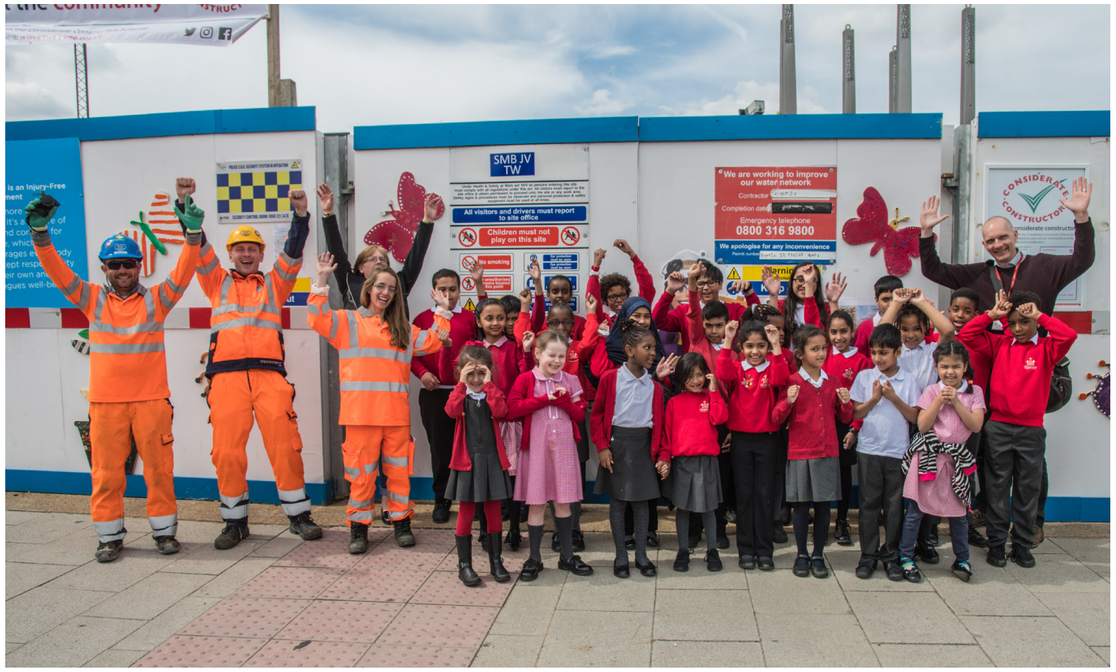
Two sides of a coin

A strong and sustainable supply chain and efficient charges for utility customers

July 2019

Balfour Beatty

Foreword



The term 'infrastructure' conjures up images of roads and bridges, skyscrapers and railways. But one of the most important types of infrastructure is of course the 342,877 kilometres[1] of pipes and the other facilities that bring clean water to our homes, and carry away runoff and waste. These are an essential part of our everyday life and the burden of responsibility for those operating them is incredibly high.

The water sector is facing well-documented challenges on a number of fronts. From the pressures on the system relating to climate change and ensuring it meets increasing demand linked to population growth; to upgrading aging infrastructure, particularly the network of underground pipes; skills shortages; improving network resilience; and a need to keep costs down for customers, the sector needs to ensure it has the vision, strategy and the right partners to deliver.

The construction and infrastructure industry has a key role to play in this. It builds and maintains many of the assets, working in partnership with the water companies. And much of the innovation which we will increasingly rely on to keep down customer bills comes to the sector via the construction supply chain.

Balfour Beatty supports the objectives of Ofwat's 2019 Price Review (PR19) for the water industry to increase investment while ensuring affordable bills for consumers. However, we are concerned that the current balance of risk and return may in fact increase the costs for consumers over the long-term by both disincentivising investment in innovation and skills, and simultaneously destabilising the supply chain, making it less productive.

This paper discusses these issues and provides Balfour Beatty's expert advice on some of the potential solutions.

Mark Bullock
Chief Executive, Rail and Utilities

[1] Water UK; England and Wales, Apr 2017 - Mar 2018

Key points and recommendations

1. Procurement processes must deliver sustainable margins in order to ensure a stable, resilient supply chain which can invest in skills, innovation and equipment.
2. Tier 1 businesses are already beginning to 'no-bid' certain contracts because the poor commercial terms being offered are unsustainable. If this becomes a trend, we believe it will become a problem for the water sector.
3. Greater certainty is needed before the supply chain will invest in research, development and innovation.
4. Contracts which share risk and reward fairly are more likely to provide an environment in which innovation can flourish than traditional procurement routes which see the supply chain bear the risk and the client take the reward.
5. Failing to address the skills gap in the water sector will hold the industry back and put at risk the delivery of the network customers need and deserve at a price they can afford.
6. The water sector has a particular skills challenge in that other areas looking for people with the same skills can offer higher salaries and the cachet of working on high-profile schemes, such as HS2 and Hinkley Point C, or secure well-paid roles in other sectors such as financial services.
7. With demand for workers outstripping supply, wages are likely to be driven up, which will have a knock-on impact on construction costs. This further impacts the ability to deliver schemes to budget and puts already stretched margins under strain. Ultimately, it is the customer who will carry the burden.
8. Given the significant infrastructure pipeline, contractors are making conscious decisions about where they deploy their people. Those schemes which allow contractors to make a reasonable margin are likely to be prioritised.
9. The funding certainty provided by the AMP cycle has not yet fully addressed the stop-start nature of contracting. Indeed, the cyclical nature of the AMP approach means that skilled staff can be lost as one AMP ends and before the next begins. We must find a way to smooth the peaks and troughs that lead to this situation and welcome work already being done in this area.
10. There is currently little effective collaboration amongst companies on some of the key challenges they all face, for example, aging assets and leakage. This is something which should be addressed.

Case study: The Anglian Water @one Alliance

In response to the challenge to reduce costs while delivering customer outcomes and effectively maintaining their assets, Anglian Water needed a new and more innovative way to deliver work. The tried and trusted traditional procurement and commercial models were not producing the reduction in cost base required, so it developed a collaborative alliance of designers and contractors with an incentivised commercial model.

The first iteration of the model was developed in 2004 and has now evolved into a mature alliance of consultants and contractors working together to deliver more than half of Anglian Water's capital investment programme. @one Alliance is responsible for designing and building around 800 schemes worth approximately £1.2billion between April 2015 and March 2020 (the AMP6 investment period), working closely with Anglian Water operations teams and other key stakeholders.

The alliance, which consists of six partners, including Balfour Beatty, working with Anglian, has a common programme pool to incentivise performance and promote the sharing of best practice across the entire supply chain. It has consistently exceeded the efficiency targets set by Ofwat for each investment period.

The contract is for the entire five-year regulatory period, from 2015 to 2020, with extensions which could take it to 2030, making it one of the longest collaborations in the sector.

Balfour Beatty provides both design and construction services across the whole of Anglian Water's region. Work is mainly focussed on clean water infrastructure (water mains), but also includes wastewater pipes and non-infrastructure projects, such as treatment works.

A sustainable supply chain

Balfour Beatty believes that delivering efficient charges for customers requires, amongst other things, a sustainable supply chain. This is necessary for two key reasons:

1. Stability. This is critical in order to avoid the disruption which drives cost increases as was seen in the aftermath Carillion's collapse in early 2018. This had an impact which was spread well beyond the immediate sector. The company left almost £1bn of debt, over £500m of pension deficit and around 30,000 unpaid subcontractors, as well as delayed schemes and a significant financial impact on the taxpayer. It drove a 20% "domino" increase in the number of UK construction companies becoming insolvent[2], with small and medium-sized subcontractors feeling the greatest impact.
2. Investment - in skills, innovation and equipment. A sustainable supply chain, with long-term relationships with those commissioning infrastructure and a visible, reliable pipeline is one which is able to invest in the things which will keep costs down in the future. There can be no investment if contracts are characterised by a short-term outlook.

Both of these points relate to procurement processes. Contracts must deliver sustainable margins in order to ensure a stable, resilient supply chain which can invest in skills, innovation and equipment.

However, although there are notable exceptions, the current relationship between some water companies and the supply chain can be transactional and adversarial, with too great a focus on driving down bids for the initial capital cost and little understanding of the actual cost of delivering schemes. The result of this aggressive procurement approach is that contracts that are drawn up and awarded without a proper scrutiny or understanding of what work should cost, so that risk is neither properly appreciated nor appropriately allocated. Disputes, which ultimately stand in the way of productive, collaborative long-term relationships, are commonplace. Contractors have the choice between taking on work that may well turn out to be loss-making, or walking away.

Unless the changes that have begun in some parts of the public sector, through moves such as the Outsourcing Playbook[3], are adopted by the water companies, Balfour Beatty believes the industry faces an increasingly uncertain future. Contractors are operating on an unsustainable business model – and have been doing for some time. The financial crisis followed by austerity, teamed with the industry's structural issues, have resulted in a construction sector which has, for over a decade, made only very slender profit margins[4]. Indeed, last year, the top 10 UK contractors made a combined margin of less than half a per cent on turnover of £31bn[5]. Meanwhile, labour and material costs have risen, particularly since Britain voted to leave the EU in 2016, leaving the industry squeezed on both sides. This is no longer sustainable.

We believe that, while in the past, contractors have been forced to accept contracts which are undeliverable at the tendered price, this is increasingly less likely to be the case. Unlike during the height of austerity when many loss-making contracts were signed, there is now a full pipeline of work including ambitious, high-profile schemes including HS2 and Hinkley Point C. Contractors are more able to choose what they bid. This means that, of course, they will choose contracts where they are able to make a reasonable margin.

Tier 1 businesses are already beginning to 'no-bid' certain contracts because the poor commercial terms being offered are unsustainable. If this becomes a trend, we believe it will become a problem for the water sector.

Of course, there will always be other, smaller companies willing to take on the work in spite of the unfavourable commercial terms. However, even this requires demobilisation, remobilisation and a learning curve which drives cost inflation due to inefficiency in the sector.

Balfour Beatty believes that if the priority were to become value rather than lowest-price-wins, the result would be improved outcomes benefitting the customer.

[2] Moore Stevens, October 2018
[3] The Outsourcing Playbook, HMG, February 2019
[4] Construction News 100
[5] Building, https://www.building.co.uk/top-150-contractors-and-housebuilders-split-fortunes/5094846.article, July 2018

Innovation

Innovation is rightly one of four key themes within Ofwat's Price Review 19 (PR19), which addresses the future challenges the water industry is facing. Innovation will be the way in which the sector will mitigate continued significant increases in water prices over the long term for the customer. It offers the best way of ensuring that the £50 billion of investment planned by water companies between 2020-2050 is spent as effectively as possible, while delivering the 21st-century water infrastructure the country needs.

However, the water sector has been slow to modernise and adopt new technology. While innovative approaches such as Building Information Modelling (BIM), the use of drones and Design for Manufacture and Assembly (DfMA) are being used on new infrastructure schemes including new treatment works and state-of-the-art schemes such as the Thames Tideway Tunnel, the approach with regard to existing infrastructure remains largely reactive and manual. Some water companies are adopting technologies such as predictive analytics to understand and optimise the asset, identify potential assets failures and ensure repairs are undertaken quickly, allowing engineers to access real-time information on hand-held devices. However, in many areas, companies remain reliant on members of the public reporting leaks, or on the age of the asset to drive decisions on maintenance – both of which are inefficient.

Balfour Beatty believes there are several areas where change must happen more quickly:

- While there are many areas where innovative solutions could be developed to reduce inefficiencies and optimise existing assets, certainty is needed before the supply chain will invest in research and development and innovation.
- The existing system can stifle innovation as competition between companies restricts the market for the businesses that bring forward innovation but do not want to offer them exclusively to one company.
- Contracts which share risk and reward fairly are more likely to provide an environment in which innovation can flourish that traditional procurement routes which see the supply chain bear the risk and the client take the reward. Water companies will only see the innovation they hope for if the contract accurately represents the nature of the risk distribution required. Examples of this exist in the water sector, but are the exception rather than the rule. In these cases, success is characterised by collaborative agreements; risk sharing; Early Contractor Involvement (ECI); and Target Price Contracts with pain gain mechanisms.
- There is currently little effective collaboration amongst companies on some of the key challenges they all face, for example, aging assets and leakage. This must change. We welcome initiatives by Ofwat to assist in this area, such as Regulators' Alliance for Progressing Infrastructure Development (RAPID).

The sector must go beyond its traditionally risk averse approach and the tried-and-tested, towards a genuine innovation mind-set. It must move more quickly to a position where there are full 3D models of the network with embedded sensors which predict asset failures before they happen and enable less digging and disruption. However, moving to a data-driven model will require a significant cultural shift.

Case study: The eight20 alliance

Thames Water is using alliance contracting to deliver infrastructure development and maintenance projects.

In 2015, Balfour Beatty, in its joint venture with Skanska and MWH Treatment (known as SMB), signed a five-year contract with Thames Water. The SMB joint venture is providing water asset solutions as part of Thames Water's 'super-alliance', known as eight20 – the largest alliance in the water sector.

Together, the alliance is carrying out £1.75bn of capital investment work during the AMP6 period (2015-2020).

Thames Water, the UK's largest water and sewage company, is using the alliance model to improve efficiency in the delivery of its business plan. The members of the alliance are rewarded or penalised based on their collective performance, according to the size of their stake. Incentives are aligned to Thames' PR14 business plan outcomes. It operates entirely on a totex (total expenditure) basis, in line with PR14 principles.

The alliance's approach includes 'stagegate reviews', which mean that projects only move to the next stage of design if innovation has been considered. There is also an 'Innovation Hopper' for innovative ideas, which reviews the business cases, assesses their likelihood of success and the potential Return on Investment. A Risks, Opportunities and Investment (ROI) fund is available to help develop and pilot ideas.

This collaborative approach, which includes a shared identity, joint team working based on unanimous agreement, and an integrated supply community, marks a complete transformation in the way Thames Water delivers capital investment.

Skills

The water industry directly and indirectly employs over 210,000 people in the UK[6]. However, in common with other parts of the construction and infrastructure industry, it is currently experiencing skills shortages driven by a range of factors, from the cyclical nature of investment, a failure to develop specialist talent since the 1990s and an aging workforce. Indeed, it is well-documented that thousands of those working in the construction and infrastructure industry, including the water sector, are aging and expected to retire from their positions in the next decade: estimates are that 63,000 vacancies will need to be filled across the industry by 2027[7].

Little progress has been made in the past few years in increasing the flow of people into the sector. The entire construction and infrastructure industry is facing the same issue, with not enough young people studying the right subjects or choosing careers in the sector. However, the water sector has a particular challenge in addition to this, in that other areas looking for people with the same skills can offer higher salaries and the cachet of working on high-profile schemes, such as HS2 and Hinkley Point C or secure well-paid roles in other sectors such as financial services. Similarly, in terms of those already working within the sector, there is growing competition for skilled individuals from other engineering fields, as significant investment in national infrastructure and an unprecedented number of high-profile schemes puts pressure on a talent pool that is already too small.

With demand for workers outstripping supply, wages are likely to be driven up, which will have a knock-on impact on construction costs. This is already happening across the construction sector[8]. This further impacts the ability to deliver schemes to budget and puts already stretched margins under strain. In some cases, a shortage of skilled labour puts the deliverability of schemes at risk. Ultimately, it is the customer who will carry the burden.

[6] https://www.euskills.co.uk/about/our-industries/water/
[7] Energy and Utilities Skills, November 2018
[8] Randstad Construction, Property & Engineering, June 2019

In Balfour Beatty's view, these are the key areas that need addressing:

- Given the significant infrastructure pipeline including HS2, Hinkley, Heathrow, and the Highways Regional Investment programme, contractors are making conscious decisions about where they deploy their people. Those schemes which allow contractors to make a reasonable margin are likely to be prioritised. The contracting models being used therefore have a significant impact on the skills shortages the water sector is facing and companies must ensure they have a procurement model which strengthen, rather than weaken the sector.
- The funding certainty provided by the AMP cycle has not yet fully addressed the stop-start nature of contracting. Indeed, the cyclical nature of the AMP approach means that skilled staff can be lost as one AMP ends and before the next begins. As these people find secure work elsewhere in the construction and infrastructure industry, it can be difficult to attract them back to the sector. We must find a way to smooth the peaks and troughs that lead to this situation and welcome work already being done in this area.
- We must do more to attract talented people into the sector, working with Government to improve the Apprenticeship Levy and with schools, colleges, universities and parents to showcase the industry. Those graduating with degrees in electrical and civil engineering have a range of potential employers and sectors competing to employ them. Similarly, once the potential of innovation is fully embraced by the water sector, it will become ever more important to attract people into the industry with new skillsets, including machine learning and data analytics. However, these people will be targeted and tempted by other areas of the economy as well as other parts of the construction and infrastructure industry. We must demonstrate that this is an immensely fulfilling field, where those working in it have the satisfaction of seeing their work realised and providing an enduring legacy for many years.
- The sector must focus on recruiting and retaining a more diverse workforce – one which is more representative of the customer base water companies serve than the current workforce which is less diverse than the wider UK workforce, and indeed the population more broadly, on every measure[9].

Concerted, coordinated action is needed to tackle these skills shortages head on.

Case study: Thames Tideway Tunnel

Running underneath the River Thames, the new tunnel will ensure the capital's sewerage system is fit to support its projected population for at least the next 100 years. It will also tackle the issue of discharges of untreated sewage that currently enter the River Thames on a regular basis.

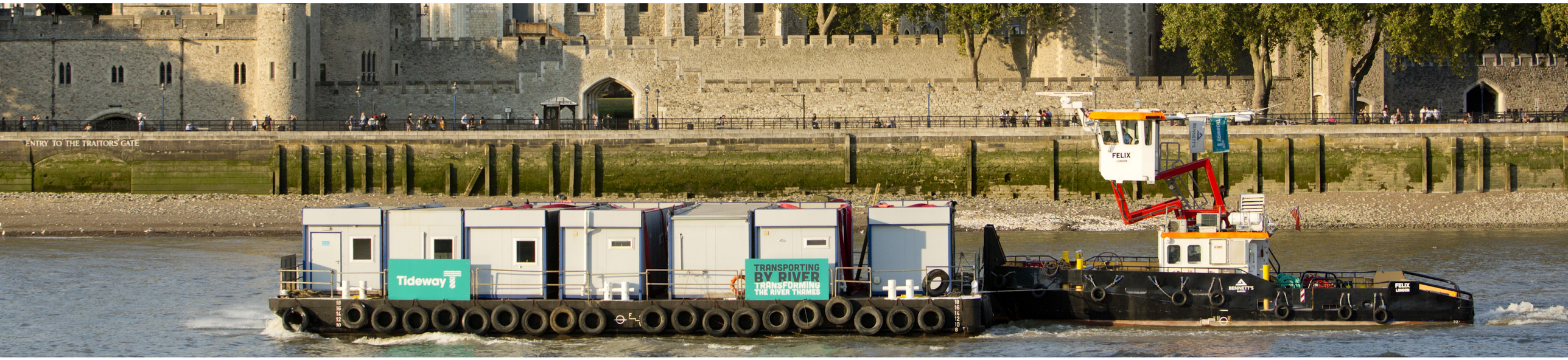
Working in a three-way equal joint venture alongside Morgan Sindall and BAM Nuttall, we will deliver the £416 million, six kilometre 'West' section of the overall 25km Thames Tideway Tunnel.

From Acton in West London to Wandsworth in South West London, the project will incorporate seven separate work sites along the route. Works will include design, construction, commissioning and maintenance for a two to five year period following construction completion.

This unique infrastructure project, which is the largest ever undertaken by the UK water industry, is another example of the part we are playing in 21st Century engineering.

Using Building Information Modelling (BIM), we will test and simulate construction before works start on site for safe and efficient delivery. A large percentage of project materials will be transported down the river to ease road congestion, emissions and disruption throughout the duration of the project.

The overall Thames Tideway Tunnel scheme will create more than 4,000 direct and indirect jobs at the peak of construction. Throughout the project, we will engage with local businesses and SMEs, providing local job opportunities including 50 new apprenticeships demonstrating our commitment to inspire and upskill a new generation.



[9] BEIS Labour Force Survey, 2017/2018

Conclusion

An efficient, innovative water sector needs a resilient supply chain. This, in turn, requires new contracting models and an understanding that traditional, aggressive procurement approaches have damaged the supply chain. Conversely, failing to address these issues will hold the industry back and put at risk the delivery of the network customers need and deserve at a price they can afford.

Balfour Beatty is working closely with its water industry clients and with other key stakeholders to encourage a long-term approach which delivers for the end-user. But the whole industry must take strategic, coordinated steps and a holistic view of the situation to safeguard future innovation and efficient charges.

About Balfour Beatty

Balfour Beatty whose first contract was awarded in 1909 is a leading international infrastructure group. With 15,000 employees across the UK, Balfour Beatty finances, develops, delivers and maintains the increasingly complex infrastructure that underpins the UK's daily life.

Balfour Beatty's Gas and Water teams work across the UK and Ireland, supporting a stable and safe supply of these vital services. Our water operations cover the whole lifecycle of networks, including clean and waste water mains, metering, treatment facilities and other essential infrastructure.

Working closely with our supply chain, we employ industry-leading approaches such as BIM and offsite construction to bring cost and time efficiencies to projects.

Balfour Beatty has a long history of working in the water sector, but we also work across a number of related, regulated sectors which gives us both a wide range of experience in this area, teamed with the ability to cross-pollinates ideas from others.

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