. These links gave us the upfront visibility needed to ensure smooth procurement and brought added value that enabled us to deliver against tight programmes.

2 **WASHINGTON SEWAGE TREATMENT WORKS**
Early supplier engagement was at the heart of saving £70,000, eliminating over 100 road wagon journeys and reducing carbon by over 4300kg of CO₂ at Washington STW, where concrete hardstanding was crushed and re-used on site. Read more on p32.

EXCELLENCE:

IMPROVING HOW WE DELIVER PROJECTS

Excellence is all about improving how we deliver projects – in all aspects, from design to construction, procurement to commissioning and completion.

To support this, we use an Excellence framework that shares knowledge and innovation; brings together expertise from networks across our business; and delivers programmes of improvements. The aim is not to over-engineer or impose excessive specifications but find the optimum balance so that we achieve the best outcomes for us and our clients.

In 2020, we formed a dedicated Excellence team to drive the framework forward. Four areas of strategic focus have been identified: knowledge sharing; innovation; networks and teams; and improvement initiatives.

BY DELIVERING THE FRAMEWORK AND EMBEDDING EXCELLENCE IN EVERYTHING WE DO, WE WILL HAVE HAPPIER CLIENTS, MORE PROFITABLE PROJECTS AND AN ENHANCED REPUTATION.

OUR EXCELLENCE FRAMEWORK

KNOWLEDGE SHARING

Aiming for one pool of knowledge across the business, using tools like ShareBook and Lessons for Learning to help us achieve this.

INNOVATION

Identifying the next opportunities and new ideas that will drive efficiencies and make us stand out from the competition.

NETWORKS AND TEAMS

Strengthening project teams and networks of people, including a new ECP network across the region and focusing our practices on design and build initiatives.

IMPROVEMENT INITIATIVES

Supporting teams in identifying common challenges then implementing and embedding change, improving what we do, finding new approaches or developing skills - including P removal standardisation; Moata Intelligent Content; the end-to-end process; Project Leader Academy

ECPs | They might be early in their careers, but Early Career Professionals help shape the culture and future of our company. They innovate, champion professional excellence, and contribute to complex projects.

PRACTICES | A Practice is an internal professional network that adds value to our business. It's a community of staff joined together by a common area of professional and technical interest that spans organisational and geographical boundaries.

OUR DIGITAL TRANSFORMATION

The digital world is revolutionising every aspect of our industry, from intuitive design tools to automated procurement to more efficient plant and machinery on construction sites.

2020 saw us continue our own digital transformation, as we built a suite of digital tools and capabilities that improve how we work and ultimately add maximum value for our clients.

Our digital tools and capabilities take projects through the whole lifecycle, enabling us to work more efficiently and deliver more value-adding and innovative solutions for our clients at every step of the way.



At the start of 2020, only a handful of colleagues were using Microsoft Teams, with plans afoot for a steady roll-out. Fast forward to December and all staff were using it for calls, chat and collaboration. It was one of many digital tools that have helped us remain productive through the pandemic, including virtual site visits using 360° cameras.

+50%

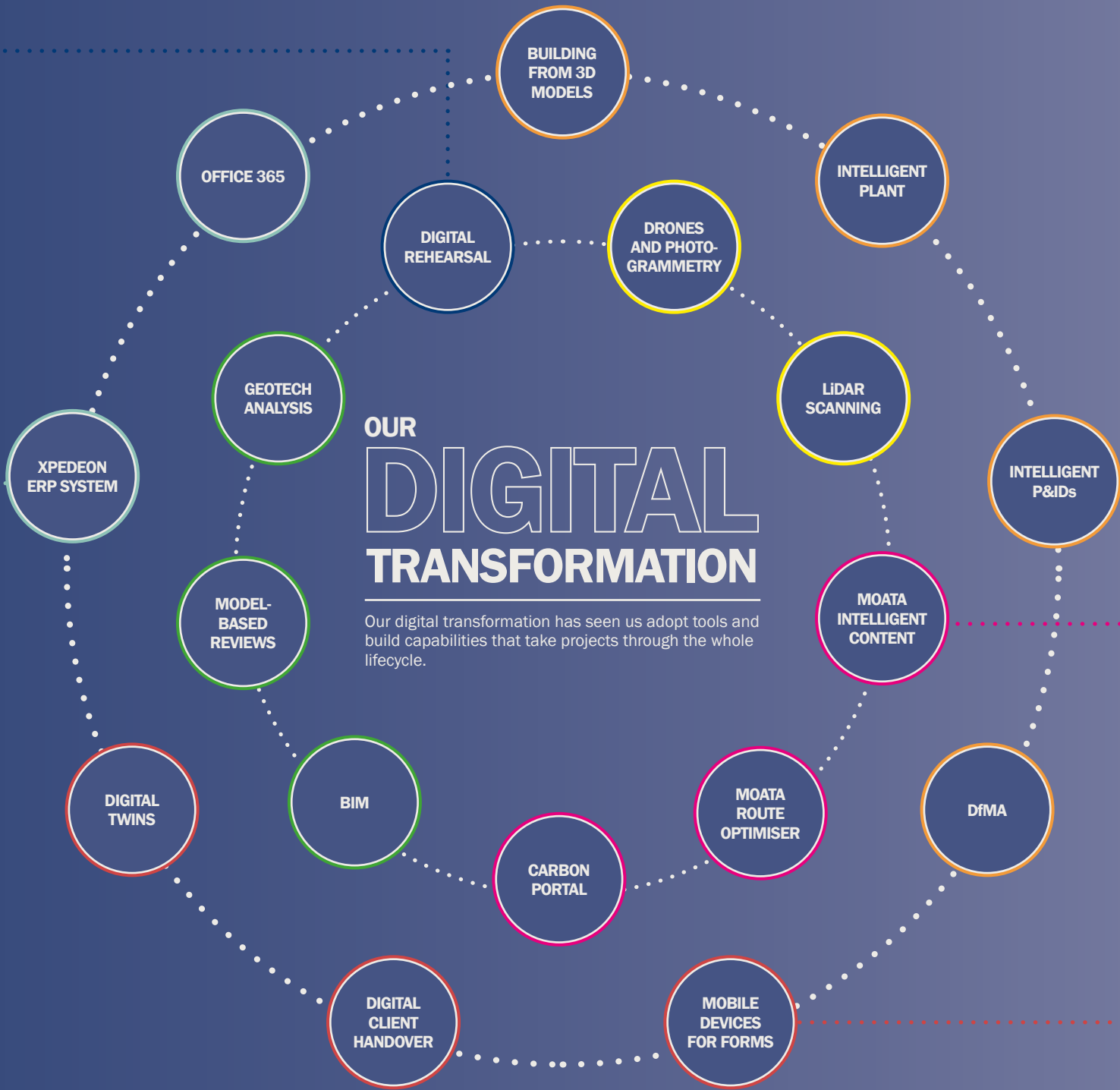
We increased the number of digital approvals by 50% in 2020. Digital workflows are more efficient and as employee competence grows, we'll never go back to doing things on paper.



Digital rehearsals help us plan activities in detail. They highlight blockers and opportunities and create an environment of calm. At the Hallbank Tunnel, following a digital rehearsal we reduced a critical shutdown duration from 28 days to fewer than eight. Learn more in the case study on p36.



Xpedeon is our new state-of-the-art ERP system. Fully-tailored to our own requirements, it is increasing the efficiency of many of our core processes on a single user-friendly platform.



OUR DIGITAL TRANSFORMATION

Our digital transformation has seen us adopt tools and build capabilities that take projects through the whole lifecycle.

MIC is our digital component catalogue. It allows us to deploy standardised digital components and assemblies and will soon be combined with procurement to standardise our whole delivery lifecycle.



We've digitised many forms that were previously completed by pen and paper, including Inspection & Testing. This means the data is entered via a mobile device and hits the system live.





IN THE COMMUNITY

As engineers, the work we deliver often takes us into the heart of different communities every day. It's always our aim to give back to these communities by offering our skills, time and expertise to make even just a small difference and leave behind a positive legacy.

EDUCATIONAL PARTNERSHIPS

People are at the heart of our business. We have a proud history of recruiting talented people from school, college and university, providing opportunities through apprenticeships, year-out placements and graduate roles. We don't doubt that we wouldn't have such a strong track-record without important, long-standing links with the education sector.

Recognising the continuing skills shortage in our industry, we partner with educational institutions with the aim of opening students' eyes to the world of construction and engineering by promoting the science, technology, engineering and maths (STEM) agenda.

Our employees support these partnerships by attending events, facilitating site visits and hosting Q&As to encourage young people to join the sector. Events also provide colleagues with new experiences and are a valuable opportunity for professional development as they work towards chartered and other qualifications.

Virtual Careers Event

Monday 30th November –
Wednesday 2nd December



VIRTUAL CAREERS WEEK

With our usual trips to university careers fairs unable to take place in the normal way last year, we instead hosted a Virtual Careers Week for students looking for placement and graduate roles to start in summer 2021. Colleagues from around the business – including previous placement students and recent graduates – hosted webinars to share their experiences and career journeys, with backgrounds in design, civil, mechanical and electrical engineering.



The Considerate Constructors Scheme (CCS) aims to raise standards in the construction industry. We've been registering sites with the scheme since 2004. In 2020, our team at Great Yarmouth scored a fantastic 44/50 when visited. CCS said:

"...surrounding community, schools and charitable causes are continuing to receive support at an exceptionally high level."

Registered Company

C 1 7 9 6

£16,300

raised by colleagues for good causes in 2020

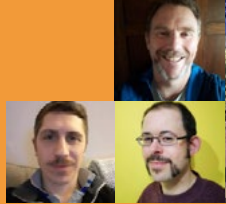
COMMUNITY PROJECTS

We lend our skills, time and expertise to local community projects to give a bit back to the areas in which we live and work. We often team up with clients to support projects to maximise community benefit; building these relationships is often critical to the success of our projects. Throughout the year we supported a variety of initiatives, from taking part in beach sweeps and braving the mud to create a natural pond for a small community school in the North East, to helping install signage for the Rotary Club in North Yorkshire.



CHARITABLE GIVING AND FUNDRAISING

Our people are full of generosity, always up for a challenge and a laugh along the way. Every year we support employees' efforts inside and outside of work by matching funds raised up to the value of £100. Despite being unable to participate in organised events for most of the year because of the pandemic, many of our colleagues found other innovative ways to support good causes, from 86-mile walks to solo cycling challenges to sponsored sleep outs.



NOVEMBER

Colleagues across the business took part in Movember, sporting moustaches, running, walking and swimming over 2,200km and engaging in conversations around men's health. Together, we raised over £6,000 with support from peers, friends and family. Thank you to those within our supply chain who also supported our efforts.

SKILLS
TIME
EXPERTISE

OUR COVID RESPONSE

2020 was a year like no other, but from the day the Covid-19 outbreak began, our dedicated teams haven't stopped delivering essential work constructing and maintaining some of the country's most important infrastructure.

With much of our work delivered in the water, sewerage, flood and coastal risk management sectors, we had a vital role to play in ensuring communities continued to receive a clean water supply, that their sewage was safely taken away and treated, and that they were protected from flooding.

With new measures in place on sites, and office-based staff moving en masse to their new home workstations overnight, we could carry on safely – and that's just what we did.

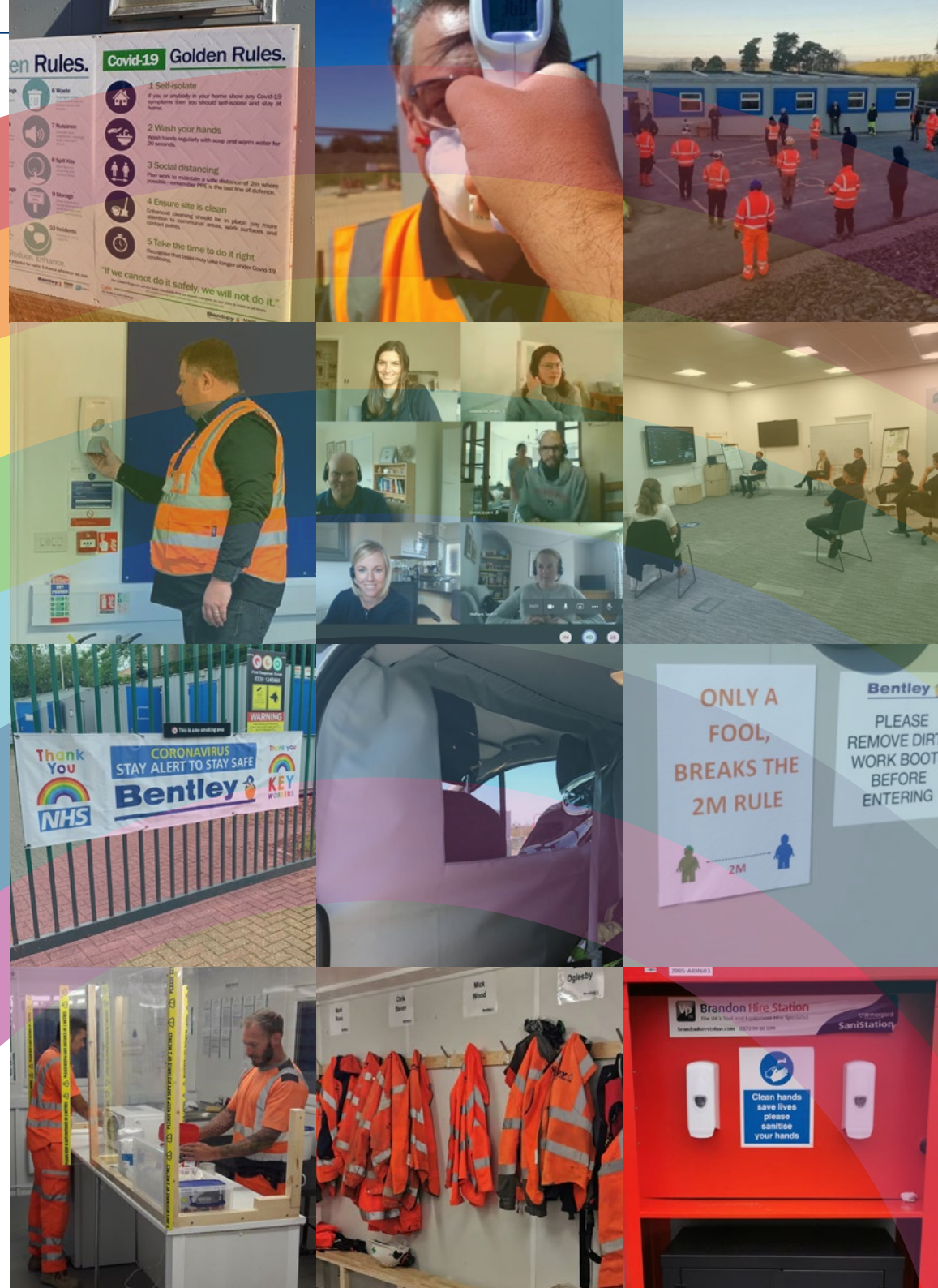
Our response to Covid-19 hasn't been without its challenges and to this day continues to take great effort from everyone to do their bit, but we're proud of every member of the team and supply chain for playing their part.

Think of others
Be positive
Be flexible
Take personal responsibility

Every Covid-19 update from Paul Bentley has included these four important behaviours, behaviours that have served us well through the pandemic



Please note that any images displayed within the Annual Review that don't illustrate Covid-19 measures in place were captured pre-pandemic



OUR RESPONSE:

A **Covid-19 response team** was formed to co-ordinate our response, reviewing guidance and providing direction and support to our teams.

New **Covid-19 Golden Rules** highlight the key directives and a Covid-specific Occupational Health Standard and Risk Assessment are circulated weekly to keep teams abreast of latest guidance.

Cabins, offices and working areas and timetables are all set up to maintain social distancing, with screens, barriers, one-way systems, outside briefing areas, staggered breaks and more all in operation.

Instead of **travelling** three or four people to a van, site teams began travelling separately. All vans are now equipped with segregation screening to enable two colleagues to travel together safely.

Daily **Safe Start** team briefings are now held outside or in smaller groups to maintain social distancing. Amongst other things, Safe Starts are used to share any updates to Covid-19 guidance.

Non-contact infra-red **thermometers** test the temperature of colleagues before entering sites and offices.

Visual markers reinforce social distancing: "Only a fool breaks the 2m rule" has become a popular motto.

Our **supply chain** continues to be magnificent: we've worked together to ensure subcontractor procedures meet our high standards, and actively engaged with key materials suppliers to mitigate any potential impact on supply.

Digital technology continues to be critical. Virtual meetings and video calls have become the norm and video updates from leadership have been used to communicate key messages.

Lockdowns and uncertainly are tough. Employee **wellbeing** has been front-and-centre, with initiatives encouraging people to talk as well as signposting colleagues to support they might need.

Training and developing our people is integral to what we do: we continue to work with our training providers to deliver courses online and where this isn't possible, adapt them to maintain social distancing.

GDS: GOING GLOBAL

Our projects might be UK based, but that doesn't mean our whole team is. 2020 saw the strengthening of our links with the Mott MacDonald Global Delivery Services (GDS) team in Mumbai, India.

The GDS is Mott MacDonald's global design resource, based in offices in India and Eastern Europe. The Mumbai office is home to specialists in the water sector who have become an integral part of the MMB team.

The link began in 2016 with six colleagues supporting projects in the UK; in 2020 that number had grown to 38 as valuable design work was delivered for projects across our water sector frameworks. These included:

PHOSPHOROUS SCHEMES IN SEVERN TRENT:

GDS led four, providing multi-disciplinary designs that included chemical dosing, tertiary solids removal and biofilters, all with the aim of removing phosphorous during the wastewater treatment process. See more in the case study on p34.

COLLABORATION WITH @ONE: A specialist Integrated Global Delivery Team (IGDT) has delivered eight schemes to date, which included BIM support.

DRAINAGE AND WASTEWATER MANAGEMENT PLANS IN NORTHUMBRIAN WATER:

GDS delivered Baseline Risk And Vulnerability Assessments (BRAVAs) for 150 catchments, redesigning processes to increase efficiency, saving 20 hours' work per medium-size catchment.

The team displays all the traits of a great MMB team:

- **Safety culture:** reporting 150+ positive interventions.
- **Driving efficiencies:** making £90k of commercial savings by standardising products, re-using designs and sharing learning.
- **Driving excellence:** by participating in the water sector Practice networks to share knowledge globally.
- **Digital by default:** driving five digital initiatives, including running pilots of Moata Rehearsive and Moata Intelligent Content.
- **Looking after their people:** wellbeing sessions, check-ins and engagement activities to bring the team together

Although face-to-face visits weren't possible in 2020, video collaboration is the norm for GDS so the 'one team' approach between MMB UK and India only grew stronger. We're excited to collaborate more as AMP7 begins in earnest in 2021.



GDS is an amazing part of the MMB team. It's great to see the relationship go from strength to strength. The team's energy and enthusiasm, coupled with its multidisciplinary and digital expertise, make it a strong fit within MMB and provides us with the opportunity to really expand the use of the team to add even greater value for our clients.

Nick Fawcett, Design Director

AND THE WINNER IS...



WINNER
WINNER
WINNER

Repeat business is the recognition that we're looking for - but it's nice to pick up an award or two along the way.

And although awards ceremonies shifted online from March 2020 at the beginning of the pandemic, we were proud to receive recognition from a host of prestigious organisations - albeit virtually!

Civil Engineering Contractors Association (CECA) Wales - Most Promising Trainee Civil Engineer - Shortlisted - Nick Louca

CECA Wales - Most Promising Trainee QS - Shortlisted - Jack Little

Institution of Civil Engineers (ICE) Wales Cymru - Roy Edwards Award - Winner - Pen y Bont Wastewater Treatment Works

CECA North East - Project of the Year under £1m - Winner - Seaham STW Inlet Works Upgrade

CECA North East - Project of the Year £1m-£5m - Highly Commended - Durham City Sewerage Scheme

ICE West Midlands - Medium Project of the Year - Highly Commended - Pool End Borehole Capital Maintenance

ICE West Midlands - Small Project of the Year -

Highly Commended - Weoley Avenue Lodge Hill Cemetery Flood Alleviation

British Construction Industry Awards - Temporary Works Initiative of the Year - Finalist - Llyn Brenig Reservoir Works

Environment Agency - Exemplar Award: Health, Safety and Environment - Winner - 1 million safe hours

Water Industry Awards - Women in Water - Winner: ASP Batch - Severn Trent Water, CiM6 (Costain & Stantec), MMB and nmcn - 'The Golden Thread' of Our Women delivering the ASP Batch

IEMA Sustainability Awards - Transport and Infrastructure Project Award - Shortlisted - Lynemouth Mine Water Treatment Scheme

Construction News - CN100 2020: The Top 100 UK Contractors - JN Bentley #54

Dŵr Cymru Welsh Water Capital Projects and Capital Contractors Awards - Health & Safety Award - Winner - Llyn Brenig Reservoir Works

Pipeline Industries Guild (PIG) - Winner - Utility Pipeline Project Award - Malpas Service Reservoir Isolation

PIG - Winner - Annual Photo Competition - Hallbank Tunnel

ICE Yorkshire & Humber - Centenary Award - Certificate of Commendation - Damflask Reservoir - North Scour Pipe Upgrade

ICE Yorkshire & Humber - Centenary Award - Certificate of Commendation - Victoria Clough Culvert

National Undergraduate Employability Awards - Placed 93rd in the Top 100 Undergraduate Employers 2020

In 2020 we delivered hundreds of projects across the UK in the water, environmental, commercial building and local authority construction sectors. On the following pages you'll find case studies on a small selection of the very best, most interesting and innovative.

PROJECT

FOCUS



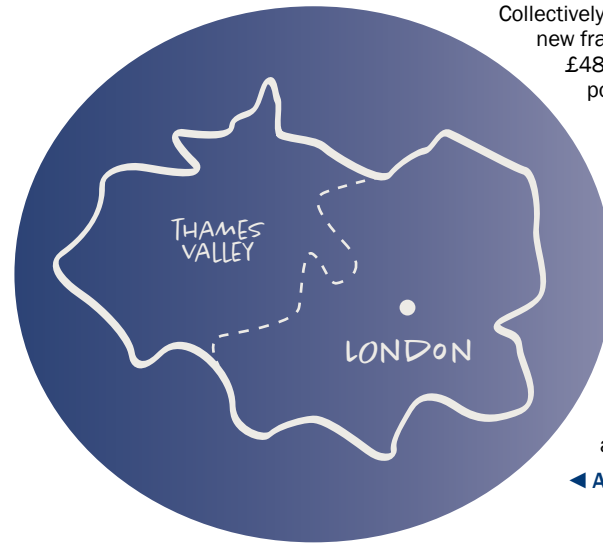
Our business maintains three primary delivery vehicles, utilising a 'right company for the opportunity' approach. **JN BENTLEY** provides civil engineering contracting services, together with mechanical and electrical expertise; **MOTT MACDONALD BENTLEY (MMB)** offers fully-integrated civil engineering feasibility, design, construction and commissioning services; and **JBA BENTLEY** delivers fully-integrated water and environmental engineering, feasibility, design, construction and commissioning services, with a focus on low carbon solutions.

THAMES WATER

2020 saw MMB expand its already large portfolio of UK water sector clients to begin working with Thames Water – the UK’s largest water and wastewater company – after being appointed to three new AMP7 frameworks.

MMB
MOTT MACDONALD
BENTLEY

AMP7 Non-Infrastructure Framework – Thames-wide
AMP7 Non-Infrastructure Framework – Thames Valley
AMP7 Infrastructure Framework Thames Valley



Collectively to all appointed parties, the new frameworks are worth around £480m during AMP7, with the potential for an extension into AMP8 thereafter.

The first of the three – Thames Water’s AMP7 capital programme for non-infrastructure projects – gives MMB access to bid for water, as well as wastewater, non-infrastructure projects and programmes, across the Thames region. Design is already underway on two run-

to-waste clean water schemes in Buckinghamshire and Reading, both worth around £500,000. Our teams expect to start on site early in 2021.

The latter two frameworks cover both non-infrastructure and infrastructure works across the Thames Valley and will see us deliver a programme of critical, design and construct projects across the clean and wastewater sectors.

There will be a focus on collaborative working with fellow partners on the frameworks and, as with all of our clients, we will work to understand the needs of Thames Water and ensure we have the right people to deliver the works and effectively integrate our ways of working to deliver innovative solutions to the benefit of Thames Water and their millions of customers.

◀ Area served by Thames Water



Image credit: Thames Water

ANGLIAN WATER

MMB
MOTT MACDONALD
BENTLEY

AMP7 @one Alliance partner
AMP7 Strategic Pipeline Alliance (SPA) partner

Anglian Water is responsible for providing water and wastewater services to customers across a larger geographical area than any other English supplier. We have worked closely together as part of the progressive @one Alliance since 2015. @one is a collaborative group of six partners who work together to deliver a significant proportion of Anglian Water's capital investment programme – to the sum of £1.2bn in AMP6.

In 2020 we added a second alliance to our portfolio. The Strategic Pipeline Alliance - SPA - is a new alliance that brings with it many exciting opportunities for our people to contribute to the delivery of one of the largest strategic water infrastructure projects in the UK.



STRATEGIC PIPELINE ALLIANCE

2020 saw MMB appointed as a key partner in Anglian Water's exciting new Strategic Pipeline Alliance (SPA). The £350m programme forms a major part of Anglian Water's 25-year Water Resources Management Plan, to manage and secure valuable water resources by safeguarding against the potential future impacts of water scarcity, climate change and growth, while protecting the environment.

Working alongside Anglian Water and three fellow construction and engineering organisations, we will deliver one of the largest strategic water infrastructure projects in the UK. A vital element of the ambitious plan is to create up to 500km of interconnecting mains and associated pumping equipment, as well as upgrading existing infrastructure, to allow water transfer across the Anglian Water region. Its single aim is to make the east of the Anglian region resilient to the risks of drought by securing water supplies for future generations.

2020 was spent building the SPA team and developing solutions, ready to hit site in 2021.

"This will be a complex and challenging major infrastructure development. It presents an exciting opportunity...and we're delighted to have four such prestigious partners on board."

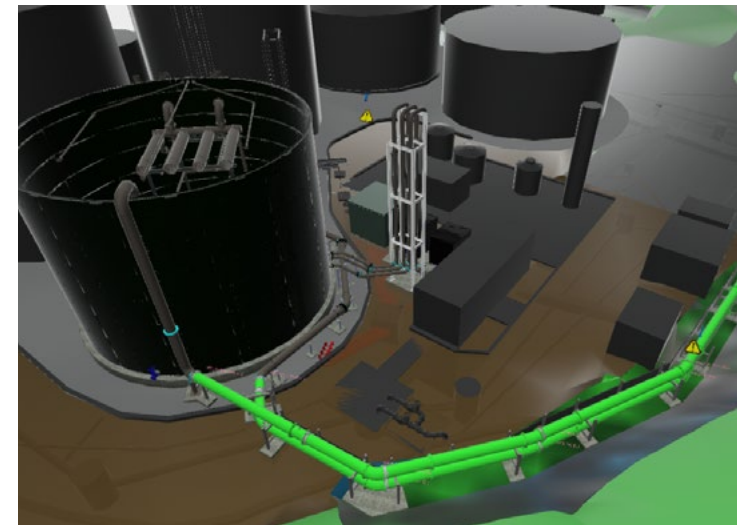
James Crompton, Anglian Water SPA Director

CLIFF QUAY WATER RECYCLING CENTRE - AMMONIA

Cliff Quay recycles water from thousands of customers in Ipswich. It is in need of an upgrade to ensure it continues to meet consent levels for the level of ammonia in the final discharge.

To achieve this, @one have designed a scheme that takes just 30% of the flows after secondary treatment through for tertiary treatment – using a moving bed biofilm reactor (MBBR) to remove ammonia, before blending it back into the final effluent ready to leave site. The design was developed in close collaboration with Anglian Water's own process scientists and operational teams. By only treating 30% of flows, we have found an affordable solution that still hits the project objectives.

2020 was spent determining the optimum process, formulating design, engaging key suppliers and undertaking up-front enabling works; 2021 will see construction begin, prior to commissioning later in the year.



CAMBRIDGE WASTEWATER TREATMENT PLANT RELOCATION

We are playing a major role in an exciting new project to relocate the wastewater treatment plant serving the city of Cambridge.

The current plant has been serving the community since 1895; this new project will unlock the existing site, enabling significant regeneration and making way for 5,600 homes, one-million square feet of commercial space and thousands of new jobs.

The proposed scheme, that will treat effluent from 300,000 customers, has 'nationally significant' status. It will see a new wastewater treatment plant and sludge treatment centre built to the north of the city, all connected to the existing network via a collection tunnel.



STORM TANK PORTFOLIO

Across the whole Anglian Water region, ourselves and fellow contract partners are delivering a large portfolio of work to increase storm capacity at 96 water recycling sites.

We have achieved a 45% efficiency, driven by simple solutions that avoid over-engineering. Think lagoons and liners rather than deep excavations; above ground steel tanks rather than concrete structures; manual washing rather than automated systems. In selecting the right solution for each site, the input from our client's operational teams – the people responsible for the day-to-day running of the centres – has been invaluable.

With a high volume of lower value projects to deliver, the philosophy of 'survey then design simply and once' is helping to achieve efficiencies. At the time of writing, 18 projects are complete or on site. The portfolio runs until 2022.

DŴR CYMRU WELSH WATER

MMB
MOTT MACDONALD
BENTLEY

AMP7 Capital Delivery Alliance partner

MMB secured a place on its first alliance with Dŵr Cymru Welsh Water at the beginning of AMP6; in the years since, the relationship has gone from strength to strength. High-performing, local teams have used their design-and-construction expertise to deliver great projects across the length and breadth of the country.

In 2020, we delivered £42m of work together, on both water and wastewater projects. AMP7 got underway with the award of large schemes at Celyn, Upper Carno and Lluest Wen plus a programme of work improving safety at reservoirs nationwide. The year also saw us hand over operation of our flagship project at Five Fords, a solution we developed to efficiently treat biosolids from satellite sites across North Wales in one central location.

7 Our performance was recognised at our client's annual Alliance Excellence Awards as MMB projects and people picked up seven awards and a further four high commendations.

BEWDLEY BANK SERVICE RESERVOIR

We constructed 34ML of additional service reservoir storage capacity to bolster drinking water storage to Hereford and surrounding areas.

The project has seen us build on our proud history of service reservoir engineering, developed in 40+ projects in recent AMP periods.

Taking a strategy of procurement-based design, a host of efficiencies were realised across the project:

- standard designs and products (already successfully deployed elsewhere in MMB) accelerated programme;
- supplier expertise and input early eliminated re-design further down the line; and
- our workforce learnt from colleagues' experience on other sites – with some even bringing their first-hand knowledge to work at Bewdley Bank itself.

40+



PROCUREMENT-LED DESIGN:

- determine need
- engage supply chain
- complete design



DOLWEN RESERVOIR SPILLWAY

The existing spillway at Dolwen Reservoir in Conwy needed replacing to meet modern safety standards. After demolishing the existing structure, a task involving a complex temporary works arrangement, our solution saw the construction of a new in-situ reinforced concrete spillway.

Extensive ground support was required to not only facilitate safe construction of the spillway itself but retain the existing reservoir embankment and adjacent hillside.

Rather than dispose of stone from the existing spillway, it was salvaged and stored for use by our client in the future. The temporary stone haul roads from this site are set for transfer to another MMB site nearby, again eliminating disposal to landfill.



GWILI GWENDRAETH STRATEGY

Dŵr Cymru Welsh Water needed a sustainable solution that met the Water Framework Directive requirement for improving water quality in the rivers Gwili and Gwendraeth Fawr. With our client discharging seven wastewater treatment works into these rivers, and further growth in the catchment predicted, strain on the ecosystem needed addressing.

Our solution justified the removal of phosphorus at strategic sites, enabling the planned development in catchment areas whilst maximising the benefits to downstream river reaches and the wider environment. The conventional solution, a pump-away solution requiring a new 30km pipeline, would have cost £80m; we rationalised this back to targeted works costing £20m and saved over 100,000t of CO₂ relative to the conventional solution (78% reduction).

The way rivers and pollutant concentrations were modelled picked up DCWW's Excellence Award 2020, has been recommended to Natural Resources Wales (NRW) as best practice, and is due to be presented at future wastewater conferences.

Construction work will begin later in the AMP and be complete by 2025.

P-REMOVAL AT DYSERTH WASTEWATER TREATMENT WORKS

With levels of phosphorous to reduce and a growing number of customers to serve, Dyserth WwTW was in need of upgrades and modifications to remain compliant well into the future. To achieve this, we supplied and installed a host of new equipment, including new primary and secondary settlement tanks, a tertiary solids removal package plant and clean and dirty backwash buffer tanks.

Groundwater and a constrained site posed challenges for the installation of new radial humus settlement tanks. After investigating a range of temporary works options, we chose a sheet and octagonal frame system. This facilitated the safe construction of the tanks and allowed other activities to continue within close proximity – keeping us on track to hit the client consent date.



NORTHUMBRIAN WATER

MMB
MOTT MACDONALD
BENTLEY

AMP7 Treatment Framework partner
AMP7 Infrastructure Framework partner

We have enjoyed a near 20-year working relationship with Northumbrian Water, initially as JN Bentley undertaking construct-only projects, before engaging as MMB to provide our client with full design and build solutions across the north east of England.

The current arrangement sees MMB appointed as a partner on both treatment and infrastructure frameworks, working on clean and wastewater assets from co-located offices at Seaham and Northumbrian Water sites across the region. Delivering £37m of work in 2020, our efforts throughout AMP6 were rewarded with a contract extension into AMP7 and the year 2025.

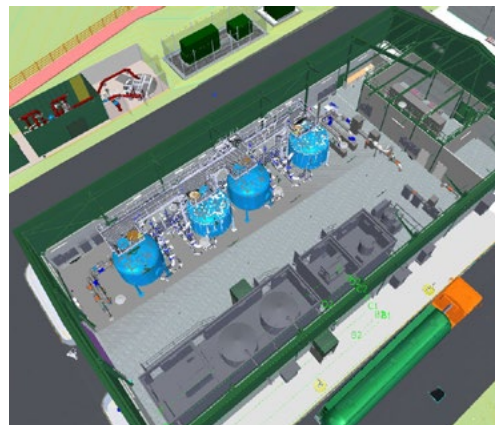
MURTON WATER TREATMENT WORKS

The use of digital technology and off-site manufacture helped to minimise waste, maintain safety standards and find opportunity within a challenging programme as we built a new water treatment works to supply Berwick-upon-Tweed.

Although one of our client's furthest geographical outposts, the same exacting standards for 'food factory' treatment apply, which is why the aging works needed replacing with a newer model.

At the heart of our approach was digital delivery. A 3D model was developed with key suppliers, giving us a full site-wide model of the civil, electrical, mechanical and process elements. This was available to the client to help visualise the final product, and then used as a tool in construction, at daily briefings, to aid setting out and to communicate progress and sequencing.

A digital terrain model (DTM) helped minimise over-dig and re-use excavated spoil dynamically across the confined site to reduce temporary stockpiling. The DTM then facilitated super-efficient and accurate (to 6mm) excavation works using a Komatsu excavator with inbuilt GPS and intelligent machine control – at the time a first for MMB.



Key learnings from Murton have been fed back into the next scheme in the batch at Wooler, which is utilising the same core team to drive further improvements.



WASHINGTON SEWAGE TREATMENT WORKS

What better than realising an opportunity that benefits not just the environment but the bottom line too? This was the case at Washington, where we are refurbishing existing electrical assets, upgrading and extending the inlet works, and increasing treatment capacity by adding three new 20m diameter final settlement tanks.

The project required the demolition of existing storage bays and hardstanding area to allow for the construction of new final settlement tanks. We re-used 1,120t of the concrete as aggregate, bringing in a crusher to break it up into the type 1 and 6F2 material we needed on site as fill for both temporary and permanent site roads and for a piling mat and laydown areas.

Not only did this approach save £70,000, it eliminated the need for over 100 road wagon journeys and in turn reduced the carbon footprint of the scheme by over 4,300kg of CO₂.

HOWDON SLUDGE TANK REPAIRS

Having been under attack from hydrogen sulphide (H₂S), two concrete sludge holding tanks at Howdon needed repairs to prolong their life. Our solution came in two parts:

Safe preparation:

- > Tanks structurally propped – a task made more challenging due to the ‘high risk’ status of the project (think H₂S and confined space working).
- > Establishing temporary sludge import – involving reconfiguration of site assets and complex temporary works.

Collaboration with concrete repair specialists

- > Specialists helped refurbish the tanks, including the application of a coating to give a 10-year guarantee. When Covid-19 caused material supply issues, we challenged the specification, found an alternative and prevented a four-week delay.

Maintaining the throughput of sludge during the works was a critical success factor. The neighbouring AAD facility turns the sludge into renewable energy, generating a significant revenue stream for our client.



AN ANCIENT CITY CENTRE

The project took us into the heart of Durham city centre. It included micro-tunnelling under live traffic before switching to a guided auger section due to the volume of uncharted services not allowing for traditional open cut.



DURHAM CITY SEWER SCHEME

To manage increasing levels of surface water run-off, we installed over 700m of new surface water sewer beneath Durham city centre.

The project came with all the challenges you would expect of working in a 1000-year-old city: narrow streets, congested roads, river ecology, pedestrians, a university, restaurants, hotels, places of worship, festivals and even a prison. You name it, Durham

has it. To compound this, as Durham has grown, so has the number of services buried within, many of which are uncharted.

It was critical the new sewer was laid without striking any of the 113 services that we needed to negotiate – something we achieved through detailed planning, workshops with the whole team, and great skill on site.

SEVERN TRENT

MMB
MOTT MACDONALD
BENTLEY

AMP7 Design and Build Framework partner

Bentley

AMP7 Civils Build-Only Framework partner
AMP7 MEICA Install Framework partner

2020 kicked-off our third consecutive AMP period working with Severn Trent. For AMP7, MMB has been appointed to a new design and build framework and JN Bentley named partner on civils 'build-only' and MEICA install frameworks that will last until 2025 and potentially beyond.

The bulk of 2020 was spent completing AMP6 projects on above and below ground assets, two of which were highly commended by the ICE in the West Midlands. That's not say AMP7 isn't underway; we've already completed our first project at Pitts Mill and are well progressed on two early commitment phosphorous removal batches. We have also provided early contractor involvement on two large schemes: Lower Gornal to Roundhill, and Hinkley to Hartshill.

PHOSPHORUS REMOVAL

Reducing levels of phosphorus in river water is a big focus for the water sector. In recent years, MMB has been at the forefront of 'P-removal' schemes, driving innovation and standardisation to become more efficient and help our clients meet increasingly stringent levels of consent.

Our latest 'P-batch' centres on three sites: Uttoxeter; Barrow & Quorn and Bottesford. At Uttoxeter, the largest site, we are providing a brand-new treatment process, replacing then decommissioning the existing works. This includes enhanced primary treatment, an ASP and sludge thickening and handling, plus the installation of new final settlement tanks, chemical dosing and a new HV and LV power and distribution network.



UCKINGTON PROJECT

There was a need to improve the ecological status of the River Worfe whilst safeguarding clean water supplies to the Telford area. Over-abstraction from the river was impacting its 'Good Ecological Status', prompting a decision from our client to decommission five existing boreholes to the east of the town.

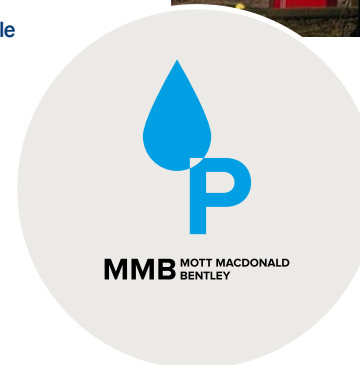
To compensate for the closure of the five sites, we fast-tracked a project to increase output capacity at the Uckington Borehole Site, abstracting from a different water source.

Collaboration was particularly vital during a 14-day shutdown to change pumps and MCC and install new pipework within the basement of an existing booster station. Careful, early planning brought all stakeholders on board; the works were executed within the timeframe and the booster station was returned to service without delay.

Severn Trent has since described Uckington as a "role model for the AMP7 groundwater programme."



33 33 critical network interventions were carried out without any disruption to customer water supplies.



Standardising MMB's approach to P removal is included within the 'efficient delivery' pillar of our Excellence framework (p19). We're collaborating closely with MMB colleagues overseas in our Global Delivery Services (GDS) on this: GDS bring with them specialist design skills in a variety of fields, none less so than P removal. The team led the design on four such projects with Severn Trent in 2020, providing commercial savings whilst hitting the right quality standards and programme – all the way from India. A truly global effort! Meet the GDS on p24.



CRESSWELL BOREHOLE CAPITAL MAINTENANCE BATCH

As part of a batch of similar schemes across the region, we upgraded Severn Trent's asset at Cresswell, which included the construction and commissioning of a new 310m deep borehole. Working with limited customer space on site, the project had a significant customer interface. A temporary filtration system was installed to maintain their clean water supply throughout construction, and the team worked hard to build rapport with residents, finding solutions that eased any concerns.

The team have had to face some challenges; the positive attitude and drive to always put the customer first has meant they have come up with some achievable solutions and as a result have had positive feedback."

Emma Hawkes, Senior Technician, Severn Trent



STOKE BARDOLPH THERMAL HYDROLYSIS PLANT

Awarded outside of our existing framework agreements with Severn Trent, alongside nmcn we are designing and building a new THP plant with biogas to grid plant, and a new digested sludge dewatering facility capable of processing 120t of digested sludge every day.

The aim is to increase the yield and improve the quality of the biogas and cake produced at Stoke Bardolph, products that can be re-used for power and in agriculture.

DIAMOND AVENUE SERVICE RESERVOIR

Amongst the challenges of engineering a new 15ML distribution service reservoir at Kirkby-in-Ashfield was service avoidance – both buried and overhead.

Buried services are a scourge of the industry: many date back decades and have never been charted. To combat this, we follow detailed Operational Safety Standards and have a highly trained team of Service Gurus on hand to provide added expertise.

At Diamond Avenue, 3D models were built to detail existing pipework and plan the configuration of the new installation. Directional drilling was used to install large diameter pipework beneath a busy trunk road, which successfully negotiated several buried services. This directional drilling was extended beyond the road to eliminate the need to work near overhead services too.

The fully-commissioned reservoir has secured water supplies to over 700,000 customers.



Large polytunnels were used for roof waterproofing, allowing work to commence in the winter months.

UNITED UTILITIES

MMB
MOTT MACDONALD
BENTLEY

AMP7 Design and Construct Framework
Construction Delivery Partner

United Utilities provide water and wastewater services to more than three million homes and businesses in the north west of England. MMB is currently one of four Construction Delivery Partners appointed to a design and construction framework that sees us carry out projects on infrastructure and non-infrastructure assets across the region.

2020 saw AMP6 come to an end; we hit 100% (14/14) critical regulatory date outputs, despite the impact of the Covid-19 pandemic, something we achieved by embracing the principles of our Cost & Efficiency Strategy. The framework was extended into AMP7, which means we will continue to collaborate on projects together through to 2025.

"An impressive feat of engineering." United Utilities

HALLBANK TUNNEL

The Haweswater Aqueduct is the backbone of United Utilities' water supply network, delivering 570ML of water every day to 2.5 million customers in Cumbria, Lancashire and Greater Manchester. This 65-year-old structure is now being overhauled to safeguard it for future generations of customers.

As part of the £1bn Haweswater Aqueduct Resilience Programme, we designed and constructed a new 2.5km section, comprising four 1.6m diameter pipes laid side by side, to replace a section of the existing aqueduct.

After nearly two years constructing the pipelines, United Utilities allowed us a short autumn shutdown of the aqueduct to connect the new pipes in at either end. At its peak, 90 engineers were working around-the-clock on socially-distanced shifts. The site was handed back to United Utilities, after just 7 days 22 hours and 46 minutes - 20 days quicker than the original plan.



Described as an "impressive feat of engineering" by our client, we are proud to have completed the first milestone in this much larger project, which will see United Utilities replace a further six tunnel sections along the 109km aqueduct.

20

Site was handed back to United Utilities
20 days earlier than the original plan



KERRIDGE SERVICE RESERVOIR

To secure the water supply for customers and enable our client to carry out periodic cleaning and maintenance on an existing service reservoir, we are engineering a new 4ML structure at Bollington, near Macclesfield.

Undertaking earthworks to a depth of 8m to accommodate the new structure was a challenge. Not only was our team operating on an existing gradient of up to 1:2.5, the bulk excavation was straight into bedrock. We turned this scenario to our advantage, minimising the size of dig by siting the new reservoir at the optimum location to balance it hydraulically with the existing reservoir and positioning to reduce the volume of excavation.

Through close liaison with the planning authority we avoided moving excavated material off site by temporarily re-profiling the hillside and storing it on site. Built adjacent to two sandstone quarries, we utilised 500t of 'as dug' sandstone to produce our own drystone walling material to comply with tight planning restrictions in the Peak District National Park.

Both reservoirs at Kerridge – new and existing – will run in parallel during normal operation, serving 8,000 homes in the local area.

HODDER WATER TREATMENT WORKS

With the existing water treatment works at Hodder in need of renovation, we have designed and are now constructing new RGFs (rapid gravity filters), a clean backwash tank, dirty backwash storage tanks and associated pipework connections, all within the boundaries of the existing site.

The RGF had to be positioned in a challenging, steep location; to carefully plan for this, 3D models for temporary works, geology and the design itself enabled teams to work together to find the optimal position that fulfilled design requirements, geotechnical constraints, constructability and existing assets on site. This resulted in the RGF building being constructed on two levels, suitably landscaped to minimise visual impact on the Area of Outstanding Natural Beauty.

The completed scheme will mean our client can produce a treated water flow up to a maximum of 105ML/d.



PRENTON SERVICE RESERVOIR ISOLATIONS

Our client needed a solution that would enable them to isolate two existing service reservoirs for maintenance whilst maintaining the clean water supply to 20,000 customers.

To achieve this, we proposed the construction of four new pump stations that deliver the water from other sources, together with the installation of significant additional pipework at several existing United Utilities sites in the area and across the existing network arrangement as a whole.

Re-zoning the network like this called for real expertise when it came to a strategic commissioning plan. It was vital that customer supplies nor water quality were compromised, something we achieved with a carefully sequenced plan and constant liaison with our client's network operations team. This ensured the network was ready for our additions to the process before water was sent into service.

YORKSHIRE WATER

MMB
MOTT MACDONALD
BENTLEY

Bentley

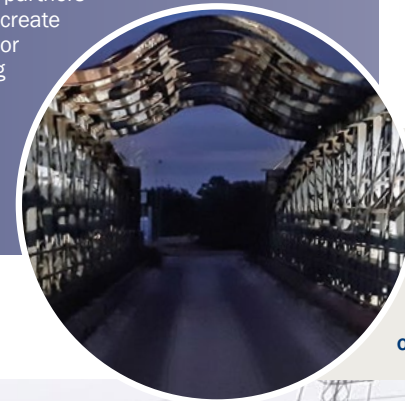
AMP7 Complex Civils Framework
AMP7 Complex MEICA Framework
AMP7 Infrastructure Networks Framework
AMP7 Minor Civils Framework

Having been founded in the county and where our head office remains to this day, it will come as no surprise that Yorkshire Water is one of our longest-standing clients. We began working together in the 1980s, first as JN Bentley and latterly as MMB, which was formed in 1999 as a design-and-build venture specifically to deliver an AMP3 Yorkshire Water framework.

Now four AMP cycles later, the relationship continues to go from strength to strength. Together with delivering £37m of work in 2020, we added a fourth AMP7 framework to our portfolio. The infrastructure framework covers

networks and will see us deliver infrastructure pipelines, projects to solve internal flooding, and other minor works packages.

This framework complements those secured in 2019 for complex and minor civil engineering and complex MEICA. Each framework will see us collaborate even more with our client and fellow contract partners as Yorkshire Water create their 'Partnership For Yorkshire', adopting the principles of Project 13.



AMP7 work has begun in earnest: the first project is complete, the strengthening of a bridge that spans the River Don joining two of Yorkshire Water's operational sites.

HULL WASTEWATER TREATMENT WORKS

At Hull WwTW we're undertaking our largest ever project with Yorkshire Water. Serving a population equivalent of more than 1 million people, the works needed upgrading having been first built some 20+ years ago. Detailed design and construction was on two fronts: a new elevated inlet works and refurbishment of an existing sludge treatment facility (STF).

It was critical existing capacity was maintained during construction. This meant the inlet works was built wholly offline and the STF constructed and commissioned in distinct phases.

The project has pioneered digital delivery in MMB:

- **Drones and laser scanning:** for surveys and aerial photography
- **BIM:** Autodesk BIM360 with an Autodesk Revit based model used as a 'lighthouse project' within MMB, handling all graphical data. With a 3D model at the head of design, multiple stakeholders could engage, from subcontractors to the client to site teams.
- **Digital forms:** Gone are handwritten inspection and test (I&T) forms; at Hull, digital forms saw all I&T requirements entered onto the system live via tablets.





ELVINGTON WATER TREATMENT WORKS

The flagship water treatment works at Elvington produces up to 250 ML/d but with its treatment process buildings and apparatus at the end of their 25-year lifespans, upgrades were needed to continue the production of clean drinking water supplies for much of South Yorkshire.

We have designed and built five chemical dosing plants ahead of decommissioning the existing facilities without disrupting water

production for longer than a few hours at any one time.

At the heart of the project was the installation of two 17m-tall silos. These were delivered on wide loads under police escort at times sympathetic to the neighbouring primary school. Extensive temporary works were in place to create a safe working area ready for a tandem crane lift to move the silos into place.



HOOKSTONE ROAD

Sandwiched between a world cycling event and the prestigious Great Yorkshire Show, upgrades to the existing sewer network within the grounds of the Yorkshire Showground and surrounding area had to meet a strict schedule.

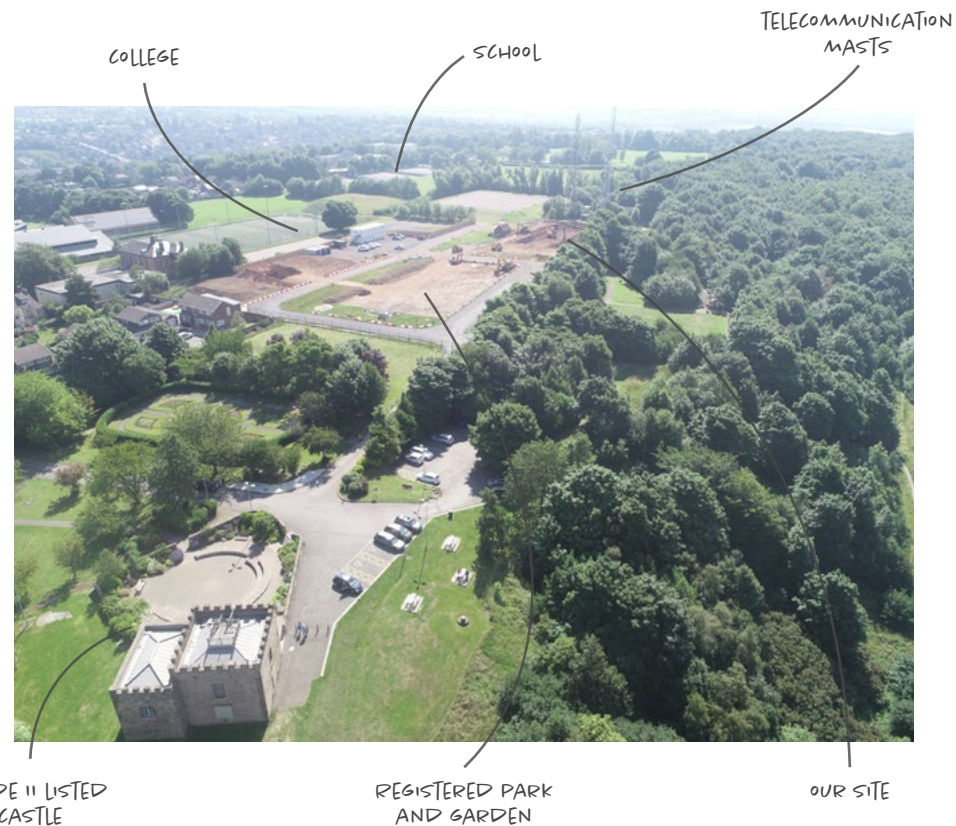
To give Yorkshire Water the additional storage they need to hold water during storm events, with the help of hydraulic modelling we developed a sustainable, all gravity solution that made best use of the on-site topography to minimise the footprint of the scheme, retaining an important public space. Pro-active planning and plant selection optimised the efficiency of the construction activity required.

The solution will significantly reduce annual spill volumes from CSOs within the catchment, delivering water quality benefits to the receiving watercourse. And, although the pandemic caused the cancellation of the summer's events, work was complete and we were ready!

BOSTON PARK SERVICE RESERVOIR

Service reservoirs (SREs) store treated water ready to be put into supply; in the case of the service reservoir at Boston Park, this supply includes the nearby Rotherham Hospital. In 2020 we kicked-off a project to replace the existing service reservoir with two new structures in order to safely maintain this supply, with our phased approach to the build ensuring minimum capacity is maintained throughout.

The site is confined: telecommunication masts, a school, a college, and a park (with Grade II listed castle) all surround the reservoir. We reduced the footprint of the new structure by lowering the bottom water level and connecting to the existing outlet, also saving the installation of 200m of pipework.



ENVIRONMENT AGENCY

2020 marked our eighth year working in partnership with the Environment Agency. The majority of projects are delivered through integrated design and build organisation JBA Bentley, which specialises in environmental engineering and low carbon solutions. JBA Bentley brings together the technical expertise of JBA Consulting with established civil engineering contractor JN Bentley.

Our work covers a wide geographical spread and an even wider variety of project type, from flood defences to pumping stations, reservoir improvements to asset inspections.

In 2020 we made excellent progress on a number of 'legacy' projects under the Water and Environmental Management (WEM) framework, and began schemes under two new long-term contracts.

2020 was a year of milestones for JBA Bentley; we celebrated one million hours worked without a reportable 'RIDDOR' injury and 12 months with ZERO environmental harm.



Water and Environmental Management (WEM) legacy projects
Marine and Coastal Framework partner
Flood and Coastal Risk Management (Central Hub) Framework partner

300,000

Many of our schemes form part of the Environment Agency's target to protect 300,000 homes from flood risk by March 2021; we're delivering multiple multi-million pound projects across the country to provide new and upgrade existing defences to keep homes and businesses free from the risk of flooding.



GREAT YARMOUTH TIDAL DEFENCES

At Great Yarmouth – one of our largest projects for the Environment Agency – we are carrying out major works to renovate and replace flood defences that provide protection to 4,500 homes and businesses.

Since starting on site in April 2019 we have repaired most of the 4.5km of flood defence, raised existing walls and installed cathodic protection, plus constructed new walled defences set back from the river front. Working closely with specialist subcontractors, limpet dams are creating a safe working area below the level of water where the lower plating can be installed on the existing sheet piled walls to extend their life.

Careful planning, innovative design, material reuse and sourcing local suppliers has contributed to a >40% reduction in carbon. Opting for a marine-based repair solution to the sheet piled walls (instead of building new retired lines) has resulted in c.£6m of savings for the client.

With works progressing well we have been awarded additional works and are currently set to complete the project in November 2021.

BENTLEY INGS PUMPING STATION REFURBISHMENT

At Bentley Ings we are undertaking major pumping station refurbishment works following significant flooding from the River Don in 2007. The scheme will boost pumping capacity by 20%, increase flood resilience and improve access in the event of future flooding.

We demolished the existing pumping station to ground level, removed parts of the internal structure and prepared the remaining below ground structure for the placement of new pumps. We also constructed a high-level access route to the site to ensure it can be maintained and utilised during events where the washlands are operating.

LOW CARBON SOLUTIONS: JBA Bentley is a specialist in the safe and efficient delivery of low carbon solutions. At Bentley Ings, examples of our approach included:

- **CAUSEWAY CULVERTS:** opting for bespoke steel culverts to be installed as part of the causeway embankment; an alternative to a concrete box design delivered a 77% carbon reduction.
- **MCC KIOSK AND GENERATOR FOUNDATIONS:** relocating the MCC kiosk and generator enabled the use of shallow foundations comprising a single concrete slab onto which structural elements were built, reducing carbon by 38%.





LINCOLN DEFENCES

The Lincoln flood defences will help to protect over 4,000 properties.

We have delivered safety improvements and commercial efficiencies by challenging the original solutions for the refurbishment of three sluice structures. Instead, we are replacing these with a cassette gate, which removes the need for confined space working, replaces on-site manual handling and lifting with off-site construction, and has reduced programme by six weeks.

As with all projects, careful environmental management is paramount. We worked with our own ecologists and the local council to devise a solution that prevented the need to remove mature trees along the embankment. 'Pollarding' – a pruning system that reduces the size of the tree whilst still maintaining and promoting growth – meant small construction plant could be used within a smaller site footprint and works could proceed without causing harm.



WINTERINGHAM INGS TO SOUTH FERRIBY FLOOD ALLEVIATION SCHEME

Following a tidal surge causing over £50m worth of damage at South Ferriby in 2013, we are now constructing new flood defences to protect 110 residential properties and a large CEMEX cement factory from potential future flood events.

Works include the construction of 2.5km of flood embankments, 200m of sheet piled and 150m of reinforced concrete walls, plus a 13m-wide flood

gate and other demountable flood defences.

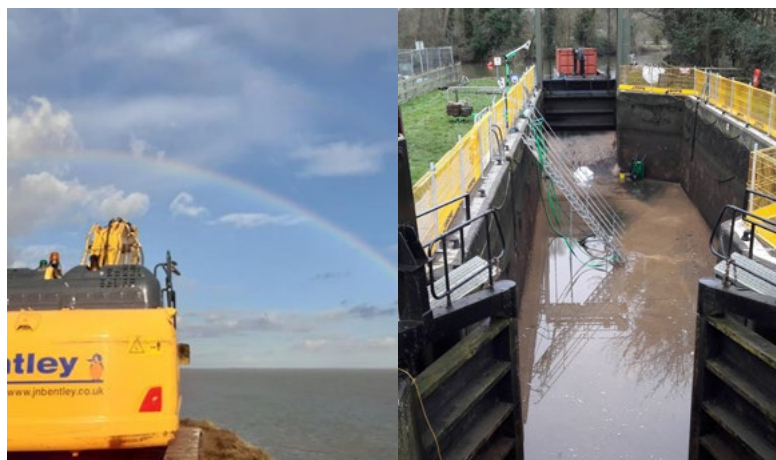
Close collaboration with CEMEX saw them supply 240,000t of clay for the embankments from their on-site quarry as their contribution to the flood defence works. The clay was quarried less than two miles from the flood embankment and eliminated the need to import material from 50-miles away, reducing our carbon footprint by 10,000t.

FLOOD AND COASTAL RISK MANAGEMENT (FCRM)

It's not all multi-million-pound projects, the experience in the team enables us to deliver minor works too, doing so efficiently; right first time; safely; without harm to the environment; and without increasing flood risk.

This is best demonstrated through our FCRM framework. Work is spread across the West and East Midlands, Lincolnshire, Northamptonshire and East Anglia. Individual projects valued at £50k are directly allocated, with packages worth up to £1.5m awarded following competitive tenders.

In 2020 we delivered £2.2m worth of work under the FCRM framework and have secured five packages to kick-start 2021.



WHAT IS FCRM?

- repair and maintenance at earth embankments
- hard flood banks
- culverts
- revetments
- desilting
- sluices and locks
- kiosks and control buildings
- access

COAL AUTHORITY

Mine Water Treatment Civil Engineering,
Refurbishment and Minor Works framework:

- Lot 1 - Projects > £1m



- Lot 2 - Projects < £1m

The Coal Authority has been working to make a better future for people and the environment in mining areas for more than 25 years.

It works closely with partners, stakeholders and the public to:

- keep people safe and provide peace of mind
- protect and enhance the environment
- use its information and expertise to help people make informed decisions
- create value and minimise cost to the taxpayer

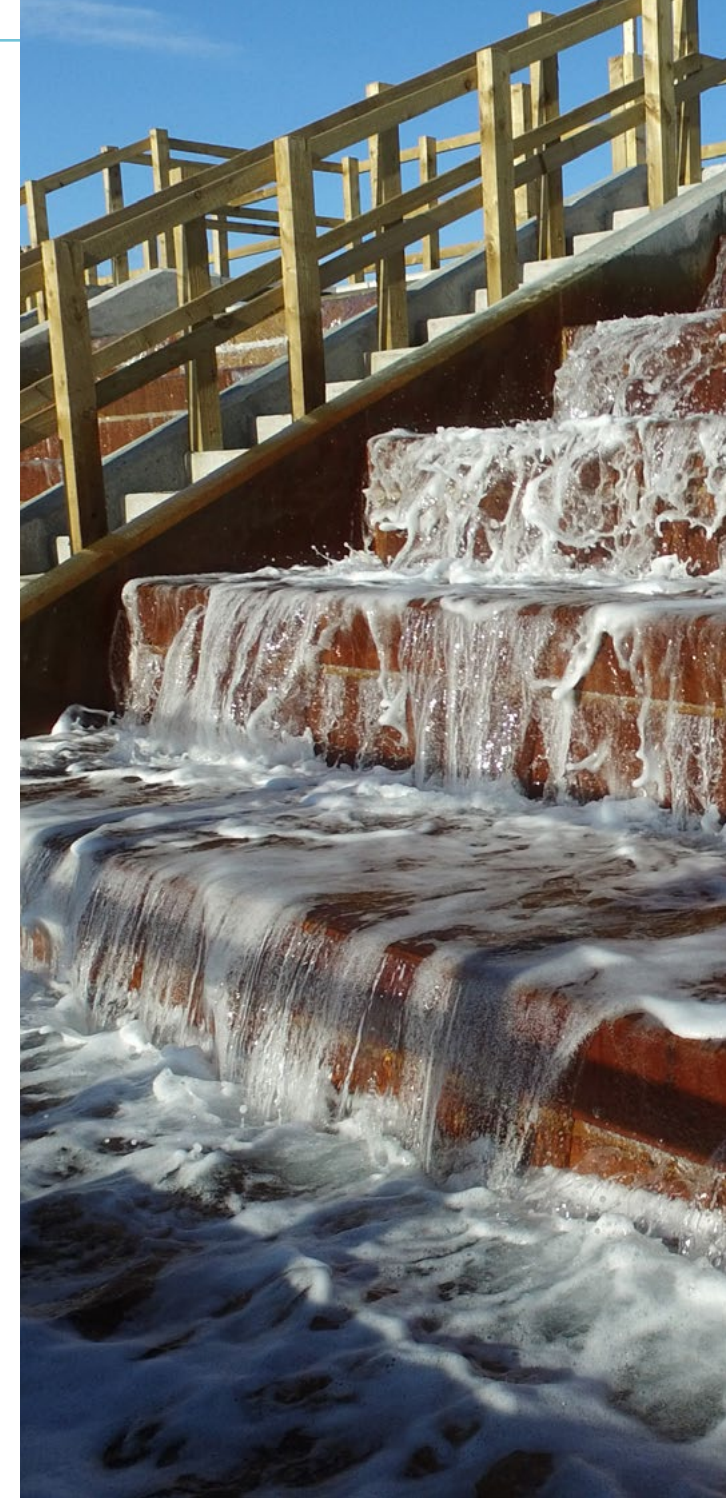
For the past 16 years, we have delivered a range of projects together, tackling challenging engineering problems to deliver safe and innovative solutions that treat mine water and improve the surrounding environment.

Schemes vary in nature, from the construction of new treatment facilities, cascades, lagoons and reed beds to structural repairs and refurbishment works.

In 2020, we extended our relationship for a further four years as we secured places on the Coal Authority's new £72m Mine Water Treatment Civil Engineering, Refurbishment and Minor Works framework, which cover coalfields UK-wide:

- **LOT 1** | JBA Bentley | Projects > £1m | Design and construction of new mine water treatment sites and major refurbishment works to existing
- **LOT 2** | JN Bentley | Projects < £1m | minor works and upgrades to existing treatment sites

2020 saw us complete legacy schemes from the Confluence framework; undertake emergency repair work in the aftermath of storms Ciara and Dennis; and begin bidding for work under the new framework. We've already been successful with four such tenders and will shortly begin work at Bullhouse constructing a new cascade structure.





LYNEMOUTH MINE WATER TREATMENT SCHEME

Our project at Lynemouth made the shortlist at the prestigious Institute for Environmental Management & Assessment (IEMA) Sustainability Impact Awards 2020.

Pumping capacity needed increasing at Lynemouth to manage rising water levels. We constructed new cascades, treatment lagoons, an ochre sludge drying bed and associated infrastructure. The scheme presented many challenges to our team, from managing buried structures to working near railway lines to safely dealing with 100,000t of contaminated soils.

CADENT GAS



Cadent Gas is responsible for transporting gas to 11 million homes and businesses in the West Midlands, North West, East of England and North London. We have been working together since 2018.

In 2020 we completed our latest batch of gas valve remediation work on 61 assets across the North West and East of England.

Projects are critical to ensuring our client can safely operate their network and maintain compliance with Pipeline Safety Regulation 13. Assets are surveyed before we return to carry out the required improvements.

30%

Being our third batch of valve remediation work, we had a bank of great learning on which we could call. To keep improving our service, we knew it was important to:

- **BE FLEXIBLE**, employing simple planning tools to keep us nimble during delivery
- **SEEK MARGINAL GAINS**, utilising our improved knowledge to seek these gains and effectively deploy resources across the contract
- **USE OUR EXPERIENCE** to mitigate risk
- **BUILD ON ALREADY GOOD RELATIONSHIPS** with our client and the highways authorities

The learning paid off: the cost and duration of the batch were cut by 30%.

ROLLS-ROYCE

JN Bentley has a long and proud association with Rolls-Royce, a relationship that dates back to the 1980s; together, we have now delivered in-excess of 100 projects.

We continued to deliver a mix of build-only and design and construct schemes in 2020 as the downturn in demand in the civil aerospace industry saw a shift of focus for the Rolls-Royce framework.

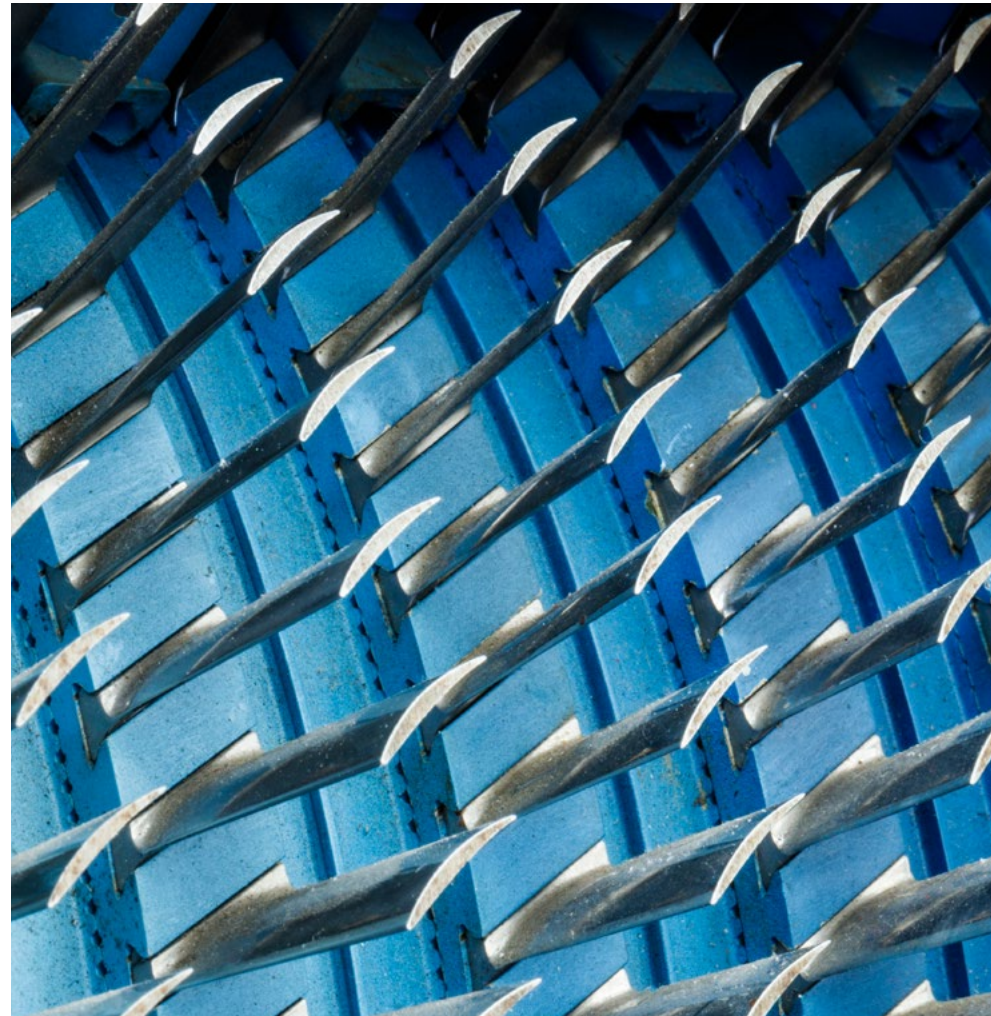
CIVIL AEROSPACE

Schemes focused on ensuring our client could continue to comply with their health and safety commitments. Projects included emergency lighting, smoke vent and gas installation upgrades; remote switching for HV electrical equipment; and external remodelling of roads and car parks to improve site safety.

DEFENCE

We increased our support to Rolls-Royce's defence sector, relocating to dedicated co-located premises to deliver this service. We made progress on three schemes:

- New security fencing, anti-intruder measures and service yard extension.
- Building refurbishment and strengthening – including concrete, steel and carbon fibre wrapped column jackets, external bracing and roof upgrades. This project was made all the more critical due to space being at a premium on this particular estate.
- Site refurbishment including civil repairs, remediation and installation, plus new infrastructure. The focus is on quality and detailed planning, for which we have used Moata Rehearsive to ensure construction work is right first time.



FURTHER EXPERTISE

MAGNOX

Magnox is responsible for the safe and secure clean-up of 12 nuclear sites across the UK. They manage each site through its whole lifecycle, overseeing all aspects of operation, defuelling and decommissioning. Their mission is to safely and securely deliver each of the sites, which are all owned by the Nuclear Decommissioning Authority, through to closure.

Trawsfynydd is one site in the midst of a large-scale decommissioning programme. Our first project together, Magnox engaged us to upgrade a diversion culvert and pumping station, plus construct a new access road. This includes significant structural, mechanical, electrical and instrumentation activity, together with earthworks and landscaping. We have since been invited to tender for further work at Trawsfynydd.

Safety is of utmost importance for Magnox. We worked collaboratively to understand the 'nuclear way of working', implemented detailed plans and were commended publicly for our approach.



Our site teams have been impressed with the attention to detail and commitment to safety delivered by JN Bentley.



MECHANICAL AND ELECTRICAL SURVEYING WITH MM GROUP

We made a foray north of the border into Scotland to support our Mott MacDonald colleagues with proposals for the Defence Infrastructure Organisation (DIO). The DIO are looking to transform the former Leuchars RAF base into a suitable home for its new inhabitants, the Royal Scots Dragoon Guards, the Royal Electrical and Mechanical Engineers and a military police unit.

Drawing on our contracting experience, we were called upon to deliver the mechanical and electrical survey scope, working with skilled subcontractors to undertake intrusive surveys that would confirm the extent and condition of services within multiple occupied buildings.

Working closely with military staff so as to minimise disruption to their usual on site operations, the surveys were completed ahead of schedule and demonstrated the value JN Bentley's experience brings to the wider Mott MacDonald Group.



PRIMARY SCHOOL RETAINING WALL

JN Bentley has a rich history of working in the traditional building trade, from school extensions to new-build children's centres and even a housing development in the Lake District.

Although 2020 saw local authority work come under increased funding pressure, we remained active in the sector. We worked with Derbyshire County Council for the very first time, replacing a retaining wall and

foundations at the boundary of a primary school in Ilkeston.

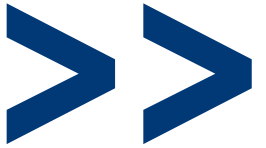
Comprising a reinforced concrete wall faced in brick - plus coping stones and timber - the project was handed back to the school on time.

We also secured two competitively tendered projects in 2020, one in Cumbria and one in the North East. These schemes will get underway in 2021.

A



TO THE FUTURE



Our combined regional revenue budget for 2021 has been set at £289m, this covering all design and construction work.

At the time of writing, 60% of this budget is already secured, with further work expected to come from successful tenders and direct allocation. This is slightly down on 2020 and is reflective of clients being a little slower than usual in releasing work at the start of the new AMP7 regulatory period (2020-2025).

Despite recent positive news on Covid-19 vaccines, the global economy will no doubt face strong headwinds over the next couple of years. However, the water market is well protected, and AMP7 capital programmes will be bigger than AMP6. As such we expect growth to return from the second half of 2021, although at a more sustainable rate than in AMP6 that will allow greater operational control.

2020 saw us secure exciting new frameworks with Thames Water, the largest of the water and sewerage companies. As workload in the North West continues to reduce, work in Anglian Water and Thames Water will markedly increase. We will also be working on several large schemes including Stoke Bardolph Thermal Hydrolysis Plant (Severn Trent) and Hodder WTW (United Utilities) as well as the Lincoln pipeline scheme (Anglian Water).

All our water frameworks last until at least 2025 and support a revenue expectation of £350-400m

in 2023. Regulatory water work will continue to make up 80% of the portfolio.

In the environment sector, JBA Bentley's work for the Environment Agency (EA) continues in 2021 at about the same rate of £40m/year. Our focus is on winning new work in flood and coastal risk management and associated markets. This includes exploiting the newly won frameworks with the government's Crown Commercial Services and Coal Authority, the latter extending our relationship with this client to over 15 years.

National Grid and Cadent have been important clients to us as we have developed capability in the gas sector. Like water, the sector is also a regulated industry and is approaching the start of the next regulatory period, RIIO-2, in April 2021. We are currently positioning for strategically important frameworks with both clients, with live bids current and more opportunities expected.

Although local authority work may start to come under funding pressure we have recently secured competitively tendered projects in Cumbria and the North East and will continue to selectively bid these types of opportunities across our region.

Specialist work at Rolls-Royce holds up well despite the impact of the Covid-19 pandemic on

the aviation sector, with ongoing work and further opportunities emerging at Raynesway.

'Digital Delivery' is becoming ever more important. Successful delivery of our Thames Water frameworks will rely on the application of digital tools allowing designers to collaborate wherever they may be - Reading, Leeds or Mumbai in India. Mott MacDonald's Moata platform of digital solutions will deliver further efficiency in both design and construction. 'Rehearsive', 'Intelligent Content' and 'Route Optimiser' could become common terminology.

In summary, 2020 was a hard year, but the outlook for the company is positive as we start to see AMP7 really kick in. Thank you for all your hard work, it's through great delivery that we can prove our value to clients and win future work.

STEVE

Steve Tetlow | Bidding and Strategy Director



The water market is well protected, and AMP7 capital programmes will be bigger than AMP6. As such we expect growth to return from the second half of 2021.

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**I feel a sense of
pride in all that our
people achieved.**

Paul Bentley, Managing Director

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