

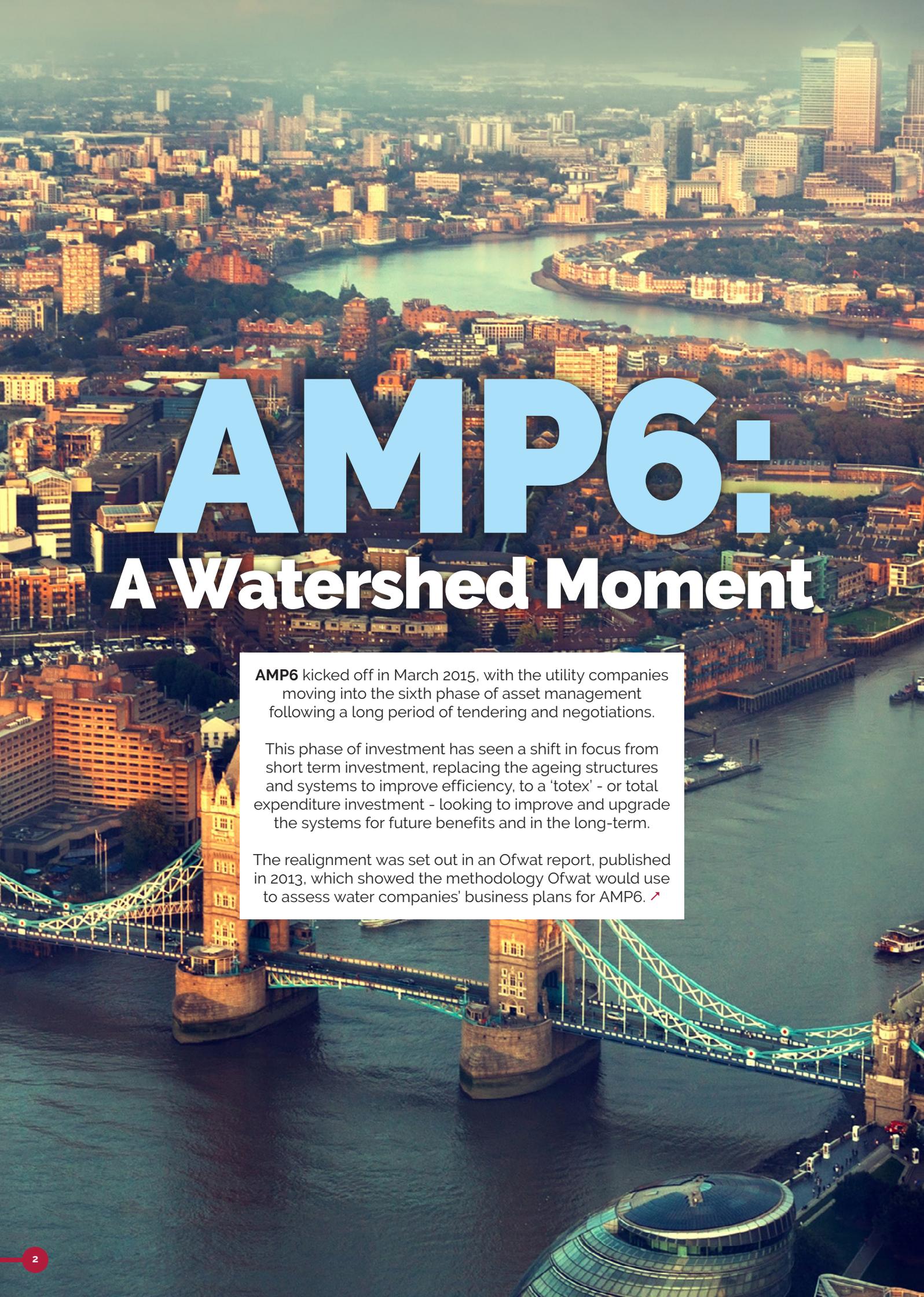
EBOOK



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AMP6

An aerial photograph of London, England, showing the River Thames winding through the city. The Tower Bridge is prominent in the foreground, spanning the river. The city skyline is visible in the background, with numerous buildings and skyscrapers. The lighting suggests a late afternoon or early morning setting, with a warm, golden glow.

AMP6: A Watershed Moment

AMP6 kicked off in March 2015, with the utility companies moving into the sixth phase of asset management following a long period of tendering and negotiations.

This phase of investment has seen a shift in focus from short term investment, replacing the ageing structures and systems to improve efficiency, to a 'totex' - or total expenditure investment - looking to improve and upgrade the systems for future benefits and in the long-term.

The realignment was set out in an Ofwat report, published in 2013, which showed the methodology Ofwat would use to assess water companies' business plans for AMP6. [↗](#)



The new methodology, which relates to water supply and sewerage in England and Wales, made it clear that the water industry's emphasis was shifting from the 'ticking regulatory boxes' approach of previous AMPs to focusing on value for money for customers.

For the first four AMP periods, water companies' business plans were dominated by the need to meet tough European Union legislation covering issues like wastewater quality and wildlife habitats.

This period will see water companies trying to get the most out of their existing assets and finding ways to minimise cost of operation.

The Ofwat document declared that water companies should be focusing on what it called 'long-term outcomes', which it hopes will encourage innovative ways of working that will deliver services for less money, and with less impact on the environment. As a result, the regulator expects to see substantial efficiency savings being delivered during the five year AMP6 period.

At the same time, Ofwat wants to encourage companies to manage water supplies more sustainably. It believes this will happen because the companies will no longer have a bias toward capital intensive and resource intensive solutions, and because it is introducing incentives to encourage the water companies to trade water and to source it from areas that do not damage the natural environment.

This shift in emphasis is leading to water companies looking for different skill-sets from their supply chains -

expertise that will help make more of existing assets.

The focus on long-term thinking is also being reflected in the way some water companies are looking to procure the firms that will deliver work during AMP6, with many opting for alliances, or for frameworks that run beyond the traditional five year AMP period.

Ofwat gave final approval to a £44Bn spend by water firms over the next period at the end of 2014, saying that the deals struck with the water companies will lead to 5% average fall in bills across England and Wales.

Jonson Cox, Ofwat Chairman, said: "This is an important step in maintaining customers' trust and confidence in the water sector.

"We set out to deliver a challenging but fair outcome. We are requiring companies to meet higher service standards and deliver on their promises to customers.

"We are bringing down bills so customers can expect value for money, while investors can earn a fair return. Companies will need to stretch themselves to deliver much more with the same level of funding as in previous years. We will achieve more resilient infrastructure and better service as a result."

Alongside the asset investment and upgrade, major projects set to take place include Severn Trent Water's Birmingham Resilience project, Wessex Water's integrated supply grid, and modernisation of United Utilities' Davyhulme wastewater treatment works, with the Thames Tideway Tunnel to be financed and delivered by an independent provider.

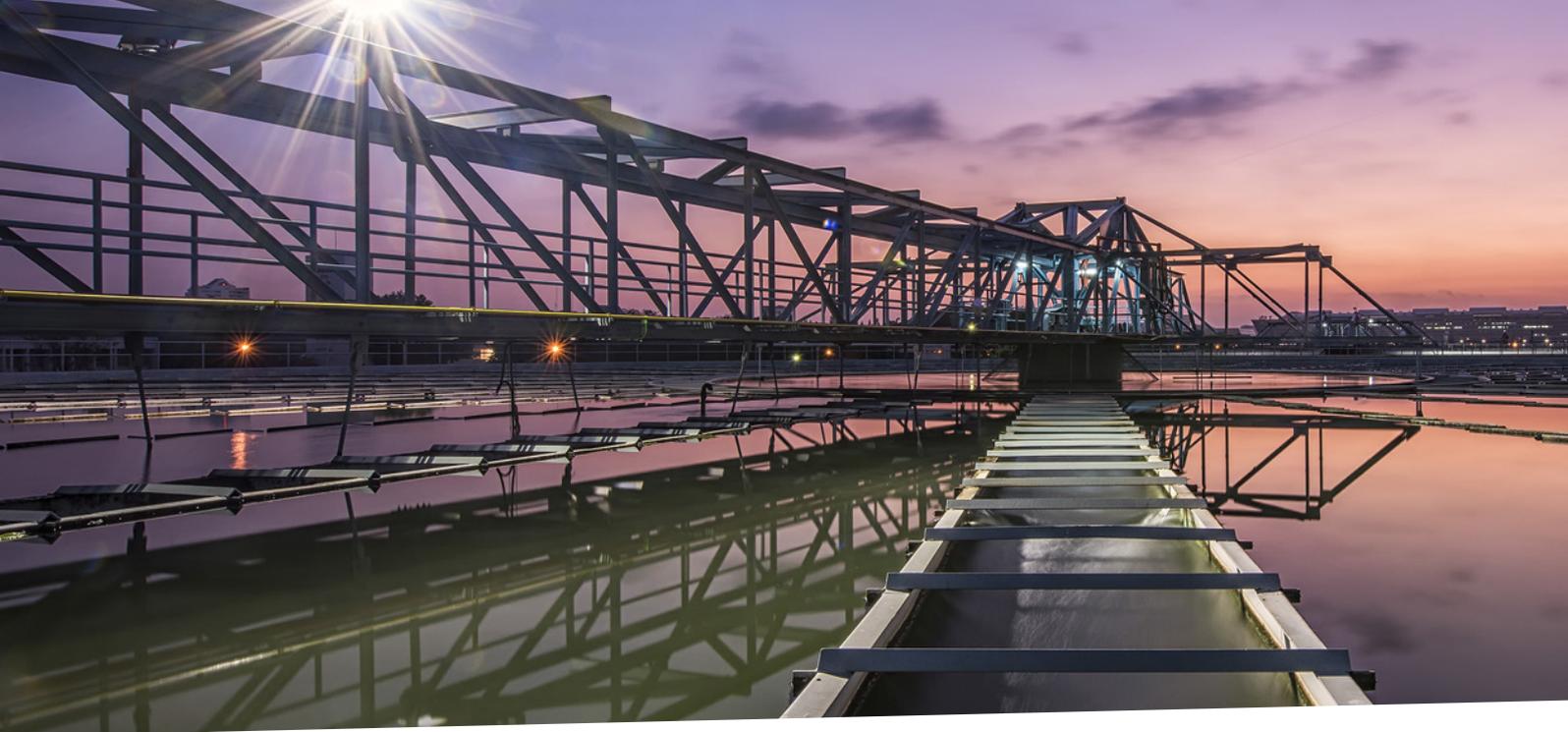


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Black & Veatch secures eight2O joint venture role

BLACK & Veatch has joined Thames Water's eight2O alliance, combining forces with Costain and Atkins (CABV) to form one of two design-build joint ventures.

The Business was welcomed aboard in a special ceremony at Thames Water's Reading headquarters, attended by high profile members of the Alliance, including Thames Water's newly appointed CEO Steve Robertson and Don Stevens from Black & Veatch.

Mr Robertson commented: "It is a pleasure to welcome Black & Veatch on board. The Company's expertise and capability will make a vital contribution to delivering the objectives of the eight2O alliance."

The CABV joint venture will be involved in every aspect - from design to construction and commissioning - of the creation of new water and wastewater treatment and carriage assets. In addition, it will be responsible for optimising the performance of new and existing infrastructure.

Black & Veatch will support each of these activities with real-time data analysis, achieved using the Company's ASSET360 tool.

Don Stevens - Black & Veatch's Executive Managing Director for Water in Europe, the Middle East and India - said: "We have worked with Thames Water for more than 20 years. Today we welcome the opportunity to make a contribution to eight2O, among the most innovative delivery alliances to date."

Scott Aitken, Managing Director of Black & Veatch Europe, added: "By providing expertise and tools for gathering and analysing data in real time we help support data and insight-driven service improvements that benefit Thames Water's customers.

"Efficiency, affordability, customer service and competition are among UK water companies' greatest challenges. Data is the common thread in meeting these challenges: more data, better data and, most importantly, better data analysis to allow

better informed decisions."

CABV will oversee asset creation and optimisation projects across Thames Water's territory in London and across the Thames Valley. Black & Veatch's experience in the Thames Water asset base - through its participation in AMP3, 4 and 5 frameworks - will complement the joint venture's support of the other eight2O partners.

Alongside Thames Water these include the Skanska, MWH and Balfour Beatty design-build joint venture, technology partner IBM and programme manager MWH.

Much of the initial investment has targeted works with the greatest impact on key customer outcomes, such as leakage reduction, flooding and energy efficiency. The latter includes large-scale combined heat and power (CHP) programmes at wastewater treatment works. ASSET360 has already been trialled by other water companies to optimise the performance of CHP assets.



Yorkshire Water celebrate £72M planning approval

A state-of-the-art £72M sludge treatment and anaerobic digestion facility - to be sited on Knostrop Wastewater Treatment Works in Leeds - has been given the go-ahead, Yorkshire Water has confirmed.

An in-depth application for the proposed bio-energy plant was approved by Leeds City Council's planning committee last month. Black & Veatch has since been appointed principal contractor, while Clugston Construction Limited will have responsibility for all civil engineering works.

The Knostrop Wastewater Treatment Works on Knowsthorpe Lane has been treating sewage from domestic households and industrial sites for close to a century. The newly-approved facility will replace an existing sludge and bio-solid incinerator - first constructed in 1993 - to ensure a more effective and efficient method of sewage treatment. Additional benefits include the innovative use of wastewater effluent as an expedient

source of renewable energy.

Nevil Muncaster, Director of Asset Management for Yorkshire Water, explained: "This is the single biggest investment of our current investment period (2015-2020) and will not only provide increased treatment capacity for our sludges but will also deliver significant operational cost savings enabling us to keep customer bills as low as possible.

"Knostrop is designated as a strategic waste site so by increasing the future sludge and bio-solid treatment capacity of the works the project will support also growth in the Leeds sub-regions."

Once operational in 2019, the new facility will be capable of processing 131 tonnes of dry sludge per day and, using pioneering heat and power technology, will generate an approximate 55% of Knostrop's energy needs - enough to power around 8,000 homes.

Benefits of the new facility include;

- A 15% reduction in carbon emissions across the Organisation.
- Provision of 55% of Knostrop's energy needs.
- A sizable contribution to the region's 94% sludge recycling target by 2020.

The development is the most recent milestone in Yorkshire Water's commitment to investing in renewable energy to benefit both the environment and keep customers' bills low. Furthermore, it supports Leeds City Council's aspirations for the Lower Aire Valley to become a hub for green energy and industry. Yorkshire Water intends to generate approximately 18% of its own energy needs by 2020.

In October 2014, a 123m high wind turbine was constructed at Knostrop which stands 12m taller than the landmark building, Bridgewater Place. This structure, which cost around £3.5M, is already a major source of power for the Knostrop site and will provide on average 10% of Knostrop's future energy needs.

Asset's acceleration aids Cornwall's waste-to-energy power plant



Asset expertise and Weholite technology are helping Cornwall to create a showcase waste-to-energy power plant to replace the county's shrinking landfill capacity. When complete, the new Cornwall Energy Recovery Centre (CERC) near the village of St Dennis will turn 240,000 tonnes of household waste a year into enough electricity to power 21,000 local homes.

Two advanced Weholite Modular tanks designed, prefabricated and installed, all within a month of commissioning, will enable main contractors Vinci Environment UK to manage complex waterflow through the site while also meeting strict environmental conditions for the state-of-the-art facility.

Cornwall needs alternative green methods to deal with non-recyclable household waste so the new CERC, operated by SUEZ recycling and recovery UK, will open later this year.

The challenge facing the Asset team was to design tanks that could cope with the high water table on the six-hectare site and withstand main traffic loading on top. Moreover the rectangular structures – measuring 3.5m x 20m x 3m – required walls of varying thickness in order to handle water at different temperatures during the power generation process.

The weight of the thicker modular tank was 40 tonnes as opposed to the concrete design which was more than 260 tonnes. In addition all the inside bespoke components of the tanks were prefabricated in the factory environment providing a solution ready to be installed.

The engineering team at Asset's state-of-the-art plant in Newport, South Wales, used specialised 'finite element' software to simulate conditions on site, which allowed them to design bespoke tanks to meet the client's specific needs.





Weholite's polyethylene solutions were chosen over competitors using more traditional materials – such as concrete – due to the fact that they are quicker to deliver and install, and exceed other materials in resilience and longevity.

Following design, each tank was pre-fabricated in two parts at Asset's Newport factory and assembled on site in Cornwall.

Transporting the load to St Dennis in central Cornwall proved straightforward enough, although the sheer size of the component parts meant the gate to the actual site had to be dismantled and reassembled in order to get to the installation point.

Despite this obstacle, delivery and installation were completed in only two days. Asset had an engineer constantly on-site to ensure the operation ran smoothly and to conduct an air test verifying the installation was watertight.

Vasilios Samaras, technical director at Asset International, explained: "This is an important project for Cornwall that will ensure a more sustainable solution to dealing with its household waste and diminishing landfill capacity. We were pleased our contribution provided a quality solution and saved the main contractor time."

Once opened, the CERC will provide a waste treatment facility that will serve the whole of Cornwall and comply with a number of requirements stipulated by the Environment Agency.

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Are Data Centres Causing a Global Water Crisis?

OPEN to all organisations involved in the management and delivery of water and wastewater assets, BIM4Water aims to assist the UK water sector in its adoption of Building Information Modelling (BIM) during AMP6.

Jon de Souza, Business Improvement Manager at Galliford Try and immediate past Chairman of BIM4Water, spoke with UK Construction Media about the creation and remit of the Organisation and the integral role that education and standardisation has to play in the successful adoption of BIM.

Could you first of all provide our readers with an introduction to BIM4Water? What would you describe as being the aims and objectives of the Organisation?

BIM4Water is the water sector's response to the growing push for BIM across the wider built environment sector which has been given greater impetus by the Government's BIM mandate. The Government's BIM strategy has been a mixture of push and pull. On the push side, the BIM Task Group has launched a number of BIM4 groups looking at various different sectors across the UK Construction market. BIM4Water is one such group. Each of these organisations exists to assist

its own part of the market in its BIM adoption and, essentially, this is our mission – to support those organisations in the water sector with an interest in BIM.

In terms of how we achieve this, five key priorities were decided upon by our membership and we have activity relating to each of these.

The first is a need to gather evidence from the water sector and elsewhere on the value of BIM. We're doing this through two main strands of work. Firstly, by using retrospective case studies to highlight warts and all stories from a number of sectors. We're not just interested in good news stories as we recognise that there is a huge amount of learning to be had from projects that perhaps don't go quite as well as intended.

We have also launched a programme of live demonstration projects. We've had a number of projects using aspects of BIM brought to us by our members. Those members are quite open to other organisations observing their progress through the design and construction process and into asset operation, to give an understanding of the impact that BIM has had on the success of the capital delivery and asset management.

The second area that we are looking at, which is interrelated as we need the evidence from real projects, is developing a business case for BIM in the water sector. We're hoping that we can produce a proper cost benefit for BIM, taking into account all of the relevant investment requirements and benefits.

Our third key work area is around the production of guidance. Our first output was our recently completed FAQ which is now available on the BIM4Water website.

One of the areas that has seen the most activity is standard libraries. Most manufacturing organisations in the water sector want a consistent approach to the data demands that are placed on them through project lifecycles. One of the worst things we could do as an industry is have as many different approaches to data as there are clients or contractors, and so the Standard Libraries Task Group is trying to produce a standard for what data is asked for from product manufacturers at different points of the capital delivery process. It's also looking at intelligent P&IDs and other areas around standard data.

The fifth area, which we're starting to work on now, is around Common Data Environments



for the water sector and how they relate to the BIM standards such as PAS1192.

What is your own professional experience? How did you become involved with BIM4Water?

I've been with Galliford Try for about three years. Prior to this I worked for Constructing Excellence – an industry improvement organisation which was involved in the development of the initial Government BIM strategy. Having moved to Galliford Try's water division, I was surprised to see that there was very little talk about BIM in the water sector.

With support from David Philp on behalf of the BIM Task Group, a small number of us were able to put together a BIM4Water group and I was delighted to be asked to chair the group on inception. The water sector has generally been quite forward thinking in adopting collaborative and integrated working practices and, with BIM being an enabler of better collaborative working, it seemed likely that water clients would understand the value of BIM.

What advantages can BIM offer the water sector, specifically in its delivery of AMP6?

The key benefit of BIM will come through the whole life value that it can help deliver. The expectation is that the use of a BIM process will enable optimum decisions to be taken at all stages in the delivery and management of a built asset with the greatest gains, including financial savings, coming in asset management thanks to clients having access

to the right asset data.

There will also be huge benefits from BIM in capital delivery, including using BIM as a way of engaging with the water company staff responsible for the operation and maintenance of an asset. The facilitation of a collaborative approach is central to the benefit of BIM. The use of BIM will not only improve the predictability of outcomes – in terms of cost, time and quality of the asset – but also support better health and safety and environmental performance.

Within our sector though, there seems to be a view from some quarters (which needs to be addressed) is that BIM is more related to capital delivery than asset management. And there are some technical challenges. For instance, I know that a lot of water companies have invested quite heavily in recent years in their asset management systems and in some cases there is a lack of understanding regarding how the data from a BIM process can be fed into those asset management systems as seamlessly as possible.

You've mentioned some of the difficulties facing the water sector with regard to BIM adoption. Are there any other significant challenges that BIM4Water is working to overcome?

The lack of Employer's Information Requirements from clients has been a challenge.

Quite a few clients have looked at early BIM pilot projects but certainly been rare that the client has come forward at the outset of the project with

a set of defined Employers' Information Requirements stating what data they want at each stage of the project. It's been left to the supply side to second guess what will be required. This isn't necessarily a criticism of clients because BIM is new to our sector and I think the best way that we can solve an issue such as this is to work together as an industry. I would like to think that this is certainly something that BIM4Water can play a role in because again, coming back to my point about standardisation, it would be nice if the requirements from different clients were broadly aligned.

There is also still a huge amount of education to do all the way through the supply chain. I think we're still coming up against a lack of understanding of BIM in the market and real evidence of BIMwash. For example, at BIM conferences I often hear people say that they're doing Level 3 BIM, but that can't be the case as that hasn't been properly defined as yet. All misinformation such as that does is undermine the confidence that both supply and demand side organisations have in what BIM can do. This BIMwash can also be a real issue in procurement.

Within BIM4Water we have representation from almost all of the water and wastewater companies. We're trying to get the message out, through our own networks and by working with organisations such as British Water and the Water industry Forum, regarding not only the benefits of BIM but also the reality of where we are as a sector and the journey that we need to go on collectively, to deliver those benefits.

Sewer infrastructure for the 21st century

LAST month, Welsh Water made public its partnership with a pioneering infrastructure initiative to ensure an efficient, environmentally and economically sustainable sewerage system for generations to come.

Chaired by Welsh Water's Director of Environment, Tony Harrington, the innovative '21st Century Drainage Programme' brings forth more than 40 organisations - from government bodies and water regulators to academics, local authorities and environmental experts. Together, each organisation has a mandate to safeguard health concerns, support local communities, and preserve the wider environment - both in the immediate and long-term future.

With climate change and population growth an ever-present concern, the '21st Century Drainage Programme' will work to cultivate a scientifically robust plan of action to better meet the infrastructure needs of an increasingly pressurised society.

Tony Harrington, Director of Environment at Welsh Water and Chairman of the '21st Century Drainage Programme', was on-hand to explain: "Welsh Water is proud to be playing its part in this innovative programme, and it's a privilege to be chairing the partners. Without adequate drainage, communities and businesses cannot grow, and we cannot properly support our environment. Today's report aims to set out the successes and challenges of the past and the scale of ambition for the future. This includes how we

should design our sewers in the future and tackle issues such as long-term sewer deterioration and potential ownership models for all drainage assets."

Tony continues: "We operate an extensive network of pipes and sites, with over 800 wastewater treatment works and 36,000km of sewers - enough to stretch to Australia and back if laid end-to-end - and ensuring the long-term sustainability of our network is a huge challenge. We also face the daily problems of sewer blockages caused by the wrong things being flushed down the toilet or poured down the kitchen sink. These cost our business around £7M every year and can flood homes and pollute local streams.

"Welsh Water's unique model with no shareholders means we've already been able to make innovative steps to future proofing our network, including the RainScape project - which reduces the risk of local sewer flooding by removing surface water from our sewers - and implementing our largest ever science and innovation programme that will play a part in helping us all secure a healthy and vibrant environment for years to come. We're also working with customers and communities through our award-winning behavioural change campaign 'Let's Stop the Block' to challenge customers to think before they flush."

Sewer blockages are a persistent and costly nuisance. Each year, hundreds of homes and businesses are swamped, while fresh watercourses and pristine beachfronts are

contaminated, thanks to the improper disposal of waste. On average, 28,000 such blockages occur each year, all of which are completely avoidable.

Imogen Brown, Head of Waste Water Networks for Welsh Water, had this to say: "We deal with over 2,000 sewer blockages every month and the majority of these blockages are caused by everyday items put down the toilet such as wet wipes, sanitary towels and cotton buds, as well as fat, oil and grease that people put down their drains. Some packaging wrongly labels things like wet wipes and sanitary products as 'flushable' when in fact they will cause blockages further down the pipe. A lot of people aren't even aware that these items can cause sewer flooding and pollution in their homes and communities."

The 'Let's Stop the Block' campaign is Welsh Water's solution to the problem. The initiative is an earnest attempt to engage with and educate frequent flushers on what not to flush. If consumers can be given a consistent message, perhaps that will make all the difference.

Imogen concludes: "Anyone who has suffered a flood in their home because of a blocked drain or sewer will know the damage and personal upset that it causes. With the collective support of enough people, we will be able to reduce the blockages, floods and pollution that cause so much distress. Reducing these blockages will also mean that our not-for-profit company will also be able to invest more in other improvements on behalf of our customers."



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