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As we move through 2016 and beyond, my thinking hasn't changed: we're at our best when we are safe, making some money and, above all, happy.



# Managing Director's View

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**It has been a tough transition into AMP6 as our water sector clients are more challenged than ever before.**

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Our largest clients in the water sector – Anglian Water, Dŵr Cymru Welsh Water, Northumbrian Water, Severn Trent Water, United Utilities, and Yorkshire Water – are all adapting to working in a total expenditure environment (known as TOTEX), and developing the best outcomes for their customers.

Our success lies in the success of our clients so it is fundamental that we help them achieve a successful transition, and remain flexible in meeting their requirements.

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**The statement ‘what’s good for our clients is good for us’ rings more true than ever before.**

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It is over twelve months since the acquisition of Bentley Holdings by the Mott MacDonald Group, which was a tremendously positive step for us as a growing business. The management triangles have driven real collaboration between JN Bentley and Mott MacDonald, and in the co-located offices the MMB ethos is alive and well.

In 2016 we all need to engage more with our colleagues in Mott MacDonald to realise some of the opportunities that joining the Group has offered. Tools like ‘Talk on Yammer’ – which will soon be available to all – will serve to make this easier for everyone, and will spark some positive discussions I am sure.

Our joint venture JBA Bentley has made great strides in 2015. The team working with the Environment Agency on two frameworks across the country have delivered some impressive schemes.

It is tricky building a new business but the relationship has really matured in the last twelve months, and on a personal level I have really enjoyed working with Jeremy Benn, my counterpart at JBA.

When it comes to safety, it was great to reach one million safe hours for the first time since 2012. This is something to be proud of, but the incidents we suffered since provide a stark reminder that we cannot take our eye off the ball, and indicated to me that standards have probably slipped a little from the exceptionally-high levels that we set ourselves.

Expectations are higher than ever before – both internally and from our clients. How do we meet these expectations? We must start by respecting our own rules and procedures and by taking personal responsibility.

We must remember that you can’t do anything in this industry without people working together in great teams. The ‘Look After Your Mate’ initiative led by Severn Trent Water emphasises just how vital an interdependent safety culture is; remember that it’s about your impact – both positive and negative – on those around you as well as yourself.

2015 saw us establish a number of new teams to better serve the needs of our clients. In doing so it was pleasing to continue our long-standing tradition of bringing talented people through the business and promoting from within. We made a total of 24 promotions to more senior positions during the year.

2015 felt like a year when many employees ‘came of age’. Lots of our people out there are making me feel old (or perhaps I am just getting old).

In all seriousness, finding a healthy blend of youthful energy and urgency

with experienced maturity and patience is something we are good at, and is undoubtedly a winning combination.

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**It has been great to see so many new faces around JN Bentley in 2015. Please help our new colleagues settle – make them feel welcome and show them the ropes – especially when it comes to safety.**

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I would like to thank everyone for your fantastic hard work in 2015. Although it may have felt like some of our frameworks have taken longer than expected to get off the ground, you really have helped contribute to us achieving some first class outcomes.

With a wonderful team in place, and with the added security of Mott MacDonald’s backing, we are well placed to handle this exciting period of growth and serve our clients better than ever before.

The Review could never cover all of your achievements from the year, but does provide an overview of just a handful of our successes from 2015.

As we move through 2016 and beyond my thinking hasn’t changed: we’re at our best when we are safe, making some money, and above all, happy.

**Paul**

Paul Bentley, Managing Director



# Financial Review

2015 saw further significant change for the business with the start of AMP6 on most of our water contracts and further integration with the Mott MacDonald Group following the acquisition in the autumn of 2014.

2014's new AMP6 framework wins with Anglian Water, United Utilities and Dŵr Cymru Welsh Water helped drive the forecast revenue for 2015 to be a record for JN Bentley at c. £135 million, an increase of around 18% v 2014 and representing an average of over £11 million per month.

Despite a slower than anticipated start to many of the new frameworks, the activity level has ramped up significantly in recent months.

Looking forward into 2016 we expect a further significant increase in turnover with a budget of £174 million (a 29% increase v current year).

This is based on an increased order book with over 60% of that total already secured and a further 31% anticipated via framework allocation.

This is a stronger position than the equivalent last year and we believe that with a few further key additions we are well placed to deliver this unprecedented growth.



During the year we opened a new MMB office at Carr Hall in Whalley to support our United Utilities operations, and a JBA Bentley office in Peterborough.

We have also expanded our operations in Newport at Dŵr Cymru Welsh Water's new offices, and within the Anglian Water offices, also in Peterborough.

Following the outstanding AMP6 bidding success with Northumbrian Water Group, at the time of writing we are now looking at options for co-located office space with the client in order to support the



#### Breakdown by sector



anticipated increase in staff in that area in 2016.

Our balance sheet remains strong despite some challenges to our cash flow associated with set up costs on the new frameworks, and that will continue to be a focus for 2016.

We have continued to invest in our infrastructure with the purchase of over 20 new and replacement excavators and rolling replacement and expansion of our van fleet. **This is a trend that will continue in 2016.**

£  
**135**  
**million**  
turnover in 2015



**258**  
**people**  
joined our team

the new **wellbeing**  
**prize draw**  
makes winners of  
**230**  
**employees**

**32**  
**graduates**  
**joined us**  
in a variety of different roles

£  
**1**  
invested in training  
and development  
**million**

**99**  
%  
of waste  
diverted  
from landfill

we won or were shortlisted for  
**16**  
industry &  
client  
**awards**

£  
**99**  
k  
donated to  
good causes  
by our people and the company

**2015 in numbers**

Jan.



Paul Bentley and other directors take time out to visit our overall 'Be Recognised' winners for 2014. Paul Craig was named individual winner and employees on site at Croft House Mews picked up the team prize (pictured above).

Read about recognition and reward on page 33.

Mar.



Close to £800 is raised for Comic Relief during March, employees joining together to hold quizzes, bake sales and auctions across our different operational regions.

Employees and the company donated close to £100,000 to good causes in 2015. Read more on page 37.

May.



We move into offices in Newport, South Wales, with new client Dŵr Cymru Welsh Water and the three capital delivery partners tasked with delivering the client's AMP6 Capital Programmes.

Read about our new partnership with DCWW on page 14.

Jan.

Feb.

Mar.

Apr.

May.

Jun.

Feb.



JN Bentley secures a new multi-million pound contract with the Coal Authority. The 'Confluence' framework is the third framework we have delivered with the Authority since beginning our partnership in 2004.

Read about our year with the Coal Authority on page 24.

Apr.



We are recognised by industry body CECA at their awards in Yorkshire and the Humber, picking up the prestigious Contract of the Year Award for our refurbishment of the bridge at Baitings Reservoir in West Yorkshire.

Read about our operations from page 10 onwards.

Jun.



We cut the ribbon on new co-located offices near Blackburn, ready for the delivery of United Utilities' AMP6 Capital Programme. The opening saw a series of presentations on the theme of 'Making a Safe Start'.

Read about our work with United Utilities on page 18.

# 2015...In Brief

Jul.



We complete our first project with new client BASF Performance Products in Bradford, showcasing our capability in the commercial building sector. In the months following, we've been awarded a second contract on the same site.

[Read more on page 25.](#)

Sep.



The award of two new framework contracts with Northumbrian Water Group caps a remarkable period of AMP6 bidding for MMB. We now work with six of the UK's largest water and sewerage companies.

[Read more from page 10 onwards.](#)

Nov.



Ground is broken at Rivelin Water Treatment Works near Sheffield, where a £20 million scheme will see the construction of seven clarifiers within a new buried structure. The scheme is using a range of new technologies.

[Read more about the scheme on page 27.](#)

Jul.

Aug.

Sep.

Oct.

Nov.

Dec.



Aug.

31 new placement students join the business, with eight former placement students returning as full-time graduates after being sponsored through their final year at university.

[Read about how we maintain our talent pipeline on page 30.](#)



Oct.

Our relationship with the Environment Agency continues, as another scheme begins, this time in the heart of Ulverston, Cumbria.

[With a second framework-specific office opening in 2015, you can learn more about our joint venture, JBA Bentley, on page 22.](#)



Dec.

Over 85 employees give up their Christmas break to support clients, the British Army, and the emergency services in their response to flooding.

[We pride ourselves on our ability to react quickly to the needs of our clients - read more on page 23.](#)







# Our purpose is defined as Engineering Sustainable Outcomes.

Engineering is at the core of the services we provide to our customers, and great engineering that provides superior value is what will continue to differentiate us from the competition.

A sustainable outcome for us is one that is sustainable economically and environmentally, and right for our customers, employees and the community. It is important we find a balance between these interests, and strive to improve.

Effort is important, but it is results that matter to our stakeholders. That is why our purpose places the focus on outcomes.

Mott MacDonald's mission is to create satisfied customers through professional excellence giving commercial success and employee fulfilment.

Since JN Bentley joined the Mott MacDonald Group in 2014, everything so important and valuable in the ethos and culture of JN Bentley has continued – and will continue to do so in 2016 and beyond.

Our particular style of collaboration, combined with utilising our technical ability and our own resources to manage programmes of works, deploy our resources and construct the solutions to meet our clients' needs, will continue to drive all that we do.



We maintain three primary delivery vehicles for our operations, utilising a 'right company for the opportunity' approach. Regardless of who is delivering the work, our approach to business and values always remain the same.

**JN Bentley** | JN Bentley provides civil engineering contracting services, together with expertise in mechanical and electrical engineering and construction.

Founded in 1972, the business has grown largely from repeat work with a relatively small number of key clients in the water sector and beyond.

**Mott MacDonald Bentley (MMB)** | MMB offers fully-integrated civil engineering feasibility, design, construction and commissioning services. The joint venture was formed in 1999 to specifically deliver long-term, high volume programmes of work for the UK's water companies.

The relationship between JN Bentley and Mott MacDonald has flourished in the years since and ultimately led to the acquisition of Bentley Holdings (including subsidiary company JN Bentley Ltd) by the Mott MacDonald Group in 2014.

**JBA Bentley** | JBA Bentley carries out fully-integrated water and environmental engineering, feasibility, design, construction and commissioning services. Established in 2013, JBA Bentley is a joint venture between JN Bentley and Jeremy Benn Associates (JBA) that brings together the specialist engineering and environmental consultancy expertise from both firms.

**PRIDE** | The mission and PRIDE values of Mott MacDonald dovetail with those of JN Bentley.

**Progress** | Embrace change and continuous improvement; seek sustainable outcomes for stakeholders and the environment; and actively support the development of staff and professionals.

**Respect** | Respect the environment and communities in which we work; value all people and cultures equally; and treat everyone with respect.

**Integrity** | Deliver on our promises; behave ethically and do not tolerate bribery or corruption; and promote a safety culture targeting zero harm to all.

**Drive** | Aim to exceed customers' expectations; encourage teamwork and deliver to the best of our ability; and work hard for professional and commercial success.

**Excellence** | Uphold leading edge technical, professional and safety standards; develop innovative, efficient solutions that create value for our customers; and remain proud of Mott MacDonald's heritage and achievements.

# Our Team

Tasked with delivering our projects is our ever-growing team – a talented group of people, who build and maintain lasting relationships with our clients and supply chain, doing so by working collaboratively and in a spirit of openness and honesty.

We focus on working in a way that makes customer operations safer, more efficient and increasingly sustainable – completing our tasks ‘right first time’, on programme and within budget.

There is a constant drive to find innovative solutions to traditional engineering problems. Design for Manufacture and Assembly (DFMA) has become a more prominent

feature of our operations, and we have embraced a raft of new technologies as BIM (or Building Information Modelling) becomes more engrained in the way we do things.

[Read more on BIM and how we see the future of civil engineering on pages 26-27.](#)

Out on site, overseen by our managers and engineers, is a large, directly-employed, well-trained and competent labour workforce.

Directly-employing our own people at all levels supports our team in understanding and working to the high standards we demand when it comes to health, safety, environmental and quality management.

“ At the heart of JN Bentley is the safe, innovative and cost-effective design and construction of great civil engineering projects.



Having such a workforce on board also means we can react more flexibly to the needs of our clients.

**It is essential that our operational teams are well supported to enable them to deliver for our clients.**

In 2015 the support team has worked closer together than ever before, efficiently serving the growing needs of the business. Working as one unit, the support team provides a raft of services including:

accounting and finance;  
communications; human resources; IT  
and data analysis; labour resourcing;

plant; procurement; quality, environment and safety; recruitment; subcontract buying; and training.

We periodically rotate staff from the operational side of the business with the support team to use their expertise – and give members of support opportunity to work directly in operational teams too.

One key focus for the support team in 2015 has been the continued development of a new IT system that will utilise the latest technology.

Deployment of the new system is underway and will be complete in 2016.

- Integral to our business is our trusted supply chain. We engage with an array of materials suppliers and subcontractors, who deliver specialist elements of work outside of our own core competencies.
- We engage with the supply chain early and maintain dialogue with them during projects.
- It is important to celebrate their exceptional performance, and do so every year by presenting certificates to the top performers.

# Anglian Water

In 2015 we commenced work as a member of Anglian Water's AMP6 Integrated Main Works Capital (IMWC) @one Alliance after being named as one of six partners that will deliver a work stream worth up to £1.3 billion over the next five years.

The work involves the design and construction of water and water recycling schemes on infrastructure and non-infrastructure sites across the whole of the Anglian region.

Much of 2015 was spent building the @one Alliance, working closely with our client and fellow partners as integrated teams in co-located premises in Peterborough.

The project teams are made up of a blend of resources from all partners based on a 'best for task' allocation and will meet the demands of the industry over the next five years by driving efficiencies and meeting ever-stringent challenges.

We have been 'on the ground' with two projects in 2015.

We completed our first scheme on the new AMP6 framework, the construction of a raw sludge cake reception facility in East Anglia.

We also continued a resilience scheme in Cambridgeshire, which is being delivered under the 'Special Projects' framework, to which JN Bentley was first appointed in 2005.



## Whitlingham Cake Reception, Norwich

In December we completed the construction and commissioning of a new sludge cake reception facility at Whitlingham Water Recycling Centre.

Valued at £3.6 million, the scheme has combined civil, mechanical and electrical elements associated with new buildings, MCC, odour control units, storage silo and connecting pipework.

The site team have looked to drive savings wherever possible, including the reuse of material used for the temporary piling mat within the permanent works as sub-base material for the structures and access roads.

In 2016 MMB will be working within the @one Alliance to deliver a further sludge cake reception facility for Anglian Water and are looking to build on the efficiencies seen at Whitlingham.

Pictures A-F show progress on site.





## Grafham Resilience

In Cambridgeshire we are part way through one of the largest schemes we have ever delivered.

The project comprises the construction of a new 40 megalitre (Ml) service reservoir, four new pumping stations, over five kilometres of pipelines, and other associated modifications across the Anglian Water network.

The two-and-a-half year project, once complete, will provide resilience to Grafham Water Treatment Works, a strategically important works supplying clean water to almost one million people.

In a 'resilience event', the final solution we have developed with our client will enable flows in the existing trunk main to be reversed, re-zoning the entire network and ensuring continuity of supply.

This innovative solution has saved £20 million in capital expenditure (CAPEX) for our client, as well as a 50% reduction in embodied carbon.

When complete, this will be the largest pre-cast concrete reservoir in the UK.





# Dŵr Cymru Welsh Water

MMB is working with Dŵr Cymru Welsh Water as one of the capital delivery partners (CDPs) tasked with delivering their AMP6 Capital Programmes.

This is the first framework we have delivered as a CDP with Dŵr Cymru Welsh Water, and involves us operating in an 'Alliance' arrangement where we work side-by-side with the client and fellow partners to support collaboration and drive best value for client and their customers.

In 2015 we grew our team in Wales significantly in order to equip ourselves for the start of AMP6.

The Alliance team established itself in new co-located offices in Newport, South Wales, and worked hard to get the first AMP6 projects to site at locations across Wales.



## Cardiff Inlet Works

One of our very first schemes is located at Cardiff Wastewater Treatment Works, where we have been tasked with improving the preliminary treatment process.

Our design team challenged the original feasibility study, as well as our client's technical standards, proposing a new solution that reduced the target cost by 50% and reduced the construction programme by more than two months.

The new outcome incorporates the new preliminary treatment stage into existing site structures – reducing cost – and makes the best use of the space available on site – improving safety in construction and operation.

Reinstating a rising main on site will also reduce the carbon footprint by reducing the volume of potable water required in the treatment process.

# Northumbrian Water Group

In 2015, after a competitive procurement process, we were named by Northumbrian Water Group as one of five partners that will deliver water and wastewater work worth up to £500 million during AMP6.

The new contracts began in October and are expected to run until 2025, with a review after five years. This could potentially extend our relationship with Northumbrian Water to close to 25 years, after first making our presence known in the North East in 2001.



The AMP6 contracts will maximise opportunities for collaborative working between ourselves and the wider team, and are testament to the hard work and dedication of our people in the North East over a period of more than a decade.

## Programmes of work

In recent years we have become adept at delivering programmes of minor works collaboratively with our clients. With Northumbrian Water we deliver a number of sub-programmes across their operating regions, including the Minor Works Sub-Programme.

Here we resolve wastewater compliance issues, working in an agile way with the client and suppliers to react quickly and provide safe, cost-effective solutions.

Each scheme under the programme is delivered for under £150,000. Key to its success is engagement with all parties from the start: the 'One Team' approach.

The whole team plans the works collaboratively, and there is a drive to continuously improve delivery by taking learning and standard designs from one scheme to the next.

We estimate that by taking this approach we have achieved efficiencies of over £1.1 million over the course of the programme.

We have also delivered a programme of works replacing and upgrading assets to comply with the Electricity at Works Regulations (EaWR).



The residents knew exactly what was happening and when and what the impact on us would be. The communication and consideration shown has been excellent.

Mr Taylor, resident, Low Warden

Under the EaWR programme we carried out full electrical and civil design, from building services to full sewage works electrical upgrades, including motor control centres, cabling, instrumentation and telemetry.

Working collaboratively, the contracted scope of works was completed in November 2015, four months ahead of programme.

## An award-winning team

Project Leader Helen Frost was recognised by Northumbrian Water for her role in the Minor Works Sub-Programme, scooping the Individual of the Year prize at their annual Going the Extra Mile (GEM) Awards.

Our scheme at Warden was named winner in the Environmental & Sustainability category, and JN Bentley was named as a finalist in both the Health & Safety Excellence and Programme of the Year categories.

## Warden Outfall

At Low Warden – a small hamlet where we installed a new sewer and outfall across agricultural land – it wasn't the scale of our works but their location and the ecological constraints therein that posed the biggest challenge.

Pre-start work and discussions with regulatory bodies such as Natural England led to us making provisions for managing the presence of flora and fauna such as water voles, freshwater pearl mussels and Himalayan balsam.



Helen is a very knowledgeable, adaptable, customer-focused Project Leader. She approaches the issues we table with an open mind, looking for best business outcomes...she has been a vital cog in the STW Minor Works collaborative team.

Jonny Belmont, Project Manager, Northumbrian Water



# The Environment Agency

Working with environmental consultants JBA, we deliver Flood Risk Management schemes under the Water and Environmental Management (WEM) Framework with the Environment Agency (EA) and others.

Under the framework we provide early contractor involvement (ECI), feasibility, design and construction activities on schemes that can vary from flood banks to pumping stations to reservoir improvements.

Projects are located across a wide geographical area – as far and wide as Wales, Cumbria and the East Coast. With a maturing office in Leeds and new premises in Peterborough, JBA Bentley is ideally placed to deliver these projects.



Throughout the duration of the works, members of the public have commented on the professionalism and politeness of the contractors, and the information provided by the whole team.

As the Senior User Representative for the scheme, I find it very rewarding for the hard work of the whole project team to be recognised like this.

Alice Hearne, Environment Agency  
(speaking about Snaith Ings)

## Dams and reservoirs

The EA own and maintain a number of reservoirs across the country; essentially storage facilities to slow down the flow of water to urban areas.

We have delivered a scheme at **Spring Gardens** in County Durham, where we have stabilised the dam by drilling and grouting over 850 holes. We also designed and constructed a new inlet channel to re-direct the flow of the river back to its original route.

At **Yellow Dam** in the Lake District, we have designed and constructed new stilling basins, a spillway channel, and an upgrade to the existing dam, to help the EA control water within the Threlkeld lead mine. An innovative 'concrete mattress' was chosen to line the new spillway as it provided a cost-effective solution that eliminated the need for excessive formwork in a tight working area.

## Earthworks

Many of the flood protection schemes we deliver with the EA involve the construction of bunds and barriers.

A scheme to protect the village of **Hensall** in North Yorkshire was initiated to offset any effects of mining subsidence from a nearby colliery. At **Snaith Ings**, on the banks of the River Ouse, the team worked with courtesy and kept the public fully informed whilst making repairs to the flood bank.

The project included 1100m of sheet piling (delivered in-house to improve efficiency) and the construction of an 800m-long earth bund, using site-won material.

## Maintaining safe access

A number of projects under WEM are required to repair and maintain safe client access to their assets. Following flooding, a scheme at **Reedness** was raised to repair 120m of flood bank on the River Ouse, before a track to enable travel along the embankment crest was constructed.



Construction has been carefully timed to work with the tide, none-more-so than a 60m section of sheet piling that was carried out using machinery working from within the channel.

**In 2015, JBA Bentley's hard work on the framework was rewarded with a two-year extension, which will carry the relationship with the EA on through until 2019.**



## Pumping stations

In Keswick we have designed and built a new pumping station and outfall to collect surface water that surcharges the drainage system at **Elliot Park**. The new solution mitigates the risk of flooding in the area. Situated in a car park near the centre of town, we have worked hard to maintain good community relations.

We have also installed a number of fish-friendly pumps and carried out a mechanical and electrical refurbishment at **Hey Cop** near Liverpool.

## Flood alleviation

One of the EA's responsibilities is to minimise flood risk to urban areas. We have been working with them on a series of five schemes in the Upper Calder region, including **Bacup Road**, an A-road particularly susceptible to flooding.

To alleviate the problem we are installing new road gullies, inlet and outlet structures and pipework to transfer rain water from an adjacent hill to a nearby brook at 25 sites along the road.

We are also in the midst of raising existing flood defence walls and refurbishing culverts as part of a flood alleviation scheme at **Ulverston** in Cumbria.

The £2.6 million project will reduce the risk of flooding to over 350 properties from Town Beck, which has a history of bursting its banks.

**Community engagement is crucial at Ulverston, given the proximity of works to residential and commercial properties. A project-specific website has been set up to keep locals informed, which includes social media feeds and a blog. The team have hosted public open days and drop-in sessions too.**



Pictured above and left is a second project in the Upper Calder Flood Risk Reduction programme, at **Hebden Bridge**.

To enable us to safely install a new inlet structure significant temporary works were required to gain access down steep banking.



# Severn Trent Water

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2015 brought to a close MMB's first five-year framework with Severn Trent Water, a successful period that culminated with a five-year framework extension, taking our agreement through until 2020.

The focus for our AMP6 schemes with Severn Trent Water is to drive maximum efficiency using factory-thinking to develop standard products that can be used across different sites. Building products off-site in controlled environments is not only safer but is more cost-effective too because it reduces the time required in design and construction.

Reaching our AMP6 efficiency targets will be an exciting challenge and one we are already embracing as the case studies below exemplify.

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## Barby Distribution Service Reservoir

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Barby Distribution Service Reservoir (DSR) serves the market town of Rugby in Warwickshire.

To accommodate for predicted population growth in the area, we were appointed to design and construct a fourth cell at the reservoir, increasing capacity by 5MI.

To ensure efficient delivery, during the planning stage we liaised with the contractor who had recently built a third cell on the site, obtaining information that mitigated the need for further ground investigation and planning permission.

During construction, casting the base slab, walls, columns and roof slab in-situ meant extensive temporary works were required, a complex process but one that the team managed safely.

## Llandinam Resilience

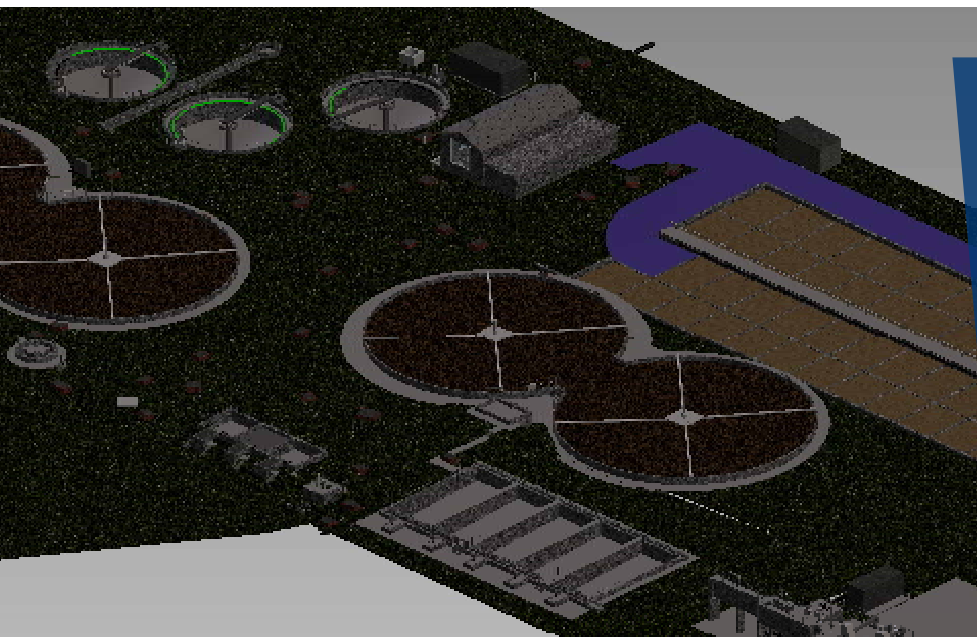
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To provide resilience to the water supply of Severn Trent Water customers in the area, we have constructed a new 'emergency' treatment works at Llandinam in Mid Wales.

During feasibility, the team looked closely at how service reservoirs are operated in resilience mode, focusing on simplicity, reliability and immediate availability.

As part of the project, we installed the first mobile UV treatment plant on a Severn Trent Water site. Built completely off site, the unit is a prime example of 'factory thinking' – an approach that here achieved a 25% reduction in cost and 30% reduction in time in construction.





## Area 5 Projects

We have started work on a batch of nine sites across the West Midlands, worth over £50 million.

The programme, which will last for four years, involves the refurbishment and replacement of secondary treatment processes and the addition of new chemical dosing units. We will deliver everything, from feasibility through to commissioning.

Working collaboratively with other partners we'll drive efficiency by using standard products throughout; up to 70% of all final assets will be built off site in factory conditions.

## Groundwater UV Plants

We have been engaged to install a batch of UV plants to help our client improve the water treatment process at twelve different borehole sites.

The repeat nature of 'batch' work like this gives us the opportunity to deliver work with great efficiency.

To achieve this efficiency we utilised factory-built assembly UV treatment plants that are designed, constructed and commissioned in controlled conditions away from site, before being delivered and installed on site.

Developing a standard plant and building it in this way has a number of benefits, which include design and construction time, safety and the quality of the end product.

With all factory-built products, the interface between the product and site is critical. To ensure the delivered plant marries-up perfectly with the on site civil installation, a purpose-built jig was fabricated and used which could be recycled and used on all twelve sites.



A project to significantly upgrade the sewage treatment works at **Worksop** was completed in 2015.

The scheme was delivered as part of the e5 Alliance - a joint venture between four framework contractors and Severn Trent Water.

# United Utilities

MMB is one of four Construction Delivery Partners helping to deliver United Utilities' AMP6 Capital Programme.

The agreement sees us undertake the design and construction of projects across the United Utilities region and across the full spectrum of water and wastewater infrastructure and non-infrastructure assets, as well as energy-related work.

Our 2015 focus with United Utilities has been all about making a safe start to AMP6 and ensuring we work collaboratively to meet the efficiency challenges laid down to our client by the regulator.

The importance of this was reinforced at the official opening of new premises at Carr Hall, near Whalley in Lancashire.

The co-located offices will house staff from MMB and United Utilities and are designed to engender the collaborative and innovative approach that is required to deliver great results over the next five years and beyond.



## Chemical Investigation Programme (CIP)

By batching schemes together there is great opportunity for efficiencies and safety improvements to be made. Work is currently on-going on a batch of six projects where we are tackling low phosphorous discharge consents by engineering new chemical dosing facilities and upgrading tertiary filters.

Our batch of work is part of a national Chemical Investigation Programme (CIP) being run by the Environment Agency and water companies across the UK.

◀ At Grasmere the team used an innovative technique to help a new kiosk blend in with its picturesque Lake District surroundings. Cladding the building in printed vinyl has given it the look of a new stone building, without the expense of sourcing Cumbrian slate. The results are very convincing, as well as being more cost-effective, safer to construct and more sustainable.

## Denton Service Reservoir Retaining Wall

Design For Manufacture and Assembly (DFMA) was evident on site at Denton Service Reservoir, on the outskirts of Manchester. The first project completed under the AMP6 framework, we were tasked with constructing a new 100m-long retaining wall to stabilise the reservoir embankment.

We successfully challenged the original solution, opting to use pre-cast concrete blocks rather than stainless steel gabion baskets.

This solution meant the depth of excavation was reduced - expediting the programme - and improved safety as it reduces the risks associated with working at height and material handling...all this whilst still fulfilling the primary function of safeguarding the embankment from future potential slippage.




## Springs Impounding Reservoir

To improve the embankment at Springs Impounding Reservoir, we have been tasked with increasing the stability of the dam by constructing a new filter drain and piled cut-off wall to the embankment.

Working on the narrow crest of the reservoir embankment meant we were limited to the type of machine and length of pile we could install. Opting to use a 'silent piling' rig, which uses a hydraulic ram to push piles into the ground, means we can install longer sheet piles and can negotiate the narrow crest safely. Increasing the length of the piles reduces the amount of filter stone we need to lay to the steep embankment face, making the scheme safer and reducing costs.





In April 2015, we were awarded United Utilities' Quarterly Safety Prize "in recognition of excellent performance in the field of health and safety whilst delivering a number of projects for United Utilities – and in particular the fine efforts of the team working at Jacksons Edge."

## Jacksons Edge Service Reservoir

We continued the construction of a new 18MI twin-compartment service reservoir at Disley, Cheshire, in 2015.

Community liaison is crucial on this project given the site lies in the middle of a residential area. We have hosted a number of community liaison meetings and events, and used off-site manufacture to reduce the length of time we are required to be on site.

All 126 of the concrete wall units in the structure (plus 132 beams, 120 columns and 400 roof slabs) are being pre-cast in factory

conditions away from Jacksons Edge before being delivered to site and carefully crane-lifted into place.

The structure for the first compartment and valve house was completed and successfully tested in 2015, with electrical installation and commissioning on-going.

Once the first compartment is commissioned, the existing reservoir will be demolished to make way for construction of the second compartment, ahead of a 2016 completion date.



# Yorkshire Water

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Yorkshire Water remains one of our longest-standing clients; our collaborative working relationship with them stretches back over twenty years, pre-dating the formation of MMB in 1999.

2015 saw AMP5 come to a close, a five year period that has seen increased focus on innovations such as off-site construction and 3D modelling to realise great benefits for safety and efficiency. We will push these innovations further into AMP6 as we strive to work leaner and safer than ever before, with BIM becoming 'business as usual'.

We continue to work from co-located premises in central Leeds, delivering frameworks that cover both above and below ground works on sewers, reservoirs, treatment works and more, across the whole of Yorkshire.

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## St Dunstons Way

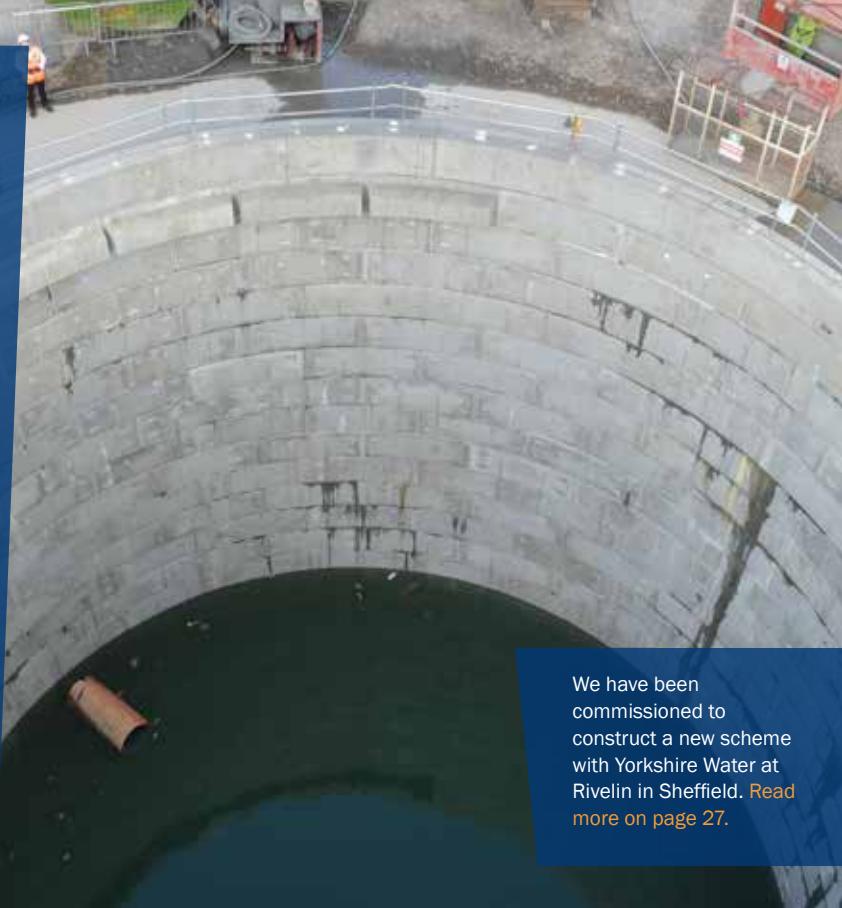
Many of the schemes we deliver with Yorkshire Water increase the capacity of the network to reduce the risk of sewer flooding.

We are doing just this in Bradford, West Yorkshire, where we are delivering a £3.5 million project to prevent flooding at the Technology Park on St Dunstons Way.

Working closely with specialist subcontractors, to manage and contain flows in the event of a heavy storm we have constructed a large 20m-diameter underpinned shaft (pictured) and a 7m-deep overflow chamber, together with over 300m of concrete pipework.

We also carried out a 140m pipe jack to install a 1.8m-diameter pipe beneath a road into the park.

The original proposal was to use an open cut method to lay the pipe, but recognising the street was used heavily by traffic accessing the industrial park, pipe jacking meant disruption to the public was significantly reduced.



We have been commissioned to construct a new scheme with Yorkshire Water at Rivelin in Sheffield. [Read more on page 27.](#)

## Oakdale

The upper reservoir at Oakdale has supplied drinking water to areas of North Yorkshire since the nineteenth century.

Bore holes now supply the local area and this, coupled with the existing spillway being in poor condition, meant the reservoir was no longer required by Yorkshire Water.



To achieve a 90% reduction in volume of water stored and discontinue the reservoir we excavated a v-shaped notch through the centre of the embankment before constructing a channel to link the remaining body of water to the beck downstream.

**At Oakdale, all excavated material was reused within the reservoir basin for landscaping and backfill on site, and the works were carefully planned so as not to disrupt the shooting season or the Cleveland Way National Trail that runs alongside the reservoir.**

Project Leader  
Kate Speirs won the prestigious British Dam Society Prize in 2015 for her paper on the use of U-sections on the spillway at Watersheddles



## Watersheddles Impounding Reservoir

We have carried out spillway improvement works at Watersheddles Reservoir, which lies on the border between Yorkshire and Lancashire. The £1.8 million scheme is logistically complex and is a great example of off-site construction improving safety and the bottom line.

Difficult access to parts of the working area inspired us to develop pre-cast concrete U-sections to line the steep Watersheddles spillway. Fixed using a spigot and socket joint more akin to culvert construction, the U-sections were installed using a unique rail and winch system.

Each section was designed to slide into place on the steep section of spillway from the safety of level ground.

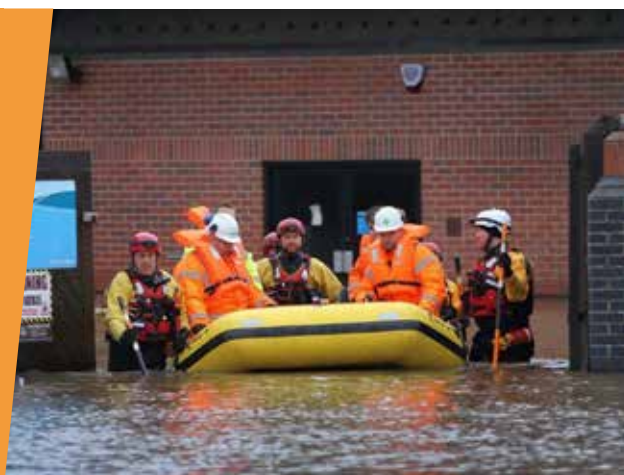
This success at Watersheddles could see the innovation used on other MMB projects in the future.

## Responding to the needs of our clients

The business has always prided itself on its ability to react flexibly to our clients' needs.

In 2015 we deployed a team at short notice to Aberdeen to help client Kelda Water improve the performance of their existing works. Drafted from our North East and Yorkshire regions, the team hit the ground running, working safely and to programme to successfully manage and facilitate the works.

At the end of 2015, over 85 employees gave up their Christmas break to offer assistance to clients who were affected by the floods that devastated large areas in the North of England.





# The Coal Authority

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In 2015, JN Bentley was awarded a place on the Coal Authority's new 'Confluence' framework. Worth £2.5 million to £4 million per year, the framework will involve the design and construction of new mine water treatment schemes across the UK.

The contract is the third framework we will have delivered with the Coal Authority, having completed a number of successful mine water treatment schemes since first working with the Authority in 2004.

The next four years provide further opportunity for partnership working that focuses on continuous improvement and more efficient delivery at not only traditional coal mines, but metal mines too.

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## Whitburn Sea Outfall

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The first scheme we have delivered under 'Confluence' was in the North East of England, where a solution was required to reduce and maintain water levels by pumping from a nearby mine via a borehole to the sea. A successful test phase proved the validity of the solution – the installation of a 450m-long outfall from the mine shaft to a point 150m out at sea.

The works were commissioned in late 2015.

To install the pipework in fragmented limestone, a rock-type susceptible to collapse, we worked with the client and supply chain to agree an increase on the specification. Instead of drilling and then lining the void before pulling the main pipework back through, our solution saw the casing itself become the outfall pipe.

By eliminating the need to pull a separate pipe back through the casing, we found an engineering solution that was not only more cost-effective but safer too.

## Craig yr Aber

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The Coal Authority has a responsibility to treat mine water before it is discharged into the natural environment. One way of achieving this is to use a passive mine water treatment scheme – something we have become experienced at building in recent years.

The scheme at Craig yr Aber, near Bridgend in Wales, involved the construction of two settlement ponds, two wetlands and two drying beds. These features remove iron from the water in an entirely 'passive' way – no chemicals are required to assist the process.

Saturated ground conditions led the project team to use innovative bales made of recycled tyres to engineer the embankments on site. Covering these in the excavated material from site provided a structurally-sound, sustainable embankment that is in-keeping with its surroundings.





# Further Expertise

Although turnover is heavily water-orientated, JN Bentley continues to enjoy links with other building and engineering sectors, utilising our expertise to deliver projects with the likes of BASF, National Grid and local authorities.

It is important to the business to maintain a presence in these sectors; joining the Mott MacDonald Group will only serve to aid this diversification in the years to come.

## Industrial building

In 2015 we completed works at a production facility for BASF Performance Products, in West Yorkshire.

BASF, who manufacture chemicals for the water industry, required the construction of foundations for a new process facility, which included the installation of over 70 in-situ concrete bored piles. We also constructed a new two-storey MCC building together with new access roads.

All construction was carried out with the added complexity of minimising disruption to on-going site activity because the existing facility remained fully operational throughout.

Off the back of this successful debut scheme with BASF, we have since been awarded additional works with the client. **Securing repeat work by demonstrating first-class performance has been integral to the success of JN Bentley over the years.**



## National Grid

In 2015 we continued to build a rapport with National Grid as we delivered over £1.5 million of work with them.

Engaged under the **Gas Asset Health Framework**, the team has received client-specific training and has worked exceptionally hard to learn new systems and procedures to make the framework a success.

Schemes under the framework cover a variety of nationwide mechanical, electrical and civils works which involve maintenance, remedial work, inspections, demolition and even river bank stabilisation across the portfolio of National Grid assets.



▲ **Alrewas** was our largest project carried out to date and involved remedial works and inspections to critical valve and pipeline facilities at the compressor station.

JN Bentley has traditionally held a presence in the highways and local authority sectors, and 2015 was no different.

Working with the **North and Mid Wales Trunk Road Agency** we carried out barrier repairs and erected noise fencing. To increase efficiency we pre-cast the concrete foundations in our yard before lifting them into place on site, an approach that the client is looking at adopting across the framework.

We have also worked with **Durham County Council** to construct new (and improve existing) carriageway and to re-align a bridge near Consett.

# The Future of Engineering

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We have developed a reputation as an innovative engineering company; the way we embrace new ways of thinking and developments in technology were pivotal in helping us secure our recent haul of contracts in the water and environmental sectors.

It is crucial that JN Bentley, MMB and JBA-B continue to innovate, not only to meet client demands but to derive safety and efficiency benefits at every stage of a project.

Innovations come in a variety of guises, from advancements in digital technologies to the development of standard products: components that are designed once but installed many times on many sites.

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## What is BIM?

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Driven by the UK Government Construction Strategy, Building Information Modelling (BIM) gets people and information working together effectively and efficiently through technology and defined processes.

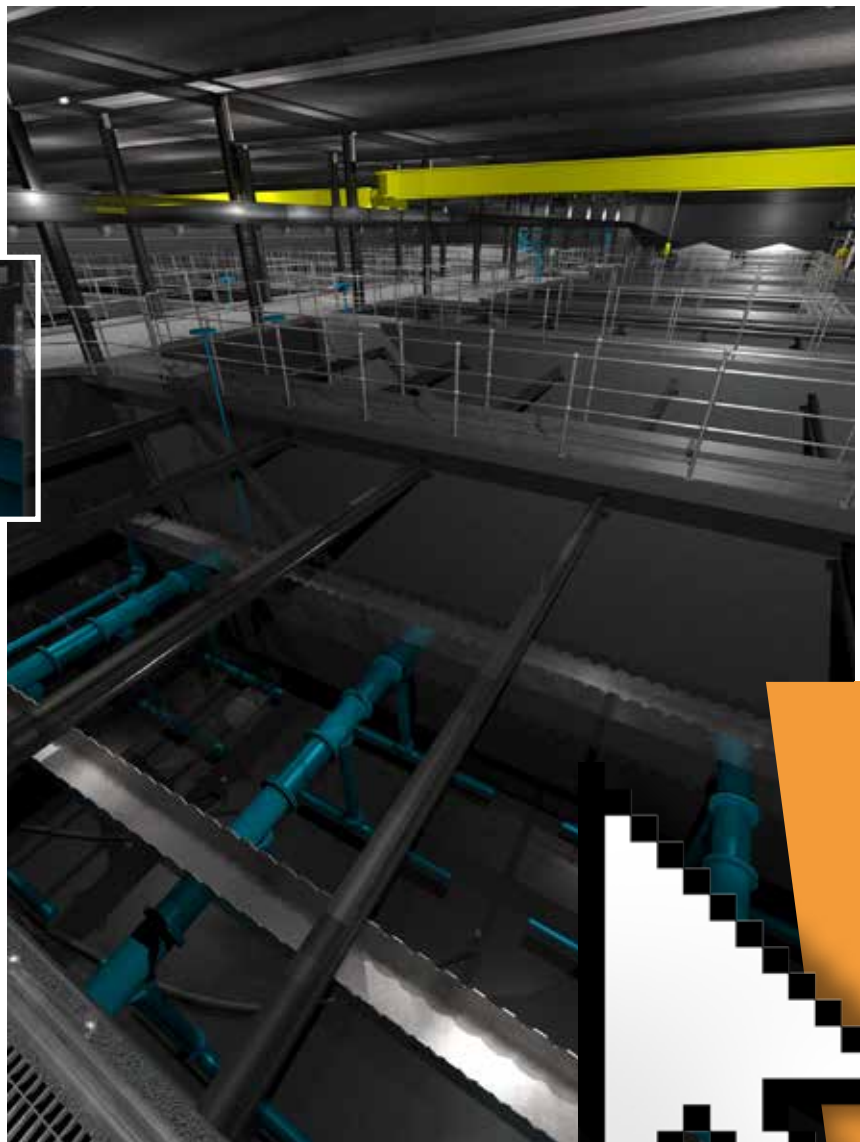


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**BIM is a coordinated set of processes, supported by technology that adds value through creating, managing and sharing a digital information model of an asset throughout its lifecycle.**

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BIM is a mandatory requirement with some of our clients, including the Environment Agency and United Utilities, but we are challenging ourselves to enable other customers to realise the full benefits of the application of digital asset information modelling too.



Utilising BIM within the business has enabled us to invest in a variety of new technologies.

### 3D laser scanning

3D laser scanning enables us to safely carry out millimetre-accurate surveys of existing assets, with the resulting point cloud data generating the geometry of the structure. Part of the scanning process also creates photographs that software 'stitches' together to create an experience similar to 'Google Street View' - we can take measurements from these photos too. We've also invested in a handheld tablet (Project Tango) that can carry out small scale surveys.

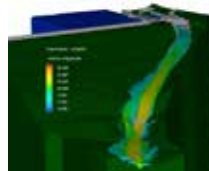


### Oculus Rift

Virtual reality goggles are being used to allow our people to walk through designs prior to construction. We have used these to demonstrate jobs to our clients, and to give our people a different perspective on the design. The goggles work with technology developed for the computer gaming industry.

### Computational fluid dynamics (CFD)

CFD uses applied mathematics, physics and computational software to visualise how liquid or gas flows. CFD models enable us to efficiently generate a variety of different water flow scenarios on assets such as reservoir spillways during the design process.



### Quadcopter

We have bought a quadcopter (or drone) with a camera/video recorder attached, which helps us improve how we safely inspect and survey our construction sites. The resulting photogrammetry can be loaded into software to produce 3D models.

**The use of this new technology improves safety on our construction sites. We can eliminate activities such as physical surveys carried out on steep spillways, high rooftops and other challenging and potentially hazardous locations.**

### Standard products

At the core of a standard product is a 'standard design' - a component that can be designed once but installed many times.

Standard products can also contain standard product information such as programmes, carbon schedules and safety information to increase efficiency.

Many products lend themselves to Design for Manufacture and Assembly (DFMA) and can be built off-site in factory conditions.



**This approach is helping us meet the efficiency challenge posed by our clients.**

### Roebuck Service Reservoir



- This BIM model links to topographical surveys, existing services, 3D ground surfaces and the existing and proposed service reservoirs as one 3D model.
- The model enabled a variety of pipework arrangements to be trialled before design was optimised and the pipework schedule automatically created ahead of a critical six-hour shutdown period. Using the BIM model ensured we met the deadline.

### Jacksons Edge Service Reservoir



- Data from CFD proved that we could significantly reduce pipework requirements and size of the valve house.
- Laser scanning was used on the 'Thimble Chamber' - a miniature reservoir at Jacksons Edge. The laser scanner was lowered into the chamber, inverted on a pole and ratchet system, negating the need to enter the reservoir. This significantly reduced any risk of contamination and eliminated the need for a costly deep clean (required after man access).
- A quadcopter was used to take monthly aerial site progress photographs.

### Rivelin Water Treatment Works



- Laser scans of existing assets assisted the design process.
- CFD modelling confirmed that flow distribution across the clarifier floor plan will be equal, preventing any potentially hazardous areas of high/low velocity.
- Quadcopter photography enabled surveys of inaccessible site locations, improving safety and the need for expensive temporary works.
- We utilised the 'as built' BIM model of a previous scheme at Rivelin to quickly design a new recycle main, avoiding any clashes with existing pipework and the need for extensive site surveys.





▲ The safe unloading of pre-cast concrete panels at a service reservoir site near Peterborough



# “ If I cannot do it safely, I will not do it

There is a great deal we can all look back on over 2015 with pride; our health and safety performance is one of those areas. The start of any new AMP always has the potential for increased risk with new challenges both in the office and on site.

In 2015 we have been able to welcome many new faces; this along with new office locations has seen substantial successes on the back of a record number of hours worked. There are of course many employees who have been with us for a number of years and we thank you all for your contributions to the performance and for welcoming our new team members.

**Significant energies were focussed on supporting new employees in understanding the JN Bentley Safety Strategy and the roles and responsibilities they have.**

Special events were held at our new office locations for those colleagues tasked with delivering the new frameworks with United Utilities, our alliance ventures with Anglian Water and for the first time with Dŵr Cymru Welsh Water.

Year	Hours Worked	Hours Worked		First Aid Injuries	Medical Treatment/Lost Time Injuries (<3 days)	RIDDOR Reportable
		Unsafe Acts/Unsafe Conditions	High Potential			
2011	2,030,180	3,140	92	73	17	0
2012	2,237,691	4,550	75	98	9	1
2013	2,120,650	7,475	23	94	8	3
2014	2,215,675	9,516	14	49	6	4
2015	3,118,626	14,149	10	65	6	3

Here is a summary of our health and safety performance in 2015.

The QES team has grown to service these new areas and has delivered more on site support and inspections than ever before as we strive to support our clients' and our own vision of zero injuries.

Training has also continued to be an area of major focus with an intelligent and dynamic approach to workforce training enabling us to ensure all gangs are competent to undertake the tasks allocated to them.

In addition we have developed and trained key site personnel in the use of advanced cable mapping and location devices to help prevent our teams from contacting buried services during their operations.

Supplier engagement has broadened into our new business areas whilst losing none of its intensity. 2015 saw JN Bentley suppliers complete three years without a RIDDOR-reportable injury - another record and an industry-leading safety achievement. The record equates to over 1.75 million hours worked safely.

However three colleagues suffered injuries which caused them to miss more than seven

days of work, all of whom were undertaking low risk activities but where circumstances conspired to cause significant harm. One such event reminded us that injuries happen to support workers as well as operational employees.

Despite these incidents our reportable injury frequency rate currently stands at 0.10 injuries per 100,000 hours worked, the lowest level since 2012.

However, our determination to remove injuries from our workplace remains undiminished and 2016 will see a re-energising of our approach as we seek to move to the next stage in the development of our safety culture.

Last year we stated that we had a massive challenge ahead of us to keep improving our health and safety performance especially with the introduction of new frameworks and the arrival of new employees. We have gone a long way to meeting that challenge, but we will not rest until we reach our ultimate goal of preventing injuries and instances of work related ill-health.

# Our People

At JN Bentley we are committed to creating a fun workplace, where people have a voice, are safe, reach their potential and prosper, and where rewards are shared.

Led by our People Steering Group and their business plan targets for the year, 2015 saw us build on our talent management programme to ensure we attract, retain and develop our people across all roles.

We also added renewed vigour to our wellbeing strategy, introducing a number of new initiatives that you can read about on page 32.

We continue to promote from within wherever possible. 2015 saw 24 employees move into more senior positions, including three internal promotions to directorship level upon the conclusion of our successful AMP6 bids.

As turnover grows and the business goes from strength to strength it is more important than ever that we use creative initiatives and offer opportunity for progression in order to make JN Bentley an attractive place to work.

## Talent pipeline

It is important that we build and maintain a happy and skilled workforce that can deliver first class, innovative and cost-effective projects with our clients.

To do this, we begin by offering routes into employment at all stages, from school leavers to experienced professionals.

We then invest in training and development to ensure our people achieve their potential and make maximum progression: in 2015 our training and development budget stretched upward of £1 million.



### Apprenticeships

Our apprenticeship scheme is delivered in conjunction with the Construction Industry Training Board (CITB) and designed 100% in-house.

This means our apprentices have the opportunity to gain experiences and competencies specific to work we do, whilst working towards professional qualifications at the same time: a Level 2 QCF Diploma in Construction and NVQ Level 2 in General Construction.



Our previous batch of five apprentices successfully passed their qualifications, and in early 2016 we welcomed our latest intake - ten budding construction operatives (pictured above) who are based across our operational regions.

### Supporting students

We have a rich tradition when it comes to supporting students through annual intakes of school leavers, placements and graduates.

Joining from universities across the UK and based in offices and sites around our operational regions, placement students take on a range of both engineering and business-related roles.

We employed 31 placement students in 2015 – a record high. We also sponsored 11 students through their final year of university, and will welcome them back as graduates in 2016.

**In 2015 our people spent over 15,000 hours on a variety of different training courses**

### Development and training

To build a skilled and sustainable workforce we have formalised the talent management process to ensure our people are on the right path to achieve maximum progression.

We use development plans for core roles in the business, whether site or office based. These development plans support employees who show potential and a desire to broaden their skills, and ensure our people can deliver first-class work for our clients.

Training is hands-on, useful to employees' roles, and designed to challenge the participants.



“ At JN Bentley we are committed to creating a fun workplace, where people have a voice, are safe, reach their potential and prosper, and where rewards are shared.

## Meet our people

JN Bentley brings talented people in at all levels of the business and invests in their development with the aim of aiding their progression within the business. **Proof of this came in the form of the 24 internal promotions we made in 2015.**

Here you have chance to meet some of our people and hear about their stories.

### Tom Guilfoyle Site Engineer



Years @ JNB: 6

Joined JNB as:  
Apprentice

**Summary:** Attracted to JN Bentley by the company apprenticeship scheme,

Tom has progressed through the ranks since completing his initial training in 2012. He spent time working as a Site Operative before moving on to the role of Site Engineer.

“ The company has faith in anyone showing willing and will push you to develop yourself - assisting in the process by assigning mentors to help your development.

Tom's training continues at college on a part-time basis, helping him develop his engineering skills and improve understanding of different tools and equipment. He is also enrolled on the JN Bentley Engineering Development Scheme.

### Dave Crossman QES Advisor



Years @ JNB: 41

Joined JNB as: Plant Operative

**Summary:** Dave has been with JN Bentley much of his working life, site managing a whole

variety of different civil engineering schemes. He has recently made the move from move from the operational side of the business to support, in his new role as QES Advisor.

“ I have stayed with JN Bentley because I have enjoyed it and always been challenged. If you wish to get on and have ambition you could not work for a better company.

Periodically rotating colleagues between site and support is one that has served JN Bentley well. The approach means support provide better service because they have real working knowledge of the practicalities of our site operations.



# Meet our people

## Gemma Holmes Site Manager



Years @ JNB: 10

Joined JNB as: Summer Placement

**Summary:** Joining full-time after studying Civil and Environmental Engineering at

university, Gemma recently passed her chartership with the Institution of Civil Engineers (CENG MICE), and became the second employee to graduate through our Civil Engineering Development Programme.

**“ Every day is different and the work is varied. You're given opportunities to test yourself but given the support you need to be able to do this.**

Gemma recently designed, site engineered and then site managed a scheme to discontinue the reservoir at Oakdale. You can read about the project on page 23.

## Ryan Walters Site Engineer



Years @ JNB: 4

Joined JNB as: Assistant Site Engineer

**Summary:** Ryan applied to join us after qualifying from college with a BTEC Extended

Diploma in Engineering. The wide range of opportunities on offer appealed to Ryan, and he has spent his time with us working on a variety of different projects in the Midlands.

**“ Since starting at JN Bentley my responsibilities have increased whilst working in both site and office based roles. Working on different projects has broadened my understanding of the civil engineering industry and given me the skills I need to develop.**

In 2015, Ryan professionally-qualified as an Engineering Technician, and is now balancing his busy workload with studies towards the completion of the JN Bentley Civil Engineering Development Programme and a degree in Civil Engineering.



### Development and training (cont.)

Our civil engineers, mechanical and electrical engineers and quantity surveyors are assigned a mentor to support them through development plans that link with the development objectives of professional bodies, meaning they achieve a professional qualification as well as meeting our own internal standards. The bodies are:

- the Institution of Civil Engineers (ICE);
- the Institution of Engineering and Technology (IET); and
- the Chartered Institution of Civil Engineering Surveyors (ICES).

In the support team, employees have trained in areas such as procurement, qualifying with the likes of the Chartered Institute of Purchasing and Supply (CIPS).

**In total we currently have 24 employees enrolled part-time on a variety of different higher and further education qualifications.**

Subjects for these higher and further education courses include civil engineering, construction management, electrical engineering and business.

Many of the practical and management courses we offer – including training for Operatives and Lead Hands in abrasive wheels and working at heights, for example - are held in our own ConstructionSkills-accredited training centres in Skipton and Shifnal.



In 2015, 30 employees progressed through Integral Leadership (IL) training, achieving a Level 5 Award in Leadership from the Institute of Leadership & Management (ILM).

Two groups of IL delegates began their courses in early 2016, which included colleagues from Mott MacDonald as well as JN Bentley.

This will take the number of staff having completed the course to upward of 180.

## Health and wellbeing

**A happy, motivated workforce that feels valued performs at its best.**

Recognising this, we reviewed our employee wellbeing programme in 2015, re-structuring our approach to better promote the programme and tell our people what is available to them.

We introduced a number of new initiatives in 2015 to complement existing wellbeing benefits such as a health cash plan, occupational health reviews and free flu jabs.

New for 2015 were periodic wellbeing campaigns focusing on topics relevant to our workforce and their lifestyles, such as sun awareness, back care and men's health.

We also launched a new Wellbeing Prize Draw, a quarterly competition open to all employees that gives them chance to win a prize worth up to £1,000 to spend on something that will enhance their physical, emotional or financial wellbeing.

**In 2015 the prize draw made winners of 230 employees who chose prizes such as holiday vouchers, sports equipment and gym membership.**

## Recognition and reward

As the company's most valuable resource, it is important we recognise and reward the hard work and achievements of our employees.

We run a monthly employee recognition campaign called 'Be Recognised' that highlights those colleagues and subcontractors who have gone above and beyond when it comes to 'living' the JN Bentley values.

In 2015 we celebrated over 150 individual and team successes and shared stories of best practice, innovation, health and safety, community engagement, environmental stewardship and exceptional workmanship.

Employees voted for their overall 2015 winners at our company seminars in January 2016 before the worthy winners were presented with their prizes on site.



**Jamie leapt into action at Leeds Bradford Airport when he saw a man collapse.**

Whilst everyone else stood watching, Jamie used his first aid skills to attend to the gentleman, resuscitating him using CPR and ensuring the emergency services were called. Doctors later confirmed that Jamie had saved the man's life.

When it came to voting for their 2015 winner, colleagues were keen to recognise this selfless act from Jamie, who deserves huge credit for his quick action and courage to step into a situation that must have been terrifying for all involved.



**Our people regularly assist the local community as part of their projects, and this was exemplified on site by Mark Dolphin and Colin Throupe.**

Working in residents' basements as part of a scheme to resolve internal property flooding, Mark and Colin faced challenging access and timescales, but still achieved their outputs.

The team both received letters of praise for their professionalism, and for making the experience "as nuisance free as possible." As excellent ambassadors for JN Bentley the team are deserving winners of the team prize for 2015.



**Damian was praised for challenging a potentially unsafe condition.**

When new excavators were delivered to site, Damian raised an issue that - once relayed to the manufacturer via the Site Manager and Plant Team - has resulted in the design being amended and the change becoming standard practice all of the manufacturer's machines.

This is a great example of an employee being involved in health and safety and being willing to challenge if they see something potentially unsafe.



**Peter, Aaron and Dean were praised for going beyond the call of duty one weekend.**

Knowing bad weather was on its way, the trio agreed to stay on site in the Lake District to work with local residents and ensure properties were protected from flooding. The guys helped the council and residents with their pumps, and moved cars to prevent them being trapped by the flood waters.

The team remained 'on call' all weekend to attend pumping alarms, and were widely praised by our clients and residents.

**154**

Well done to all of the monthly winners from 2015, and to every one of the 154 teams and individuals nominated.

## Meet our people

### Jordan Garside Site Operative



Years @ JNB: 4

Joined JNB as:  
Apprentice

**Summary:** Jordan passed our apprenticeship scheme in 2015 after two years

of hard work learning the ropes. He has worked on a variety of schemes, from mine water treatment to security works, all the time developing skills that build on what he learnt during his apprenticeship.

**“The JN Bentley trainers really know what they're talking about and have a good breadth of experience. The apprenticeship was really hands-on rather than just classroom learning.**

In the months since his apprenticeship, Jordan has been pro-active in talking to the engineers on site, and will soon begin training to become an engineer himself when he begins a BTEC Level 3 Diploma in Construction and Civil Engineering.

### Emily Smith HR Assistant



Years @ JNB: 3

Joined JNB as:  
Placement Student

**Summary:** Emily joined JN Bentley through our popular university placement programme.

After a successful year with us on placement, Emily returned in 2015 as a graduate in the HR team and is enjoying the variety that the role provides.

**“One of the main things that encouraged me to return to JN Bentley as a graduate is the company's philosophy of 'promoting from within'. This makes me feel confident that there will be lots of opportunities for future development.**

Now working as a graduate, Emily's role has added responsibility, which challenges key skills such as organisation and communication. Emily herself is now mentoring one of our new crop of 31 placement students.



We recognise that our operations can have a direct impact on the different environments in which we work, and we understand our responsibility to the environment.

We are committed to continually improving how we not only protect the environment, but enhance it through our projects.

Our company vision is to achieve zero environmental incidents and legal breaches on all of our projects and at all premises.

We are committed to operating in an environmentally responsible manner, and believe that effective stewardship of both the natural and built environment is essential for maintaining JN Bentley as a sustainable business.

## Environmental engineering

Regardless of the type of scheme we are tasked with delivering, we always aim to leave behind a positive environmental legacy.

This legacy might be by constructing environmental enhancements such as fish passes, or simply leaving the site well landscaped and looking as if we were never there.

Often, our projects ask us to solve a specific environmental issue, such as flood risk. Many of these schemes are with the Environment Agency, and we have formed a joint venture with environmental consultancy Jeremy Benn Associates (JBA) as a specialist vehicle to deliver this work. Read about JBA Bentley on page 16.

## A greener fleet

We own and operate our own fleet of plant that ranges from excavators to crawler cranes.

We are committed to renewing and adding to this fleet to ensure we are working at our most efficient best.

New purchases in 2015 include seven 21T hybrid excavators, which use about 25% less fuel than traditional machines and are quieter to operate.

We've also purchased two new 'eco cabins', which use the generator to charge batteries and in turn significantly reduce the amount of fuel required, and 30 brand new, more fuel-efficient vans.

## Training

On a more local level, our investment in specific environmental training continues.

Delivered by our own in-house environmental specialists, the course targets a wide cross-section of employees and looks at areas of environmental risk, opportunities for improvements, and client and statutory requirements.

In the last two years, 170 employees have attended the training. A number of refresher courses are planned for 2016.

We have identified three key impact areas under which we focus our efforts:

### Pollution prevention

Often working in close proximity to watercourses and other environmentally-sensitive areas, preventing a pollution event is of paramount importance.

By encouraging all employees and suppliers to report all environmental incidents – however small they may seem – we increase awareness and gather valuable data.

 **66%**

2015 saw another significant increase in reporting levels, up 66% to 2,543. This is the sharpest increase in environmental reporting since our records began in 2007.

### Waste management

The company target is to maintain a diversion rate of waste from landfill of over 90%. We achieved this in 2015, diverting over 99% of waste from landfill, including 'muck away'.

This was achieved through the proactive nature of our people who look to minimise waste production in the first place, before reusing and recycling waste materials on site and with colleagues working nearby.

### Fuel and energy use

Our approach to reducing carbon is led by the Board of Directors. Paul Bentley sits on the Infrastructure Working Group, a delegation of the Green Construction Board which was established as consultative forum for government and UK industry.

JN Bentley has signed up to the Infrastructure Carbon Review – a joint initiative to reduce carbon in infrastructure – and now has representation on a panel shaping a new Publicly Available Standard (PAS) for carbon measurement and management.

T Carbon/ £M Turnover	2008	2009	2010	2011	2012	2013	2014	2015
Turnover (£million)	95	86	82	105	120	118	114.6	135
In-situ concrete	19.12	23.60	32.43	30.86	49.29	45.20	26.09	28.66
Rebar	17.25	17.84	31.71	26.62	27.49	20.63	4.66	12.64
Designed pre-cast concrete	-	-	-	-	-	11.56	5.44	18.94
Rebar supplied in POC	-	-	-	-	-	3.99	1.53	7.33
Manholes and covers	1.94	2.34	1.51	2.65	1.55	1.79	1.40	0.68
Aggregates quarried	9.12	5.45	7.57	4.88	4.77	4.32	9.66	10.91
Aggregates recycled	3.99	6.65	3.62	1.87	3.24	2.24	3.79	1.85
Aggregates coated	0.14	0.20	0.16	0.80	0.58	0.45	0.52	0.19
Gas oil	100.61	86.89	82.88	47.64	52.05	43.80	33.53	30.85
Subtotal	152.2	143.0	159.9	115.3	139.0	134.0	86.6	112.0
Diesel	22.04	23.71	24.95	18.75	20.09	21.58	23.11	16.09
Petrol	1.10	2.13	2.61	1.96	0.94	0.87	1.12	1.43
Natural Gas	0.43	0.63	0.15	0.09	0.40	0.57	0.25	0.29
Electricity	1.51	1.57	3.20	2.52	2.02	1.21	2.10	1.96
Linton Hydro	-	-	-	-	-	-1.58	-0.95	-0.98
Subtotal	25.1	28.0	30.9	23.3	21.9	23.3	25.6	19.8
Totals	177	171	191	139	161	157	112	132

Our energy and carbon monitoring is now into its eighth year, during which time the scale and nature of the company's operations has changed significantly. Despite this, over this eight year period there has been a significant overall decrease in operational carbon emitted from an initial 177 tonne CO<sub>2</sub>e per £1 million turnover in 2008, down to 132 tonne CO<sub>2</sub>e per £1 million turnover in 2015.

The decrease in energy-related carbon (i.e. gas, electric and fuel) has been relatively linear over recent years showing physical and behavioural efficiencies in plant, vehicles and buildings, whereas the CO<sub>2</sub>e associated with embodied carbon has been slightly more sporadic and work-type dependant and has been significantly influenced by AMP cycles in the water sector.

In 2015 embodied carbon increased significantly as a result of several large schemes that utilised pre-cast concrete. While this, to a certain extent, is out of our control, the use of pre-cast as best practice technology affords carbon savings compared to traditional methods.

Going forward, as the order books continue to grow, we will continue to invest in the most efficient plant, seek to pioneer new innovative design with lower OPEX costs, and continue to raise awareness through training to ensure we continue to reduce operational and embodied carbon associated with our work and its legacy of operation.

Pictured are on-going works at Springs Impounding Reservoir. Read more on page 20.

**“ We are committed to continually improving how we not only protect the environment, but enhance it through our projects.**



We make an annual submission to **Business in the Community's Environment Index**. This detailed environmental assessment measures our environmental performance and enables us to benchmark performance against our peers.

In 2015 we scored 97%, securing the top 'platinum' status. This is an improvement on 2014 and evidence of our on-going commitment to great environmental stewardship.

An environmental audit from **Achilles UVDB Verify** - the supplier management community for the UK utilities industry - scored us at 100% for both site and system performance.

We also received recognition for the construction of a new outfall at Warden in the North East, retaining **Northumbrian Water's Environmental & Sustainability GEM Award**.

You can read more on page 14.



JBA Bentley picked up its first award as we scooped a **Silver Considerate Constructors Scheme National Site Award** for repairs we made to a section of underground culvert in Stalybridge.



# Our Community

The nature of the work we deliver as engineers means we are often working in the heart of the community – whether this be in our offices or on our construction sites. It is important that we build up a rapport with the community, and leave behind only positive legacies.

Rather than make one-off philanthropic donations we encourage our people to give their skills, time and expertise to add value to their communities.

## School and college partnerships

Promoting the STEM subjects – science, technology, engineering and maths – and opening pupils' eyes to construction are at the heart of our work with schools and colleges.

Activities range from long-term student mentoring to one-off visits.

As well as benefiting the students, the events also act as valuable opportunities for professional development for our people.

In the Midlands we partnered with a secondary school to run the Engineering Education Scheme (EES).

We set a group of four A-level students a six-month challenge relating to a real life engineering brief. The students carried out optioneering and development before producing and presenting a report on their preferred solution. EES is great for developing skills in project management, team work, problem solving and communication.

We maintained our link with specialist engineering academy Skipton Girls' High School. Engineers mentored students through their engineering A-level, and a group of volunteers supported 'Water Week' –

an initiative promoting water conservation and the work of WaterAid. In December we were delighted to attend the opening of the school's new STEM Innovation Centre.

We have a number of employees registered as STEM Ambassadors. Using a hands-on approach to inspire the next generation of engineers, these Ambassadors have volunteered at a number of different events in 2015, including an airshow at RAF Cosford and a STEM event to celebrate the 50th anniversary of the Red Arrows at RAF Scampton.



## Award-winning success

The Institution of Civil Engineers (ICE) in the West Midlands recognised our efforts, presenting us with the Education Award for 2015.

This award recognised the partnerships we build with schools, such as running the ICE's 'Bridge to Schools' initiative that gives students opportunity to build a 20m suspension bridge with our STEM Ambassadors.

## Community projects

Many of our employees like to support a variety of community-based projects – 'giving a bit back' and building positive relationships.

To help introduce ourselves to the local area, our new team in the North West joined the client to help make the grounds at **Bury Hospice** more accessible and attractive for their residents.

We truly put our engineering skills into practice in **Gargrave, North Yorkshire**, carrying out a drainage survey of a playground in preparation for the installation of new modern apparatus.

Sarah Pawson, leading the playground project, said,

**"Without Bentley's help, the project would have suffered a major setback. When they heard about the plans for the playground, they were down the following week."**

Our people regularly assist the local community as part of their projects.

This was exemplified by long-serving Site Manager Mark Dolphin and Colin Throupe, who won Yorkshire Water's Customer Praise Award in May, before going on to be voted team winners of the 2015 Be Recognised Awards.



**"The difference you have made is unbelievable. The team worked so hard and all the people at the Hospice including patients, visitors and staff are amazed at the difference you have made."**

Julie Kilgallon, Bury Hospice

Pictured are examples from our three-fold approach to working in our community:

- **School and college partnerships** - with the aim of opening pupils' eyes to the world of work and engineering;
- **Community projects** - lending our skills, time and expertise to help with local projects; and
- **Charitable giving and fundraising** - raising thousands of pounds for worthy causes.



## Charitable giving and fundraising

Employees are a generous bunch at JN Bentley. They are regularly involved in fundraising activities inside and outside of work

Each quarter the business comes together to support a national charity, hosting quizzes, bake sales and auctions to raise money for the likes of Comic Relief, Children in Need and Macmillan.

As the photos demonstrate, our people in our different operational regions have hosted and taken part in a variety of other events to raise money for worthy causes.

We support employee fundraising efforts through a company 'matched fundraising' scheme. The popular initiative enables employees to claim up to £100 to supplement their own fundraising. In 2015 our people raised over £21,000 for various charities, with 36 employees claiming matched fundraising (listed below).

• Jonathon Aylwin | Macmillan Cancer Support • Christopher Beck | Macmillan Cancer Support • Neil Belcher | Sue Ryder • Mark Belcher | Sue Ryder • Dave Bellis | Nightingale House Hospice • Aimee Binns | Sue Ryder Manorlands • Alastair Binns | Sue Ryder Manorlands • Charlie Binns | Sue Ryder Manorlands • Caroline Cornish | Cancer Research UK • Isaac Dann | WaterAid • Richard Grayson | WaterAid • John Greenwood | The Kirstin Royle Trust • Les Hartland | ABF The Soldiers' Charity • Paul Hearn | Cancer Research UK • Adrian Hill | Hope House Hospice • Dave Holding | Stroke Association • Simon Hudson | Children's Heart Surgery Fund • Alan King | Brain Tumour Charity • Alan Morritt | Prevention of Young Suicide • Colin Nichol | 8th Darlington Scout Group • Gary Pickersgill | Friends of Alfie Martin • Jamie Purvis | Macmillan Cancer Support • Simon Rathbone | Hope House Hospice • Chris Reynolds | ABF The Soldiers' Charity • Mick Riddiough | Yorkshire Air Ambulance • Angus Ridge | Ataxia UK • William Sah | WaterAid • Graham Sharkey | MS Society • Helen Thompson | Prostate Cancer UK • Mike Timmington | Children with Cancer UK • Ryan Utley | Prostate Cancer UK • Paul Wallis | Cancer Research UK • Nicola Wilson | Airedale NHS Foundation Trust Charitable Funds • Mark Wood | Alzheimer's Society • Brian Yates | Childreach Nepal • Barry Young | Diabetes UK •



Given such a significant proportion of our work is in the water sector it only seems apt we work with our clients to support the WaterAid charity.

**We donated over £60,000 to WaterAid in 2015.**

Activity	2015 (£)
Charitable Donations (incl. philanthropic giving, sponsorship of events, gifts in kind etc.)	Company Donations (WaterAid)
	60,803
	Company Donations (Other)
	3,549
Fundraising	Employee Donations (Other)
	9,767
	Employee Fundraising
	21,476
	Company Matching
	3,487
<b>Total</b>	<b>99,082</b>



30 employees from JN Bentley and Mott MacDonald came together as 'Team MMB' to take part in the 'sportive' event that paved the way for the professional riders in the first ever Tour de Yorkshire.

Many used the event as an opportunity to raise money and support a charity.



▲ In the North East a group of volunteers teamed up with the client and a fellow contract partner to visit a nursery in Jesmond to give pupils chance to see a real "digger" in action.





# Looking Ahead

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With the water company AMP6 period (2015-20) formally starting on 1st April 2015, our broad portfolio of frameworks have started to feed new work through to our teams. This has not led to turnover increasing quite as quickly as we expected, but this is always difficult to forecast, and has been complicated by the new 'TOTEX' regime changing the way our clients make capital investment decisions.

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Notwithstanding, our new frameworks with Anglian Water, United Utilities and Dŵr Cymru Welsh Water are all now well established, and will deliver a combined revenue in 2016 similar to that being delivered through our long-standing clients Yorkshire Water and Severn Trent Water.

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**In October 2015 we added two further framework wins for Northumbrian Water, and we now enter 2016 with six main water industry clients, providing us with a well-balanced and diverse client mix.**

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We continue to expect overall workload volume to increase steadily throughout AMP6, exceeding £200m/year by mid-AMP,

seeing Mott MacDonald Bentley (MMB) firmly established as a leading solution provider to the UK water industry.

In the environment sector JBA Bentley's work for the Environment Agency will stabilise around £15 million/year. A further £3m+ will be added through long-standing framework work with the Coal Authority, for whom we deliver nationally-important environmental work in the minewater remediation sector.

In 2015 we have successfully delivered several projects for National Grid, and our challenge in 2016 will be to push on from this base.

We are fortunate in having support from the wider Mott MacDonald Group, for whom National Grid are a significant client, and therefore look forward to identifying and delivering opportunities, including design and build work, that can benefit us both.

We continue to engage with selective clients in the industrial sector. In 2015 we delivered our first project for BASF in Bradford, and will

continue to look for similar opportunities in 2016.

The growth the company is experiencing needs to be delivered safely, with high levels of customer satisfaction. The organisational changes we have put in place during 2015 create the team structure for this delivery.

We continue to see increased rates of positive safety interventions, and a consequential drop in injury rates. The company seminars, held in January 2016 at three locations across the country, allowed us to refresh the Safety Strategy and pave the way for further improvement.

The outlook for the company continues to be one of positive growth, which will bring many challenging, exciting and rewarding opportunities.

This growth comes because of the efforts and performance of our teams over many years – something of which we can all be proud.





Part of the Mott MacDonald Group

[www.jnbentley.co.uk](http://www.jnbentley.co.uk)

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