

Balfour Beatty

# update

THE MAGAZINE FOR ALL OUR PEOPLE

ISSUE ONE 2012

[update.balfourbeatty.com](http://update.balfourbeatty.com)

## THE RIPPLE EFFECT

WHY WORKING  
TOGETHER AS  
ONE WILL HELP  
STRENGTHEN  
OUR EXISTING  
CUSTOMER  
PARTNERSHIPS  
AND LEAD TO  
LONG-TERM  
RELATIONSHIPS  
WITH NEW  
CLIENTS

### MINING

A rich resource of transport infrastructure opportunities

### BRAZIL

Beyond the beaches of this booming economy

### WATER

How we are tapping into technology solutions

### LONDON

A diver on Olympic hopes and the Aquatics Centre

“

## We all share a responsibility to keep ourselves and others safe by identifying and eliminating risks and carrying out work as instructed, as long as it is safe to do so

To both new and existing customers, we need to demonstrate our end-to-end knowledge and our ability to forge the strong partnerships needed to create world-class infrastructure. To do this effectively, we must work, think and act as one. These actions will create a ripple effect, helping us to become more efficient, offer more value to our customers and attract new clients. Our customers will recognise that this is a fundamentally better way to deliver society's infrastructure.

By the time you read this, you will have taken part in the global safety 'stand down' day on 20 June. You will know that we are urgently renewing our focus on our Zero Harm goals following a number of recent injuries and fatalities. As well as a commitment to working together to share knowledge, we all share a responsibility to keep ourselves and others safe by identifying and eliminating risks and carrying out work as instructed, as long as it is safe to do so. To reinforce the stand down day, our next Spotlight will now focus on its outcomes and learnings, and what we can all do to keep every one of us safe.

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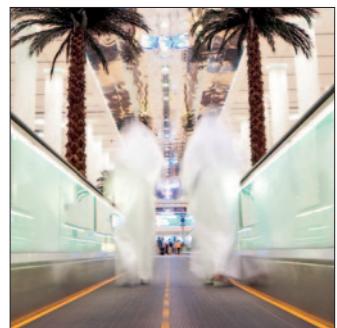
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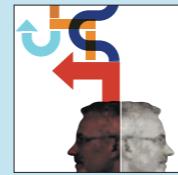
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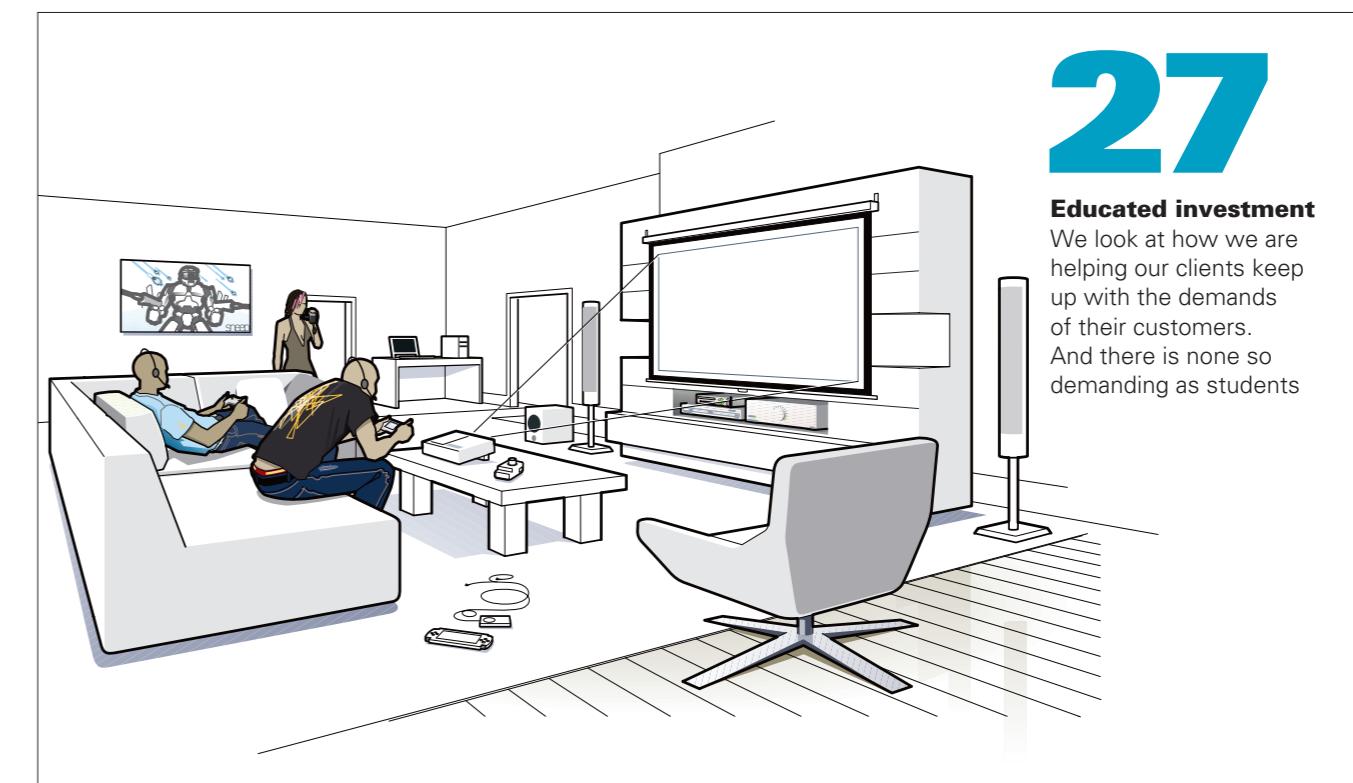
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**Follow our lead** How Balfour Beatty project managers are using their end-to-end knowledge to help private and public companies work together



Cover image: Max Ellis

# CONNECT TO LEARN

A deep and varied knowledge of infrastructure and infrastructure performance is our competitive edge. With effective ways to collaborate internally, we can bring more to the table for our clients, says Kevin Craven



**Kevin Craven**  
is CEO of Support  
Services at  
**Balfour Beatty**

**W**e are changing the way we work with clients. We have 50,000 employees working across more than 80 countries and a 500,000-strong community of partners, subcontractors and suppliers. The experience our people have amassed gives us an enormous breadth and depth of knowledge, which enables us to have more informed conversations with clients, probing their project specifications for a deeper understanding of their needs. This approach is proving to be effective in the current economic climate, where customers have to deliver ever more complex projects on tighter budgets.

How do we enable better conversations? Backstage, we need to create collaborative teams, bringing together skills from our different specialist groups, to assess client needs and find efficient ways to meet them. Alongside this, we are building rigorous client relationship management programmes, which involve regular meetings between senior managers in Balfour Beatty and our client companies and tailored relationship development plans. All these efforts are helping us to have more focused conversations with our clients.

They are leading to new business opportunities too. Because we

understand clients' businesses and they come to know our different capabilities, we are often invited to compete for new projects. Our quarterly meetings with senior managers at a major utility, with whom we have worked on several projects, have provided us with a clear picture of the business and feedback on our performance, and helped us most recently develop an opportunity to compete for the utility's new power generation project.

How successful we are in our new approach to delivering value to our clients will depend hugely on two factors – the processes we design to make information exchange within Balfour Beatty easy, and whether we can bring about a culture that encourages knowledge sharing and collaboration. In an organisation as diverse as ours, in terms of both geography and business streams, that is not an easy task. We are still in the early stages of that journey but we are making progress.

## Networkers

Client demands for more complex projects are naturally making us break out of our different divisions and pull together our resources to find the right skill set for every project. We are nurturing these early indicators of a knowledge sharing culture through various people networks. There is now a team of 80 networkers in Omega, representing different roles and locations, tasked with actively promoting collaboration and knowledge sharing. This team will be expanded eventually to include 400 employees. Another example of

these groups, B Bright, has been introduced specifically for the company's youngest types of professionals. The aim is to network in the UK and share their knowledge. To facilitate this collaboration, we are putting in place a knowledge sharing platform with a total investment over the next few years of £10 million. How we are building this IT backbone is, in itself, an example of collaboration, with teams from our offices in London and New York combining their expertise.

We are creating an environment with the tools and culture to help people connect with and learn from others. Knowledge remains our competitive edge and it grows only when shared.

*Balfour Beatty has received the BS11000 certification for its collaborative practices with clients. For details, see update.balfourbeatty.com/category/knowledge-sharing*



**We are nurturing a knowledge sharing culture through various people networks**

# SIMPLE, AGILE, RESPONSIVE

Balfour Beatty Construction Services UK is simplifying its structure to become a more agile business aligned to customer needs. CEO Mike Peasland is involving staff to help design the new structure and to see how the changes are received

"It's about creating a collaborative culture that empowers our employees and engages our supply chain to deliver innovation and value for our customers". That's how Mike Peasland, CEO, Balfour Beatty Construction Services UK (CSUK) described the transformation that the business is going through in order to become acknowledged, valued and rewarded as the business that defines the sector.

Mike is no stranger to change, having seen the company grow substantially over the past 42 years since he joined it but, in his experience, this will mark a significant change to the way the construction business in the UK will operate.

He has a steely determination to get it right. To do so he wants to understand how the changes are being received in the business. That's why Mike and Kathryn Marshall, CSUK Chief People Officer, invited colleagues Steve Tomkins, Kate Lewis and Jack Skinner, who have been acting as employee representatives throughout the consultation process, to a breakfast meeting for an informal discussion about the process to date.

They all strongly agreed that the proposed move to a structure with



three business streams and four regional hubs would avoid unnecessary duplication and help improve the experience for the customer.

"People understand the need for change; they just find it odd that we haven't got a masterplan or an organogram already worked out," says Steve, Contracts Manager at Balfour Beatty Civil Engineering.

Mike acknowledged that people could see this as an unusual way of doing things, but pointed out that the approach was a symbol of change in itself.

"We don't have a masterplan in our back pocket, it's more of a floorplan – a blueprint with the customer running right through the centre and we are building it from



there, consulting with colleagues and customers to inform the eventual structure. It's not just about restructuring or efficiency, it's about shifting the way we think and behave, which starts with our approach to managing that change."

The main challenge voiced by Jack, Unite-EESA Senior Convener, was the affect on CSUK's ability to attract and retain the best talent in the future.

Kathryn accepted that change can be unsettling but remained confident that the future structure would provide a more collaborative environment, with better opportunities for career progression.

"Inspiring colleagues about the future while remaining sensitive to those affected by the change is always a difficult balance, but more will be done in the future on communicating the benefits," she said.

Kate, Senior Production Integrator at Mansell, a strong advocate of the Mansell brand, was concerned about losing regional identity as a result of the change.

Mike was clear that any decisions on brand won't be made lightly, and that brand value needs to be continually evaluated with customers. The results from CSUK's recent customer research on brand will be reviewed at the end of June.

"That value is judged more on the delivery of our customer promise than the marque above the door," said Mike. "These changes will help us deliver a more consistent customer experience."

For a full transcript of the meeting, visit [update.balfourbeatty.com/article/construction-services-uk](http://update.balfourbeatty.com/article/construction-services-uk)

# INNOVATE OR FADE AWAY

Balfour Beatty's plans to develop a culture that supports new ideas and fresh thinking will help innovation to become part of the Group's make-up, says Alasdair MacDonald



**Alasdair MacDonald**  
is Director of Strategic Innovation at Balfour Beatty

Innovation is not a choice, it is an absolute necessity," Professor David Gann, Chair for Innovation and Entrepreneurship at Imperial College London, recently warned. Balfour Beatty is heeding this warning. We are facing increased competition – from India, well-funded infrastructure groups in China and companies such as IBM and Siemens driving revolution. As a result, we are investing in innovation and have developed an innovation strategy to meet our customers' needs, encourage entrepreneurship and remain a leader in the construction and infrastructure industry. We have worked closely with Imperial College London to develop a three-pronged approach to our strategy:

- Innovation as One
- Innovation Everywhere
- Open Innovation.

#### Client-led innovation

Innovation as One will promote customer-focused strategic innovation themes across our business:

- Where physical meets digital: The use of digital information is transforming the planning, design, construction, management and maintenance of infrastructure and provision of services. After capital and labour, information is now considered to be the third source of value, which needs to be unlocked to support delivery of Balfour Beatty's goals.

*Sustainable resources:* Energy prices are increasing and many resources are becoming scarcer and more costly. Waste disposal costs are also rising, while closed-loop systems are becoming increasingly prevalent as the economics of reuse improve.

Balfour Beatty is helping its clients overcome the challenges of resource constraints.

*Delivering outcomes:* Customers are looking at new ways to procure work and incentivise their supply chain to innovate and provide efficient and effective products and services. This is driving innovation in delivery models. We need to offer business models that the market demands and provide new, efficient ways of achieving the desired outcomes.

To ensure continued customer focus, we will develop an Innovation Outreach Programme, designed to increase engagement with our most innovative and valuable clients.

The second part of the innovation strategy, Innovation Everywhere, will reach out to Balfour Beatty's 52,000 employees to encourage the sharing of, and capability for, innovation. Under this programme, we will create Innovation Solution Centres to integrate current innovation initiatives across operating companies and encourage events, awards, communication and training.

#### An Open Innovation culture

Through Open Innovation – the third prong of our strategy – we will seek to share knowledge with our strategic suppliers and partners to develop innovations that will be mutually beneficial, as well as give value, to our customers.



It is early days for our innovation strategy but our work is already bearing fruit. For example, we congratulate Samuel Jupe, whose innovation, *Active management of generators to increase renewable energy supplied through UK electricity networks*, was the winner of our 2012 Chairman's Innovation prize, an annual prize to recognise the contribution graduates make to innovation at Balfour Beatty.

And our involvement in the Microsoft Innovation Outreach Programme fostered our engagement and subsequent deal with Autodesk, a US-based software firm, to establish a global Building Information Modelling and Virtual Design and Construction system.

A continued strategic approach to innovation will, we hope, make this "absolute necessity" part of Balfour Beatty's make-up, helping us to offer customers the best in infrastructure solutions.

# MORE TO PLAY FOR

Managing customer relationships well is the key to successfully delivering infrastructure. Get this right for mega events and the benefits will affect generations to come, says Martin Heffer



**Martin Heffer**  
is Technical Director, Transport Planning and Visualisation at Parsons Brinckerhoff

The world's eyes are on London as the immovable deadline of the 2012 Olympic Games draws closer. Balfour Beatty and Parsons Brinckerhoff, as the professional services division of the Group, have been involved not only in constructing Olympic venues but also in delivering Olympic Games-related transport infrastructure, such as the £363 million East London rail line.

For organisations such as ours, the reputational benefit/risk of being involved in a mega event such as the Olympic Games is huge. We know the world will be watching and it is extremely important to us to deliver work on target and to the highest of standards. That's why the experience we have been able to bring to the table for London 2012 – based on Parsons Brinckerhoff's involvement in developing public transport systems for the Sydney 2000 and the Beijing 2008 Olympics – has been invaluable.

#### Teamwork is essential

If our experience tells us anything it is this: for the successful delivery of transport infrastructure projects in the run-up to mega events, all parties must engage with each other as early as possible and, most importantly, work as a team, treating all members with respect and appreciating their variety of ideas. As with Olympic competition, success depends on this team effort, and the clock is ticking. Meeting the schedule is an absolute must that cannot waver.

Getting all parties engaged and aligned is fundamentally about managing relationships well. This is not only the responsibility of the delivery agency – responsibility also lies with all team members. At Parsons Brinckerhoff and Balfour Beatty, we aim to understand the wider picture rather than simply play an individual isolated role.

**How does this work in practice?**  
On major transport infrastructure projects, it is important for all relevant partners to be involved from the start because there is always a risk that what works at the design stage may not work practically on the ground.

At Parsons Brinckerhoff, we will often take on responsibility for facilitating this early involvement and brokering inevitable differences of opinions among parties. It may seem like an unusual part of the job description, but we believe facilitating agreement and buy-in at every stage of the process helps us help our customers achieve their objectives.

If we get this right, the pay-offs of successful delivery will affect generations to come.

#### Long-term benefits

The obvious benefit of building new transport infrastructure to support the hosting of mega events is the economic boost received from the capital expenditure that would not normally occur or would be deferred. Not only does new transport infrastructure lead to new jobs, it also helps the local and national economy work more effectively.

Additionally, there are two less obvious benefits: the first is a once-in-a-lifetime opportunity

to test transport infrastructure to its maximum capacity, therefore learning how to operate networks more efficiently for the good of daily users; the second benefit is an opportunity for many different agencies to work together in a single, co-ordinated team in a way they have not done before. As an example, Parsons Brinckerhoff has provided the IT infrastructure for the new Transport for London control centre in the Palestra building in Southwark.

**Success depends on a team effort and the clock is ticking...**



Here, a number of transport agencies and emergency services will work together to ensure the smooth running of London's transport infrastructure during the Olympics and offer a co-ordinated response to any incidents that may occur.

Regardless of whether the control centre remains in place beyond the Olympics, this mega event has created an opportunity for these agencies to forge links and work together. This rare and valuable experience will be a true legacy that has a life beyond the Olympic Games.

In London this summer, the UK has much more to play for than winning gold.

# WORTH WAITING FOR

A sustainable approach to investment in public infrastructure can, in the long term, deliver greater value for taxpayers, **says Mike Peasland**



**Mike Peasland**  
is CEO of  
Construction  
Services UK at  
**Balfour Beatty**

**A**ustere times understandably call for austere measures. As governments in developed economies seek to rein in public spending, cost of construction is the deciding factor driving many public infrastructure projects.

This, however, can often be a false economy, particularly as the infrastructure industry makes advances in sustainable technology. Building public infrastructure on a cost-of-construction basis can, in the long run, lead to more frequent repairs or replacement. If that infrastructure provides a public service – a road or rail network, for example – the disruption to that service caused by maintenance work can affect customer satisfaction and goodwill. The cost of losing these can often be much higher than any savings made by lowest cost construction at the outset.

For some time now, Balfour Beatty has been nurturing a long-term, sustainable approach to the work we do and we are starting to encourage our clients to share this approach with us. With our broad and deep knowledge of customer assets, we believe we can help customers to realise the benefits that can be achieved across the infrastructure lifecycle by investing intelligently upfront.

What does a long-term, sustainable approach to investment look like? We believe it comprises three elements: economic, social and environmental benefits for society. Organisations are familiar with identifying the economic benefits of their investments, but

they could also be asking themselves pertinent questions about the social and environmental outcomes. For example, will my investment create jobs within the local community or a communal space for local people to use? Or will my investment create biodiversity where none has existed before?

#### **Creating alignment**

Alignment across the economic, social and environmental space is at the heart of sustainable investment and at the heart of Balfour Beatty's purpose to provide a fundamentally better way of delivering society's infrastructure. While social and environmental factors may not make sense in the short term, the economic benefits of that upfront investment will be realised in the long term. For example, giving back to local communities can often lead to customer loyalty down the line.

We are already working with customers to introduce long-term, sustainable investments into recent projects. For the Aquatics Centre in London's Olympic Park, we designed a low carbon concrete mix to help reduce its carbon footprint. But the changes do not always have to be so significant. Many of our clients are now making use of low-energy light fittings and activity-sensitive toilet flushing systems to help save on long-term energy costs.

On the construction of Terminal 2B at Heathrow Airport, we helped our client, BAA, to expand its sustainability agenda beyond environmental matters by proposing a construction academy to train young people in construction skills in the local catchment area.

At Balfour Beatty, we practise what we preach. In 2008 Ian Tyler, our Chief Executive, asked me to lead the development of a sustainability strategy across our global operations. That strategy is based on our ambition

of creating a sustainable Balfour Beatty by 2020 and is supported by a sustainability roadmap to help us chart our progress towards that goal. Through the roadmap, we are monitoring 31 sustainability indicators in 10 key areas that cover profitable markets, healthy communities and environmental limits.



**Giving back to local communities can lead to customer loyalty**



Our ambition includes adding value for our stakeholders by helping our customers to reach their own sustainability goals; increasing returns for our shareholders; creating a better place for our employees to develop and prosper; and providing infrastructure that benefits the wider community and environment.

We hope the knowledge we gain through our own sustainability journey will help us to influence our customers to develop a more long-term and sustainable view of value.

*For details about Balfour Beatty's Sustainability Month, visit [www.balfourbeatty.com/sustainability](http://balfourbeatty.com/sustainability)*



# BEST FOOT FORWARD

With a stable government, burgeoning economy and need for infrastructure, Brazil is exactly the place Balfour Beatty should be, says Richard Adams, who heads the Group's new office in the country

I've been visiting Brazil on business on and off for four and a half years. I find the opportunities here extremely exciting, and the people welcoming and friendly, so I couldn't resist the offer of a longer placement. It is a country of amazing contrasts. Take São Paulo and Rio: in Rio, you can't help but stare at the beautiful beaches and phenomenal backdrop of mountains and islands, while São Paulo – where our office is based – is a forest of tower blocks, although 40km away you have more sandy beaches.

My role as Country Manager is to establish Balfour Beatty in Brazil and provide opportunities for the Group. I'm a conduit to understanding the market and networking with customers and potential partners. Over the next five years, Brazil will become an increasingly popular place for overseas businesses. It is huge, has a stable government and is currently one of the world's few growing economies. The demographic is curious in that 50 per cent of the population are under 25 – so there is a lack of certain key skills and experience.

Over the past 20 years, Brazil has seen huge urbanisation. Today, 70 per cent of its people live in cities, and the infrastructure can't cope. The Brazilian government has an accelerated infrastructure programme, and huge spending across the spectrum – transport, road, rail, airports, ports and power for industrialisation and urbanisation – all of which sit well with our skills and expertise. My job is to find people who know how to operate here and people who can support them with expertise from across the Group.



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**Brazil has seen huge urbanisation, and the infrastructure can't cope**

The organisations I've met are very professional, so competing here head-on would be hard work. It's important that we come as an organisation to work with and add value. They are great builders, evidenced by some amazing structures and buildings; engineers are very competent but there is a shortage of them, which is slowing the ambitious programmes for oil, gas, mining, transport and city developments.

But Brazil is quite protective as it tries to generate work for its own people; getting work visas here is a challenge. That needs to change if it wants to encourage international companies, but also we need to strike the right balance between bringing in skills, expertise and support, and training Brazilian people.

Brazil is one of the few countries in which we operate where English is not the primary language: everything is in Portuguese. As the country becomes more international, more people will want to speak English, but where we are now – populating the business with non-Portuguese-speaking people – won't work. It is a place to embrace but with the respect that we should give to any country that we enter. We need to understand the needs and work with them, for what hopefully will be a profitable future.

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## COUNTRY FILE

**Population:** 205,716,890 (est. July 2012)

**Percentage of covered highways:** 6%

**Number of football fans expected in 2014:** 500,000

**Capital:** Brasilia

**Urban population:** 87%

# BUILDING DREAMS TOGETHER

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Robert Van Cleave, Chairman and CEO of Balfour Beatty Construction Services US, is leading Balfour Beatty Group's drive for greater knowledge sharing and collaboration. It will be, he believes, a key pillar of future success

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**R**obert Van Cleave has come a long way since working in the oil fields of east Texas as a 19-year-old, hoping to earn enough money to fund his way through college. That was nearly 35 years ago. Today, as Chairman and CEO of Balfour Beatty Construction Services US, he runs a US\$4 billion revenue business that is among the top five construction players in the US. With over three decades of construction industry experience behind him – half of which has been built with Balfour Beatty

– Robert is ideally placed to steer the business through what he describes as "a tremendous change cycle, in terms of technology, innovation, and new delivery methods". To lead the change, he believes knowledge sharing and collaboration will be crucial. Here, he shares his insights on exactly how the infrastructure industry will tackle the challenges that lie ahead.

#### What is the greatest lesson you've learned?

One thing I've learned (and seen proven, time and again) is that while you are hired for what you've done, you are fired for who you are. That may sound harsh, but is indeed a fact and has proven to be a key success factor in our business strategy. Your capabilities, technical know-how, education and experience may get you in the door – but, ultimately, your long-term success in a service business like ours is based upon your personal character and behaviour. And while some may argue that your character is innate, I suggest that behaviour is a choice. It is something you either prioritise or don't. And when you do, the direct payoff and commitments include honest communication, responsible choices,



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# ULTIMATELY, YOUR LONG-TERM SUCCESS IN A SERVICE BUSINESS LIKE OURS IS BASED UPON YOUR PERSONAL CHARACTER AND BEHAVIOUR

accountable follow-through, long-term relationships, and an environment that attracts and engages others.

**What are you most proud of?**

In 1996, when I joined the business as Division President of our operations in the Southwest, we were predominantly known as a hard-bid contractor, winning and building work based on lowest price and how well we could "play the game". We set out on a course to create value for our customers and ourselves – redefining the culture, service focus, employee proposition, and attention on winning work through relationships and performance rather than price. The result was a complete business turnaround – moving from 80 per cent hard-bid work in 1996 to 85 per cent negotiated work just two years later. This not only proved a short-term win for business results, but also laid the groundwork for the award-winning service and employee brand we have today.

**How has the industry changed in your time with the company?**

The pace of change within our industry since the business turnaround in the late 1990s has been remarkable. Top-tier competitors have caught on to the importance of customer focus and long-term relationship building. In addition, the pace of technology and innovation change has been astonishing. Building information modelling tools, which just a few years ago were revolutionary, are today the "new norm". And atop all of this are dramatic shifts in the way we procure and deliver our services as new contracting methods take centre stage. As a result, public-private partnerships and integrated project delivery are now contract types we offer regularly with our traditional construction management at risk services.

**What is our biggest challenge as a global business?**

As large as we've grown, there are many that come to mind. But the one that stands out as perhaps our greatest challenge (and opportunity) is the need for a new Knowledge Sharing &

Collaboration (KS&C) platform (see box).

While I am honoured to be involved, they could not have chosen a more technology-challenged individual to "chair" this project! That aside (as we rely upon the technical brilliance of the real team), I firmly believe this project is pivotal to our forward momentum as a global, differentiated business. While the collective Balfour Beatty family has much to offer our customers and this industry, we will not succeed if we cannot find better ways to share information, collaborate on lessons learned, connect the right teammates across the business, and "put our best foot forward". And while technology will play a big role, the reality is that without people willing to work for the good of others and the benefit of the whole, we cannot succeed. This will be our greatest challenge, and I believe a defining highlight of our future success.

**What keeps you awake at night?**

Our business is growing and, as such, we are continually bringing new members into the fold. And, because we are a service business – which is fundamentally a people business – much of our fate rests in the decisions and choices made by others. The decentralised nature of our business

means that individual team members make decisions every day that affect safety, employee engagement, company culture, customer service, financial performance and ethical behaviour. So what keeps me awake at night is wondering if we've done everything in our power to ensure we've built a culture so strong that our values, principles and priorities are

## Why create (or invest in) a global KS&C platform?

- To create a robust global technology platform that increases information flow among all Balfour Beatty people
- To harness the collective power of our group experience, expertise, relationships and knowledge for the benefit of the clients we serve
- To provide richer employee profiles (social media-like), opening the gateway for greater connectivity between geographically separate employees
- To encourage discussion groups and best practice sharing between like-minded teammates across the business

demonstrated throughout the business every day – not only by me or senior leadership, but by every employee, manager and member of the team.

**What keeps you motivated?**

We've spent a lot of time recently working on defining purpose, both at the Group level and at Balfour Beatty Construction Services US. Through this work, we've uncovered many themes that link us: a common passion for this industry, for serving others and for creating landmark spaces that stand the test of time; a common belief that the way we work together is as important as the physical results of our work; and a belief that through it all, our teammates remain relentless allies for the dreams we are entrusted to build. Being part of that mission, continually driving to exceed the expectations of others, and helping differentiate our company from the historical commodity view of construction – these are huge personal drivers and keep me motivated.

**What's on the horizon?**

While we are incredibly proud of what we've accomplished to date as a US group (Balfour Beatty Infrastructure, Balfour Beatty Rail and Balfour Beatty Construction), we know that there is much work yet to be done. The industry is in the midst of a tremendous change cycle, in terms of technology, innovation and new delivery methods. At Balfour Beatty

Construction US, we have top-flight leaders looking at how to deploy strategies in each of these areas within our business, but it will take all of us working together to entrench these processes as the "new norm" for how we deliver for our customers, employees and business partners. We are actively working on initiatives to leverage a National Contractor strategy, create an Innovative Design Construct and Operate (IDCO) model, seek increased public-private partnership opportunities and capture efficiencies. In addition, our strategic growth plans for the next five years include further penetration of the water and green retrofit markets. Each of these workstreams is aimed at positioning our business for continued growth, energising employees, tapping new markets, expanding our services and fully leveraging the strength of our global and US Balfour Beatty family.

**What's your advice to graduates about to enter the industry?**

The experience that customers are provided is as important as the technical criteria. Schedule, quality and price – these were the factors by which we were judged when I first graduated. Today, those are expected as the bare minimum. To be successful, we must also look at the true output of the project and deliver our customer's priorities and needs while executing safely and sustainably. We must find ways to increase a facility's sustainability, as we seek to lower utility costs. We must recommend changes in material selection to improve sound transmission ratings. We must suggest relocation of entry or exit points to provide easier access for maintenance. These are things we must do to move beyond being a commodity builder, and to deliver our services in a fundamentally better way.

## Balfour Beatty Construction Services US: Current projects

- Penn State University Energy Efficient Buildings Hub, Philadelphia, Pennsylvania
- Monroe Carell Jr. Children's Hospital Expansion at Vanderbilt University Medical Center, Nashville, Tennessee
- Patapsco Wastewater Treatment Plant, Baltimore, Maryland
- Wells Fargo Securities Expansion, Charlotte, North Carolina
- State Highway 161, Dallas, Texas
- Dr. Phillips Center for the Performing Arts, Orlando, Florida
- Fort Leonard Wood Military Housing, Fort Leonard Wood, Missouri
- Edith Green-Wendell Wyatt Federal Building, Portland, Oregon
- Eagle P3 Rail Commuter Project, Denver, Colorado
- San Diego County Women's Detention Facility, Santee, California



# THE INDUSTRY IS IN THE MIDST OF A TREMENDOUS CHANGE CYCLE, IN TERMS OF TECHNOLOGY, INNOVATION AND NEW DELIVERY METHODS



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# ARE WE THERE YET?

The growing need to mine and transport the world's natural resources is driving demand for the joint global infrastructure expertise prevalent across Balfour Beatty Group's companies

**F**rom providing fuel for power stations to supplying raw materials for steelmaking, the world's mining companies are accelerating production and reporting record revenues in the process. Business consultancy PwC calculates that turnover among the world's top 40 mining companies exceeded US\$400 billion for the first time in history in 2010, a 34 per cent increase over 2009.

The global mining boom is not without its challenges, however. New sources of coal, iron ore, gold, copper and uranium are increasingly being found inland, far from the ports that have traditionally served as distribution points for mined commodities and in locations that lack adequate transport links. Accessing and transporting minerals has become the greatest conundrum for the mining industry while commentators now list it as one of the sector's biggest business risks.

In its report, *Business risks facing mining and metals 2011-2012*, business consultancy Ernst & Young states: "Expansion of infrastructure in many countries has not always kept pace with the sustained growth in demand and has in turn created infrastructure capacity constraints." It cites Australia's Queensland coal rail development, China's third coal rail development and Russia's aging rail network as proof that a lack of rail infrastructure is the largest global bottleneck for the movement of minerals around the world.

While lack of rail infrastructure may be the mining sector's biggest challenge, it is becoming the rail infrastructure industry's biggest

opportunity. "The emerging markets for us [in rail] really are in iron ore and coal," says Tim Clark, Head of Technical Services – Mining at Balfour Beatty Rail International & Major Projects. Colleague Sandra Blain, who is Delivery Manager for Mining, adds: "You have big coal reserves in Eastern Australia, and through the whole of Indonesia, Mozambique and Columbia. In many places the coal is inland and yet to be developed, and this is where we are really seeing the activity between rail and coal."

To take advantage of these growing opportunities, in January 2011 Balfour Beatty established a Global Mining business. Based in Sydney, Australia, the business seeks to promote collaboration across the Group on mining-related projects in a bid to offer mining customers a full life-cycle service from feasibility studies through to operation and maintenance (see *Global Mining: a growing presence*).

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**To beat our competition, we need to understand our customers' needs and put them first**

If mineral-rich countries invest in transport infrastructure to support their mining sectors, it could dramatically change global patterns of supply and demand. Mozambique is a case in point. The southeast African country is estimated to have enormous coal

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## Global Mining: a growing presence

reserves that would put it on a par with leading coal mining countries such as Australia and South Africa. Its location means major coal importers such as India would turn to the country for their supply in favour of other markets. However, to achieve its potential, Mozambique must first invest in infrastructure.

"Mozambique's coal area is in the Tete Province and the size of the deposit is thought to be huge, similar in area to Scotland," explains Sandra. But it is also hundreds of kilometres inland from the ports of Nacala or Beira.

"There is a 500km rail system from the mining area that crosses the Zambezi River before it turns south to Beira, which is a small harbour with limited capacity," says Douwe van Wyk, Director Major Projects at Parsons Brinckerhoff Africa – part of Balfour Beatty Group. "But its potential capacity is less than 10 per cent of what could be exported from Mozambique, so a significant new

Balfour Beatty's Global Mining business is particularly keen to promote collaboration within the Group. Established in January 2011, the business group is based in Sydney with regional centres in New South Wales, Queensland, South Australia and Western Australia. Further afield, it has centres in Johannesburg in South Africa and Manchester in the UK, and is in the process of establishing its first office in Mozambique. It also has a representative in Rio in Brazil to help it exploit the South American opportunities.

Since its establishment, which brought together existing mining operations in Australia and South Africa, the team has hired more than 150 new staff to grow the business. By getting involved in the early stages of projects, Global Mining is in a strong position to bring in other capabilities from the Group to bid for future work.

port and railway system needs to be built." Although Mozambique is a new market for Balfour Beatty Rail, Parsons Brinckerhoff has extensive experience in this part of the world, having carried out feasibility studies for mining companies and work for Mozambique's power and utility provider. "We started off in power and moved into mining and now we will probably move into rail, and hopefully master-planning," says Douwe.

Owing to the size of the opportunity, collaboration with other parts of Balfour Beatty is a fundamental part of efforts to capitalise on opportunities in Mozambique, he adds. "Balfour Beatty Rail, Global Mining and Parsons Brinckerhoff South Africa are very keen to co-operate. We understand the strengths that each party can bring and we are very much looking forward to growing this opportunity together."

**Moving coal in Mongolia**  
Another market where new rail networks are planned is landlocked Mongolia, something of a sleeping giant when it comes to exploiting its

"We work from planning and concept level through to feasibility studies and detailed design. We get involved at a very early stage when customers may be looking at getting the project finance together to exploit a particular resource," says Nick Edmunds, Director at Global Mining. "My team don't go into the delivery side of projects, whereas people in South Africa and Australia have extensive delivery capability. On a major project there is then potentially a big opportunity for us to look at the design of rail and port facilities and leverage that back into Balfour Beatty Group."

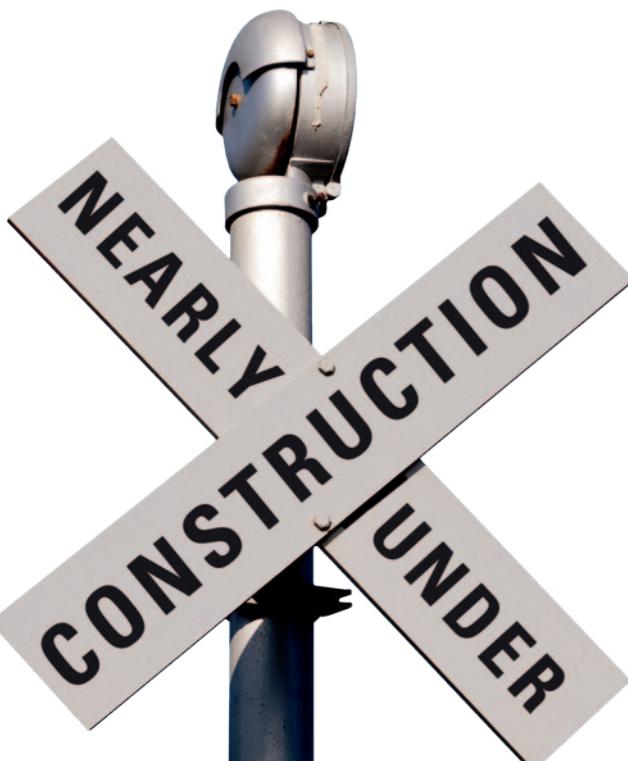
Balfour Beatty Rail's Tim Clark says that the division has a lot to offer mining customers, particularly in the current economic environment, where rising costs are ensuring that project cost projections are as accurate as possible. "The mining companies need to have confidence in their cost projections for their railway plans. This requires an understanding of the logistics involved in building these railways and that is an area where we can help."

Ultimately, the company wants to offer customers a full life-cycle service from optioneering and feasibility through to design, construction, operation and maintenance. "We would definitely be looking at doing this with Parsons Brinckerhoff, which has a lot of skills in engineering and designing mines. That, coupled with its wider consulting skills in ports and our own rail capabilities, means we can offer a very broad service," says Tim.

resources. The country is rich in coal, gold, copper, molybdenum, fluorite, iron and uranium and, with 1.5 million sq km of land, the biggest reserves could yet emerge.

"We are looking at rail prospects here – in the south there is a 284km railway planned from the huge Tavan Tolgoi coal mine to the Chinese border. Transportation is currently undertaken by truck," says Rod Stewart, the Global Lead for Rail and Ports in the Technical Services division of Global Mining.

But before any projects can go



## Harnessing existing expertise

### Scheme

**Mangoola Coal Project,  
New South Wales,  
Australia**

### Customer

Xstrata Coal NSW (XCN)

### Value

£740 million  
(Aus\$1.1 billion)

Under an engineering, procurement and construction management alliance agreement, Parsons Brinckerhoff worked on delivery of a new 10.5Mt/y thermal coal mine project in the Upper Hunter Valley in Australia. Running between 2009 and 2011, Parsons Brinckerhoff's work included design and project management of critical elements including access roads, a 7km rail spur and loop, the mining infrastructure area, bulk earthworks, dams and water management.

"We reused a lot of our existing knowledge on this project. It finished well ahead of time and significantly under budget. Predominantly, this was because we had the knowledge within our capability groups to get that design right and ensure a well-planned and efficient construction process," says Cameron Kirkwood, Director for Markets and Development at Global Mining.

**DELIVERED**

Mining is currently collaborating with Halsall Group, a Canadian professional services firm owned by Balfour Beatty, to explore opportunities in Canada.

ahead, Mongolia must resolve its issues with rail gauge. The 2,215km railway that runs from the Russian to the Chinese border uses the Russian rail gauge. China, however, uses the standard rail gauge. The issue has been raised during current election campaigning – voters go to the polls at the end of June – suggesting rail infrastructure is high on politicians' agendas. "It looks as if a decision will now wait until after the elections," says Rod.

It may be that a flexible approach is most appropriate. Mongolia is also considering a 500km railway connection into Russia from coal mines in the north, which would almost certainly need to be the Russian gauge. Railways can be built as dual track systems but at much greater expense.

Once the gauge issue is resolved and projects gain momentum, Rod says there could be opportunities for Balfour Beatty Group companies in the rail and power sectors, should electrification of the networks become a requirement.

**New growth in old markets**  
Beyond emerging markets, infrastructure opportunities also exist

in established mining hubs such as South Africa, Botswana and West Africa, and in developed markets such as North America. Established hubs are facing similar challenges to newcomers. "Most easy pickings have been made now and a lot of mining is moving inland and the mines need new infrastructure, from power plants and water to hospitals. They basically need to develop new towns, so there is significant opportunity," says Douwe.

Developed markets where Balfour Beatty is focusing on mining sector prospects include Canada, which, as home to 30 per cent of the world's potash (used as fertiliser), is in the throes of a mineral mining boom. The country is keen to upgrade its mining infrastructure as it seeks to expand its customer base to emerging markets.

Overdependence on North American and European customers led to economic difficulties in the wake of the 2008 global downturn. "There are many opportunities for people like us. The environmental requirements are also fairly strict and as we have a lot of experience here, we really feel that we have a lot to contribute," Global Mining's Rod says. Global



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**A lot of good work has been done in terms of managing the risk and understanding the territories**

markets. Tim believes the company is benefiting from Parsons Brinckerhoff's previous work in higher-risk territories. "A lot of good work has been done in terms of managing the risk and understanding the territories," he says.

For the wider mining industry, the rising costs in the sector have highlighted the need to work more efficiently. "Last year was another strong one for the industry, but there is a continued increase in costs, as there has been over the past five years. The growth in cost is outstripping the growth in revenue," explains Jonathan

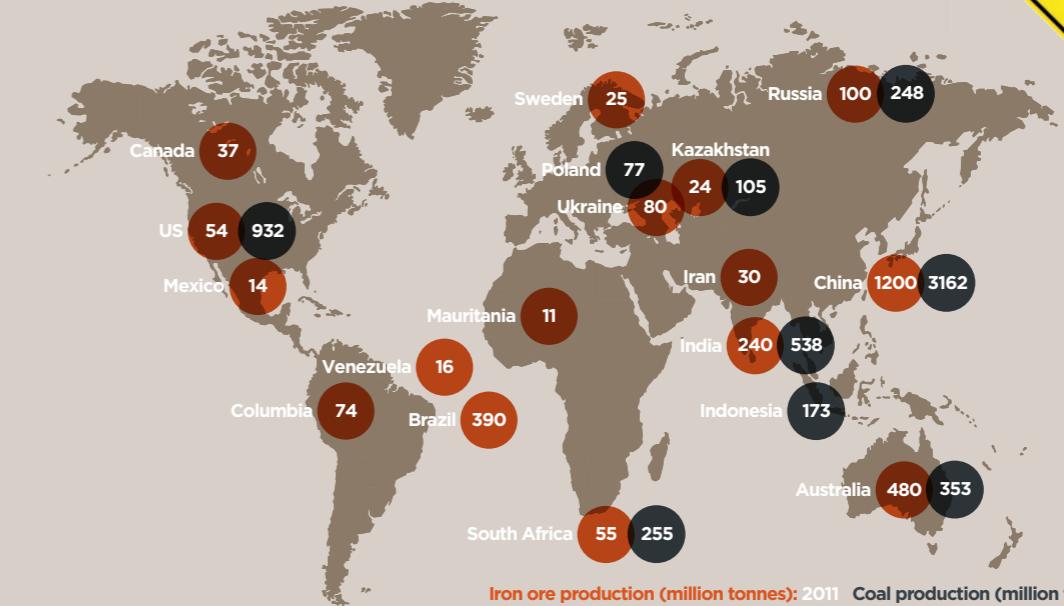


Lambert, a partner at PwC and author of an annual series of mining reports, of which *Mine 2011* is the latest. "The risk, if the prices suddenly come off, is that the margins are squeezed quite a bit so I think we will see a lot of cost rationalisation in the industry this year."

In response, Global Mining has harnessed Balfour Beatty's Group-wide experience to deliver more

cost-effective standardised solutions to the industry when appropriate, based on its many years of experience of working with the mining sector. Projects such as Xstrata's Mangoola coal mine in New South Wales, Australia, or Iluka Resources' Jacinth-Ambrosia mineral sands mine development scheme in South Australia are just two examples

## International commodity production 2011



# Gateway to GROWTH

EMERGING MARKETS ARE RECOGNISING THE ECONOMIC BENEFITS OF NEW INVESTMENT IN AVIATION INFRASTRUCTURE, WHICH IS ALSO CREATING OPPORTUNITIES FOR CONSTRUCTION COMPANIES

**F**rom Bangkok to Beijing, or New Delhi to Dubai – the competition among cities in the world's fastest-growing economies can often be seen in their gleaming airports. The amount of space and comfort on offer at Terminal 3 in Dubai or Suvarnabhumi Airport in Bangkok is something travellers using many European and US airports can only view with envy.

Perhaps the greatest concentration of major new projects is in the Middle East, where oil-rich governments have been competing to develop aviation hubs. As well as Dubai, the projects have included New Doha International Airport in Qatar and new terminals in Abu Dhabi and Bahrain. Balfour Beatty has worked at many of these fast-growing hubs, constructing access

roads for Dubai International Airport via its Dutco Balfour Beatty joint venture and developing a masterplan for Kuala Lumpur International Airport as part of an Anglo-Japanese consortium.

The Group has also provided project management services at Indira Gandhi International Airport in New Delhi, the busiest airport in India. Parsons Brinckerhoff worked with Delhi International Airport Ltd on its expansion and modernisation programme, which included a new runway and a 5.4 million sq ft terminal that opened in July 2010.

With ample room to grow in the future, emerging economies are staking a claim to be not just regional aviation

hubs but globally important economic hubs too. Proponents argue that better connections between major cities help smooth the way for companies to do deals with suppliers and customers in overseas markets and, on that basis, new airports are a smart investment.

Trying to put a figure on how much these new airports can boost a local economy is not easy, but work by UK research firm Oxford Economics goes some way to showing the impact that the booming aviation sector has had on Dubai. According to its report, the industry employs 58,000 people in the emirate and contributes US\$6.2 billion to its gross domestic product (GDP).

Once indirect jobs and spending are included, it is thought to support more than 250,000 jobs and contribute more than US\$22 billion to Dubai's GDP. That is equivalent to 19 per cent of total employment in the emirate and 28 per cent of its GDP.

The airport operator, Dubai Airports, plans to spend US\$7.8 billion to boost capacity from 60 million passengers a year to 90 million by 2018. That is likely to lead to the industry becoming even more important for the economy. If demand continues to grow as expected, the aviation industry will support as many as 373,000 jobs and more than US\$45 billion in economic activity by 2020, estimates Oxford Economics.

## Economic impact

The rewards for investment by other countries have also been estimated by the International Air Transport Association (IATA) and research group InterVistas Consulting. According to their calculations, a US\$168 million investment in the aviation industry in Jamaica would lead to a US\$26 million boost in GDP, equivalent to a 16 per cent annual rate of return. The rate of

return rises to 28 per cent in Jordan and as much as 59 per cent in Kenya.

This economic impact is felt in a number of ways. The most obvious direct benefits are the jobs that airports and airlines provide and the spending power of their passengers. Globally, the industry directly employs 5.5 million people, according to the Air Transport Action Group (ATAG), an industry body, and indirectly provides another 26.3 million jobs, principally in tourism.

Aviation oils the wheels of trade and commerce more generally, opening up export markets, providing critical transport routes for high-value and perishable goods, enhancing competition and allowing greater economies of scale for businesses.

"Connecting a country with other countries can clearly have benefits for tourism, but it also contributes towards increased investment, trade and productivity," says Ian Kincaid, Vice-President for Economic Analysis at InterVistas. "Research has found that firms in one country are more likely to invest in another country if there are good air connections between the two, as it allows them to move staff back and forward regularly. And if you're near an airport with good connections, that can help you market your products and services around the world."

It is such factors that have prompted the huge investment. Over the past decade, major airports and terminals have been opened in countries across the developing world, from Guangzhou in southern China to Durban in South Africa. And once the facilities have been built, there is always the opportunity to grow further.

Hong Kong International Airport has been expanding fast since its opening in 1998. In March, Gammon Construction won a HK\$6.2 billion contract to build a new midfield concourse with 20 aircraft stands. It is the biggest solo contract ever awarded to Gammon and comes alongside other work it is carrying out at the airport, including building a cargo terminal for Cathay Pacific.

"Hong Kong has not felt any huge effects from the economic downturn

in the rest of the world because one of its main sources of traffic is Asia and the rest of China," says Alan Gibson, Gammon's Project Director for the new terminal. "The Airport Authority is undertaking studies on the third airport runway and we see a prosperous long-term development. As an aviation centre, Hong Kong tries to provide passengers with the best facilities it can."

Balfour Beatty has had a long relationship with Hong Kong's Airport Authority. In the 1990s, as part of a joint venture, Balfour Beatty Civil Engineering constructed Hong Kong International Airport's massive 1.2km Terminal 1, at the time the world's single largest building project.

While emerging markets such as India and China are investing heavily in their aviation infrastructure, the picture is somewhat different in developed economies. They have also seen growth in aviation demand, but at lower levels.

Nonetheless, the potential benefits for Western economies are similar to those in Asia or the Middle East.

#### A competitive edge

"Any successful modern economy needs a competitive air transport sector," said Tony Tyler, Director General of IATA, at a speech in February. "With austerity budgets across Europe, export revenues from cargo and tourists are critical to support jobs and GDP growth. The aviation supply chain sustains millions of European jobs. Even more important are the jobs and growth in industries supported by aviation, including export businesses and manufacturing."

According to the Airport Operators Association (AOA), a British trade body, the aviation industry helps to sustain more than 230,000 jobs in the UK and 2.6 million jobs in the tourism sector.

The most significant boost to the country's airport infrastructure in recent years was the opening of Heathrow Terminal 5 in 2008. Balfour Beatty was the second-largest contractor on that project, building Underground and mainline rail links to the new terminal, as well as a spur from the M25. Now

more developments are on the way. Six Balfour Beatty companies are working together on Terminal 2B, part of a £2.5 billion investment by airport operator BAA to replace the existing Terminal 2, with Balfour Beatty's package of work worth £592 million. "The capacity will be 30 million passengers a year," says Steve O'Sullivan, Framework Director on the project for Balfour Beatty. "Terminal 5 set a new benchmark for European hub airports – and Terminal 2B will build on T5's success in terms of passenger experience."

Balfour Beatty has been working closely with Heathrow Airport's logistics team to overcome the challenges of building in the middle of two busy runways. Apart from passing thousands of staff, and all the materials used on site, through security checks, the construction team must ensure runways are kept free of dust and debris.

Beyond Heathrow, the UK government's aviation review is considering proposals to build a £50 billion airport in the Thames Estuary to tackle the lack of airport capacity in south-east England. The airport would be capable of handling 150 million passengers every year.

#### New arrivals

Around the rest of Europe, a number of new terminals have opened in recent

years, including Terminal 2 in Dublin and Terminal 4 at Madrid-Barajas airport. Others are planned or being built in Berlin, Frankfurt and Lisbon.

In the US, the market is more subdued, not least because of a lack of government funding. That issue was partly addressed by a four-year, US\$63 billion package for the Federal Aviation Administration agreed in February, but more will be needed.

Roddy Boggus, National Aviation Director for Parsons Brinckerhoff, says the pent-up demand for infrastructure development in the US could be as much as US\$50 billion to US\$80 billion and new funding models are slowly being developed. "The federal government can't fund everything," he says. "I think that over the next four years you'll see various groups trying to determine new ways to fund airports, through user fees or privatisation." As a case in point, the Port Authority of New York & New Jersey issued a request for information in December 2011, looking for partners to design, construct, operate and finance the redevelopment of LaGuardia Airport's central terminal.

In the meantime, work is ongoing at other hubs, including a multi-billion-dollar upgrade programme at Los Angeles International, and new runways and a new terminal at Chicago International. At Dallas Fort Worth, Balfour Beatty Construction is part of the BARC consortium, which has a US\$900 million contract to renovate terminals A and C and build a new rail station.

Despite all this activity, there is little doubt it is harder to build and expand airports in developed countries

than in emerging markets. Planning applications tend to be more onerous, and environmental rules more stringent. Airports are also often forced to shut runways at night, reducing the number of hours to recoup costs.

According to Ian of InterVistas, governments in Europe could do a number of things to help their airlines compete, not least in terms of improving their infrastructure and reducing taxation levels for the industry. "The UK's largest airport, Heathrow, has only two runways, which is acting as a major constraint," he says.

"Compare that with six runways at Amsterdam, four at Frankfurt and Paris, and an ever-growing number in the Middle East. High taxes also erode the competitiveness of European carriers. When it comes to connecting traffic, that puts carriers at a disadvantage. If a passenger has the option of connecting through the Middle East or Europe, the Middle East will generally come out cheaper because of the tax issue."

It is difficult for the industry to make a case for cutting taxation in the current economic conditions. Nonetheless, an argument can be made for greater investment to allow the economies to make the most of any recovery.

New airports tend to be a symptom of booming economies, first envisaged during times of plenty. Sometimes by the time the building work is complete, the economic tide has turned. That appears to be the case in Dublin, with Terminal 2 opening in late 2010 long after the Celtic Tiger economy had stopped roaring, and it now lies empty for much of the day. But once economic

activity returns, the benefits of having strong infrastructure will be felt.

Without the right sort of infrastructure, the developed world may find that even more business moves east, to the ever-more self-confident economies of the Middle East and Asia.

## AS GOOD AS NEW

Brand new infrastructure may not be a priority for airport owners in developed markets right now, but many are investing in modernising existing terminal buildings.

"Many terminals are reaching 30, 40, 50-year lifecycles so owners are going in and retrofitting them to bring them up to today's standards and efficiencies," says Karl Joeris, Operations Director for the North Texas Division of Balfour Beatty Construction US.

He is leading Balfour Beatty's involvement in a US\$1.96 billion renovation of four terminals at Dallas/Fort Worth International Airport in Texas, US. The project also involves the construction of a near 8,000-capacity car park and a rail station to accommodate a link to the Dallas Area Rapid Transit light rail system.

Keeping customers satisfied is behind many of the changes being made at Dallas/Fort Worth. In the car park, a parking guidance system will alert drivers to empty spaces, saving them wasted time driving up and down full rows.

Karl's team has introduced a number of innovations into the renovation process itself, including the use of an entirely electronic planning room, which has saved US\$3 million in regraphics costs for the Designers and Construction Managers alone. Recycling waste materials has, to date, returned a further US\$0.75 million to the customer and that figure is likely to increase by the time the project is completed around 2017.

*For more details on the renovation of Dallas/Fort Worth International Airport, visit update.balfourbeatty.com*

# SLOWING THE FLOW

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Teamwork and new technology could help the UK's water industry conserve this increasingly precious resource

**W**ater is big news. When the UK government declared drought in the most populated area of Britain in February, and Anglian Water and South East Water announced they would be sending egg timers to households to encourage shorter showers, the story was covered by everyone from the *Daily Telegraph* newspaper to the Netmums website. Water, or rather its scarcity, is now an issue for us all.

Traditionally, water has been looked on as a cheap commodity that is always available. The view was that it was easier for a pipe to leak than to fix it. But, explains Jonathan Chapman, Director of Strategic Development at Balfour Beatty Utility Solutions (BBUS), that picture is changing.

"Given where we are in potential water scarcity, water will continue to be an important area for the whole of the UK economy. The water sector is seeing continued investment with a 5 per cent increase in spend since the end of the last regulatory period in 2010, while the rest of the UK economy is slowing in its investment cycles," he says. The total UK water market is estimated to be worth £7.68 billion per annum, and BBUS, which is part of the Services division, is a leading service provider within it.

The sector is important to Balfour Beatty, not only for its long-term potential but also for its client base. "It represents a consistent market opportunity. We have blue-chip customers who are interested in working with companies that are sustainable, and have a strong ethical approach to work. The match is very good," says Jonathan.

#### The "new norm"

During a water summit hosted earlier this year by UK Secretary of State for the Environment Caroline Spelman, she warned that drought was the biggest issue facing the water industry for the next 20 years. In her speech, she repeatedly used the term "new norm" to describe current conditions.

"The regulator asked the water companies to take a longer-term view and lay out their 25-year plans," says Colin Kelly, BBUS Director of Gas and Water. "It made them consider the impact of climate change with longer, drier summers and winters with more intense rainfall. The change in supply and demand has also made the current model totally unsustainable, and is starting to make people have different conversations. We are talking to some customers about the viability of desalination plants, whereas before

they would question the need for them." This change in mindset has matched awareness in society as a whole, says Jonathan. "The whole sustainability agenda has come forward. It has become unacceptable to waste this precious resource."

Water companies are helping in the drive to raise awareness and reduce consumption. Southern Water, for example, is working with BBUS on a universal metering programme, under which 500,000 meters will be installed over five years. "When people can understand the cost of water, it will help reduce consumption," explains Jonathan.

Another key focus for water companies is reducing leakage. Colin estimates that BBUS has doubled its leakage workload in the past two years. The task has been made harder because much of the UK pipework or water infrastructure was laid in Victorian times.

While parts have been upgraded since privatisation, infrastructure has generally been overlooked. "Over 90 per cent of all innovation in the industry has been on water treatment and sewage treatment. The infrastructure has been neglected. We have been installing and repairing pipes in the same way since the 1970s," says Mike Brockhurst, Innovation General Manager, Gas and Water. "We are trying to change that and bring science and technology in."

#### Medical prognosis

BBUS is working with customers to apply intelligence in the network, to understand when and how failures occur and to try to predict and pre-empt them. Mike and Colin liken the innovative work in progress to advances in medicine. Patient care and healthcare are better because of non-invasive techniques, such as ultrasound

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**The total UK water market is estimated to be worth £7.68 billion**

and MRI scans and, where necessary, keyhole surgery.

"We are taking that thinking into the water industry infrastructure," says Mike. BBUS has devised a "basket of capabilities", a series of complementary technologies that, put simply, reduce the need to dig holes to access pipes.

Colin cites a project, Water Advanced Technology Enabling Robotics (WATER), being undertaken with Yorkshire Water as an example. It is a collaborative scheme, sponsored by Yorkshire Water with additional external funding, and

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## BBUS is taking a leadership position. Being proactive differentiates it in the marketplace and emphasises its role as a strategic partner

BBUS as the industry lead. The team has pioneered the development of camera and sensor systems to detect water main conditions from the inside, and to effect repairs. The cameras can provide real-time analysis of the performance of the water network and identify earlier than previously possible where the network might fail. Since the introduction of the project, more than 1,000 inspections with cameras have been carried out, saving the need to make more than 1,000 excavations. This is reducing costs too – so far saving more than £500,000.

Another project to come out of a consortium led by BBUS – again involving Yorkshire Water, and working with technologist JD7 – has developed an internal pipe ultrasonic sensor that allows the structural inspection of the inside of water mains while live. Now in phase two, the consortium is working with John Moores University, which developed sensor technology for offshore oil and gas exploration, to transfer its technology into the phase one system. The combined capability will allow pipework inspection, material verification and structural assessment. It will provide information measuring the pipe thickness, from which estimates can be made as to the existing lifespan of a pipe. The technology negates the need to drill holes to attach sensors to pipes, as well as fitting water companies' desire for lifetime assessment of their pipework without interruption to customers' supply.

### Thought leaders

By investing time, resources and money into developing innovative solutions, BBUS is taking a leadership position within the industry – and for good reason. Being proactive differentiates BBUS in the

marketplace and emphasises its role as a strategic partner.

"The Balfour Beatty name carries a large responsibility," says Colin. "We could sit there as a contractor and wait for our customers to say jump and then say, how high? But we are trying to bring solutions to the table and work with all levels of industry, whether government, regulators, or cross industry, to try to drive out new models and new thinking. We are asking, if we work in a slightly different way, can we work for the better benefit of society as a whole?"

In speeches at the Future Water 2011 conference and the launch of a new UK Water Research and Innovation Framework, Colin stressed the need for collaboration. At the former, he called for a National Innovation Strategy for the industry, stating: "It will not be enough for us to simply up our game and do more of the same, but better." Working collaboratively in a more formal framework would "remove the wasted effort and duplicity which occur from multiple organisations working in parallel on the same problems".

In a similar vein, Mike is working with the Water Industry Forum on an agenda for a series of cross-industry meetings on collaborative innovation. The Forum is an independent, not-for-profit network that brings together the whole of the UK water industry to tackle the challenges faced.

Within Balfour Beatty, collaboration has gone global. According to Jonathan: "The UK water sector is recognised as a global leader, particularly given the regulatory environment within which we work." BBUS has had a knowledge exchange visit with colleagues in the US, and Jonathan is also providing technology and capability information to Parsons Brinckerhoff in Australia,

in preparation for a contract bid.

The UN estimates that by 2025, 48 nations will face freshwater stress or scarcity, affecting more than 2.8 billion people. It would be comforting to think that, by 2025, those 48 nations could be benefiting from the collaborative efforts and technologies emerging today.

## Manage what you measure

As part of an ongoing commitment to sustainable business practices, UK industry body the Strategic Forum for Construction has set targets for reduction of waste to landfill, carbon emissions and water usage on construction sites.

Jane Thornback, who co-ordinates the sustainable construction task groups (of which water is one), says she is pleased with progress so far. In setting a target of reducing water usage on site by 20 per cent by this year compared with 2008 usage, the task group – chaired by Balfour Beatty's Jonathan Garrett – first had to establish how water was being used and wasted. Surprisingly, it had not been measured before. "You need to measure water usage. Only when you measure it can you manage what you are doing and know what different practices will result in greater or lesser usage," says Thornback.

The detailed water audits have enabled the group to assess what is happening on the ground and share best practice. "The work is helping us get to know how to use water more efficiently, given it is an increasingly scarce resource. It is increasingly recognised as a huge problem in southern England and will affect where businesses can operate, so having an understanding of how we use the resource is hugely important," she says.

# EDUCATED INVESTMENT

As emerging economies get stronger, competition for the brightest undergraduates is increasing. Building modern, sustainable and high-tech campuses is one way companies such as Balfour Beatty are helping universities attract the best talent



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Overseas applications for places at US universities this autumn have grown 9 per cent – the seventh consecutive annual increase, with most interest coming from students in China, India and South Korea. In the UK, university applications from students in non-European Union countries have grown by 12.1 per cent in 2012.

The continued drain of undergraduate talent from emerging to developed economies supports the fact that the US and UK dominate university rankings. However, many emerging economy governments are starting to fight back.

Most notable is the growing trend for emerging economies to partner with established Western universities to build branch campuses in their own countries in a bid to import the West's high academic standards. For example, New York University has established a campus in the United Arab Emirates.

The branch campus boom has created unprecedented opportunities for infrastructure companies and the demand isn't only coming from Western

universities branching out into emerging markets. Domestic universities in these territories are also seeking to improve the quality of their infrastructure to stay competitive, and this activity appears to have triggered demand in developed markets too. It seems that Western universities, which see their overseas intake as an important revenue stream, are taking the competition from emerging markets seriously enough to raise their game in terms of the quality of their own campuses. A recent industry survey revealed that 79 per cent of UK universities are planning construction projects worth more than £5 million within the next year, to attract more students, particularly international and/or postgraduate students.

#### Integrated approach

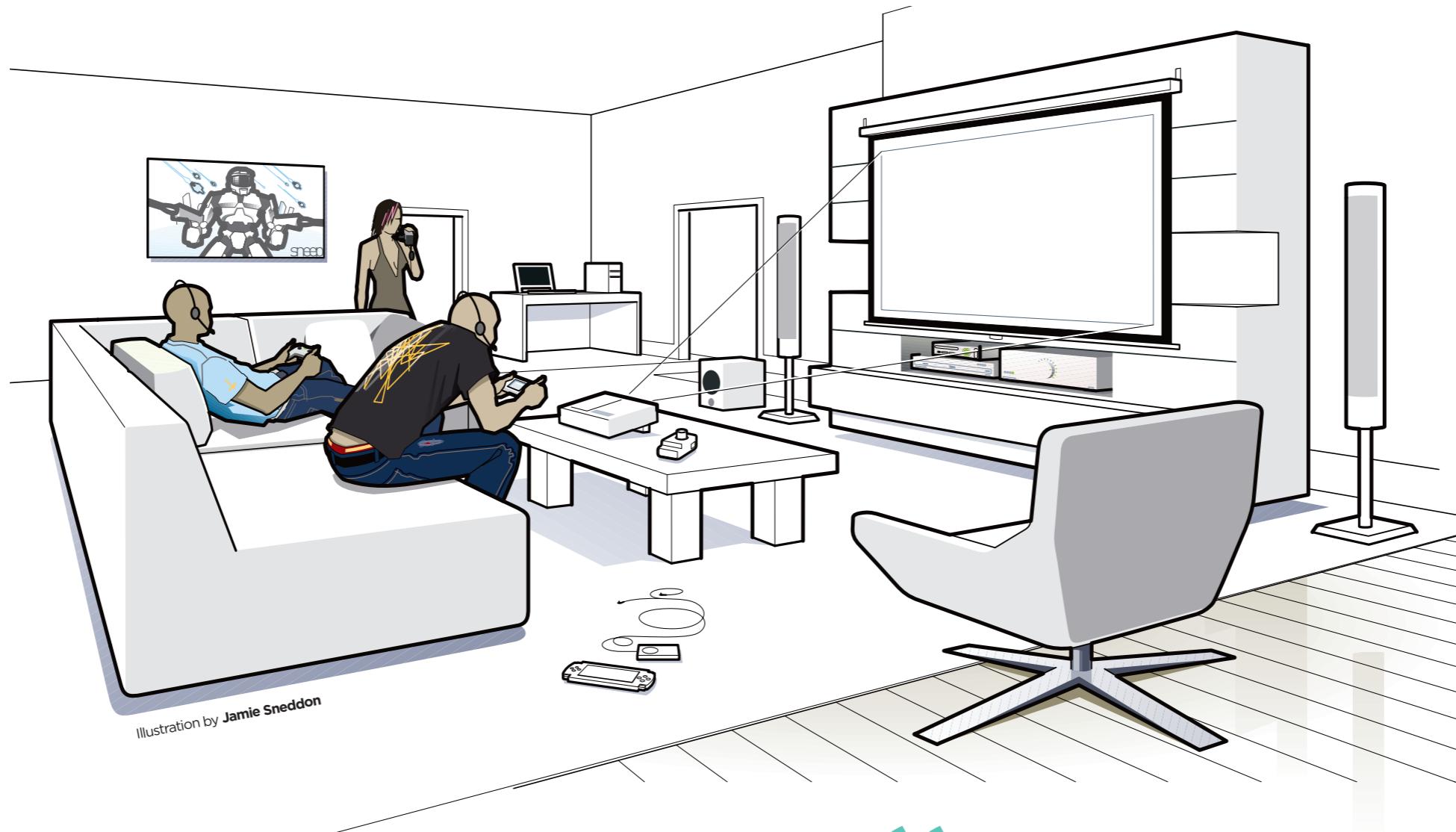
In turning to the private sector for their infrastructure needs, universities are looking for an integrated service offering, covering everything from design and construction to finance, leasing and facilities management.

Balfour Beatty's offer of an integrated service was crucial in clinching the contract for the HK\$1.48 billion project to build the Institute of Technical Education (ITE) College West, in Singapore, which opened in 2010.

Balfour Beatty Capital and Gammon Construction worked together to develop a public-private partnership (PPP) deal through which the campus could be financed, built and managed over 27 years. Gammon Construction undertook the design and build of the campus, which set new benchmarks in energy efficiency, winning it a "Platinum" grade – the highest available – under the Singapore government's environmental performance scheme.

Sustainability was also a key priority on the HK\$1.97 billion contract to build part of the University of Hong Kong's Centennial Campus, which Gammon Construction delivered in March 2012. The contract involved the construction of one 10-storey and two nine-storey academic buildings, and the West Gate Lift Tower and Footbridge.

To ensure a safer and better working environment, Gammon Construction



implemented a range of measures such as reducing site waste and lowering energy use. The campus buildings used intelligent building materials and natural energy, green roofs, natural ventilation and recycled greywater.

#### A good home

High-quality student housing is also integral to the drive to attract the best undergraduate talent. "Many universities use student satisfaction questionnaires that have an impact on their positions in the league tables. The quality of the residential experience will inform students' overall sense of a supportive environment at university,"

says Patrick Finch, a spokesman for the Association of University Directors of Estates in the UK.

That means traditional dormitories with shared bathrooms are quickly being relegated to the past. According to a 2010 study, 87.5 per cent of students would rather have a double bed and the majority are willing to pay extra for private bathrooms and on-site parking. Andrew Bowler, Divisional Managing Director at Mansell, says that rather than "basic and rudimentary" accommodation, students expect "something that is modern, safe, technically advanced, sustainable and resembles a good-quality hotel". As a



## Traditional dormitories with shared bathrooms are quickly being relegated to the past

result, residential buildings now often have more areas for students to meet and socialise. A case in point is a seven-storey building at Old Street, London, that Mansell recently constructed with student accommodation developer UNITE. The £11.45 million project includes a landscaped communal courtyard and separate common room.

"In addition to requiring new builds, universities have large amounts of existing accommodation stock that needs renovating to meet students' expectations of quality. In a competitive market, renovation is a way for universities to differentiate their existing housing," says Robert Shepko, Division President of Balfour

#### A new model

With public spending cuts in developed economies affecting all aspects of social funding, including higher education, many universities are considering the public-private partnership model as a possible route to funding necessary infrastructure upgrades. To tap into this growing trend in the US, Balfour Beatty Capital Group established Balfour Beatty Campus Solutions in 2010. The company acts as developer, pulling together the resources for every project.

For its first student housing project for Florida Atlantic University, Balfour Beatty Campus Solutions worked with Balfour Beatty Construction US to design, build and operate 375 apartment-style units to house 1,200 students. Balfour Beatty Capital provided debt financing for the US\$123 million project.

Beatty Campus Solutions. On one such project, the University of London appointed Mansell for a £22.1 million refurbishment of its student housing. The company demolished two blocks of student residences and replaced them with new housing. The new buildings were completed 32 weeks ahead of schedule. Nearby Georgian houses were also converted into student flats, and Mansell refurbished student rooms in the International Hall by upgrading the heating system, replacing the furniture and carpets and redecorating, which was completed on schedule.

As competition to attract the brightest undergraduate and postgraduate talent becomes a global rather than a Western battle, infrastructure companies have an unprecedented opportunity to help higher education customers gain a competitive advantage through the quality of their teaching, research and accommodation facilities. Those companies that can deliver financially and environmentally innovative ways of helping universities raise the infrastructure bar will be best placed to capitalise on the growing opportunities this sector has to offer.

# FOLLOW OUR LEAD

As the UK government sets up the first leadership academy of its kind for the public sector, what can it learn from private sector companies, where world-class project management skills are crucial?

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## CASE STUDY

### A major new road for Carlisle

The Carlisle Northern Development Route in the UK opened in February this year, two months ahead of schedule. Construction of the 8.25km of road running along the western border of the city was vital to reduce traffic congestion in Carlisle.

Planning for the entire £158 million project began some nine years earlier. "The initial business development support in 2003 helped us to understand what issues there might be for the customer, so that when we came to bid the following year, we were able to tailor our offering to meet these challenges," says Andy Beauchamp, Operations Director for Connect Roads.

Four underpasses and two major bridges were constructed, flood culverts were built to channel water under the earth embankment, and a cycle route was provided along the whole length of the road. Connect Roads will maintain the road for 30 years using Balfour Beatty as its operating partner.

Among the unusual challenges the project faced was the discovery of Stone Age flint tools, which were retrieved and handed over to a local museum for display. The demolition of an existing bridge over the West Coast mainline intercity route had to be completed within a strict 56-hour deadline in order to keep closure of the line to a minimum.

# O

ne of the big challenges for governments is to find the best ways for the public and private sectors to work together. In the early 1990s, proposals in the UK to fund public sector projects through private finance initiatives (PFI) triggered a mixed response. The Labour Party questioned the idea in opposition, and then supported it in government. Fast forward two decades and Conservative politician George Osborne was similarly doubtful while in opposition, but then in his first year as Chancellor signed off 61 PFI schemes worth nearly £7 billion.

Now the UK government is determined to develop project management skills in the public sector with the establishment of a Major Projects Leadership Academy at Oxford University's Said Business School. The Academy will aim to build an elite group of world-class project leaders within the UK civil service. Once again, it will be calling directly or indirectly on experience and expertise built up by large private sector companies.

Plans are for 150 project leaders to join the Academy over the next four years. Academy Director Dr Paul Chapman says the teaching will be intellectually rigorous, but will also

focus on practical skills. "We will be drawing on our considerable experience of working with senior project practitioners from around the world, as well as our research insights in developing the first programme of its kind for the public sector," he says. "The Academy will enhance and build the skills of already capable project specialists in the public sector by giving them exposure to the ideas, experiences and best practice from world-class major project leaders and academics, and connecting them to their peers across central government and beyond."

David Philp of Balfour Beatty Construction Services UK, who is currently on secondment to the Cabinet Office as Head of Building Information Modelling (BIM) Implementation, says the government has a real desire to create the ability to better procure, construct and refurbish assets with greater certainty, safety and value for money. The portfolio of major government projects runs to about £400 billion, and these changes will mean that more projects will be instigated, he says.

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"Government recognises the need to become a more intelligent client, learning new skills from the private sector and academia. The government's major projects, from large ICT schemes to major infrastructure procurement, are by nature multifaceted and varied, and their scale and ambition demand unique skills in terms of project management.

"The Academy will focus on leadership, technical understanding and commercial capability so that major projects can be delivered with less reliance on external consultants," he says. "Participants will be exposed to the very best practice, and will have the chance to develop new skills so that the public sector is in the vanguard of project management know-how."

#### Talent exodus

But why is the Academy necessary? Why should project managers require what critics might describe as a remedial course of training to bring them up to scratch? Will Hughes, Professor of Construction Management and Engineering at Reading University, says that one intractable problem has been hanging on to talented managers. "It is really difficult in the public sector to reward performance adequately," he says. "What happens is that public sector managers learn from their



**You just have to be prepared to meet the changing demands as the project progresses to completion**

mistakes and become expert at running projects, but then the private sector will pay a fortune for those skills. Because the public sector can't reward them, they don't stay."

There is also, of course, the problem of leadership. All too often, he says, changes in political leadership lead to vacillations in policy that make proper project management almost impossible. Overspending and

"a huge amount of scope creep" are common occurrences when a construction project is started under one government and completed under another. But as Andy Beauchamp, Operations Director for Connect Roads, says, dealing with shifting goalposts is part of the job description for anyone managing a major project. "For the public sector that might mean additional consultation; for the private sector it could be reaction to the latest market intelligence – you just have to be prepared to meet the changing demands as the project progresses to completion."

Several of Connect Roads' contracts are halfway through their 30-year lifespan, so Andy has experience of this sort of long-term project management he is talking about. "Our ability to recycle our knowledge means we can cut to the chase a little more quickly than the public sector might do. We do these things all the time – procurement, delivery, and working to tight time frames – so we have pace and drive in our operations. People simply have to get up to speed, so that we can meet the targets that have been set.

#### ANDY BEAUCHAMP'S TOP FIVE PROJECT MANAGEMENT PRINCIPLES

- 1 Communication** The customer's requirements have to be fully understood, and the customer has to be aware of the demands of the project.
- 2 Knowledge** A close-knit team, where everyone knows their colleagues' strengths and weaknesses, copes better with the unexpected.
- 3 Co-operation** A good project manager will appreciate the point of view of people who may disagree and seek to mitigate their concerns.
- 4 Health and safety** Those on the project, customer's staff working nearby, and members of the public all have to be protected.
- 5 Focus** Whatever happens, clear focus on a successful conclusion must be maintained.

#### CASE STUDY

#### Better drive on the M25

In 2009, the Highways Agency awarded Connect Plus a £6.2 billion contract to widen, improve and maintain the UK's M25 motorway network over a 30-year period. The major improvements include the widening of the M25 by adding a fourth lane to 40 miles of the 117-mile orbital road and the refurbishment of the Hatfield Tunnel on the A1(M). These major improvements are nearing completion – all in time for the London 2012 Games. A further 35 miles, where the M25 is still three lanes, will be transformed in 2014 by converting the existing hard shoulder into a fourth lane. This is part of the Highways Agency's national Managed Motorways programme. Connect Plus has invested more than £60 million to date in renewing the M25 carriageway, including key structures such as the Queen Elizabeth II Bridge and the westbound tunnel at Dartford. "Our investment challenge comes with high demands on safety, planning, delivery and night-time logistics including traffic management," says Tim Jones, CEO, Connect Plus. Connect Plus is also responsible for the operation and maintenance of the Dartford crossing, including the collection of revenue for the Secretary of State, amounting to circa £70 million per annum.

It's all about focus; and sometimes the political pressures on a public sector organisation can deflect the focus."

#### Similar issues

Certainly, the challenges are much the same, whether a project is commissioned by a government department or a private company. There has to be continual communication, for instance, and not only with the client. A project manager has to understand the objections of people who don't want it to go ahead, for example.

"Co-operation is always better than confrontation," he says. "Perhaps you can mitigate problems without affecting the overall success of what you're doing – but behind all that must be the drive to get the project done. That might be a focus that some public sector managers lack – there may be political pressures on them to take a step to the side rather than keep pressing forward."

It all comes down to experience – and that, says Andy, is what Balfour Beatty has to offer. "As a global company, we have broad experience of a whole range of different types of major construction and infrastructure projects, and a depth of experience of seeing them through from beginning to end. We can pass that experience on, so that instead of learning from their mistakes, people can listen to the challenges we've faced, and gain from what we've learned."



#### CASE STUDY

#### Keeping the hospital running

The £170 million construction of a new wing at Victoria Hospital, Kirkaldy in Scotland, took three years from the start of work to the final handover. At its peak, the project involved 86 members of staff and 500 operatives with 130 subcontractors working on the project. But one of the biggest challenges was keeping work running on schedule without interfering with the day-to-day running of a busy hospital.

"We were working adjacent to the main entrance, and one of the first things we had to do was build an enclosed walkway with lights and CCTV to protect the public from the noise and dust of the site," says Roddy Mackay, Project Director. "Our site also overlapped with the existing

Accident and Emergency access, so we had to construct a new ramp for the ambulances and work our way through the area without ever disrupting the blue-light traffic. Good communication with the NHS team responsible for the project was essential, so that we understood exactly what they wanted and they understood what we were doing."

The new wing was completed in October 2011, and includes 11 operating theatres, an emergency care centre, 13 wards, surgical and medical assessment units, a maternity unit, a women and children's unit, day intervention, critical care, coronary care and renal and dialysis facilities. It was completed on time, with no lost time incidents.

Balfour Beatty's specialist healthcare company, Consort, will operate and maintain the project on a 30-year public-private partnership contract.

# My **OLYMPIC** dream

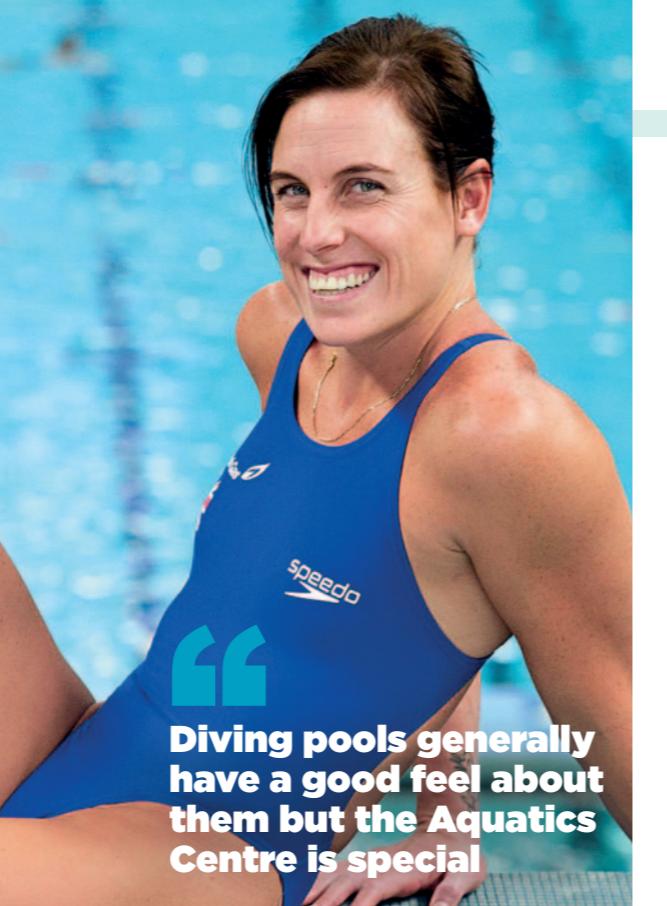
British diver Monique Gladding is getting closer to her dream of competing at the London Olympics after a successful performance at FINA World Cup, at the Aquatics Centre, and her subsequent selection for Team GB. It is a great achievement for Monique, who suffered a horrific accident in 2011. Here, she shares her hopes for the Games and her experiences of competing at the Aquatics Centre, built by Balfour Beatty

In February 2012 I secured an Olympic place for Team GB after finishing 10th in the 10m platform diving final in the FINA World Cup. This was a great achievement for the team because our priority was a qualification spot, but the fact that I was the person able to do it was a real honour.

My accident last year put my Olympic dream in complete jeopardy. I hit my head against the platform and fell for 20m into the pool unconscious, which has made the past year a real struggle – it took two months before I could think about diving again. But my training was going really well before the accident, so the first thing that hit me was that I needed to get back to where I was.

The World Cup was the first time that I have been in the Aquatics Centre and competed in the Olympic pool. To have that taste of what the London 2012 Games are going to be like was just the most amazing thing.

Diving pools generally have a good feel to them, but this one is special. The attention to detail is staggering. Take the railings, for instance. You wouldn't usually expect to take much notice of such minor details, but the way they've been designed has really made



Diving pools generally have a good feel about them but the Aquatics Centre is special

a massive impact. There's something about the way the ceiling has been built too – it really makes a difference to the calm atmosphere.

When you enter the centre, you just get an overwhelming sense of something that is brand new and exciting: it's the Rolls-Royce of facilities.

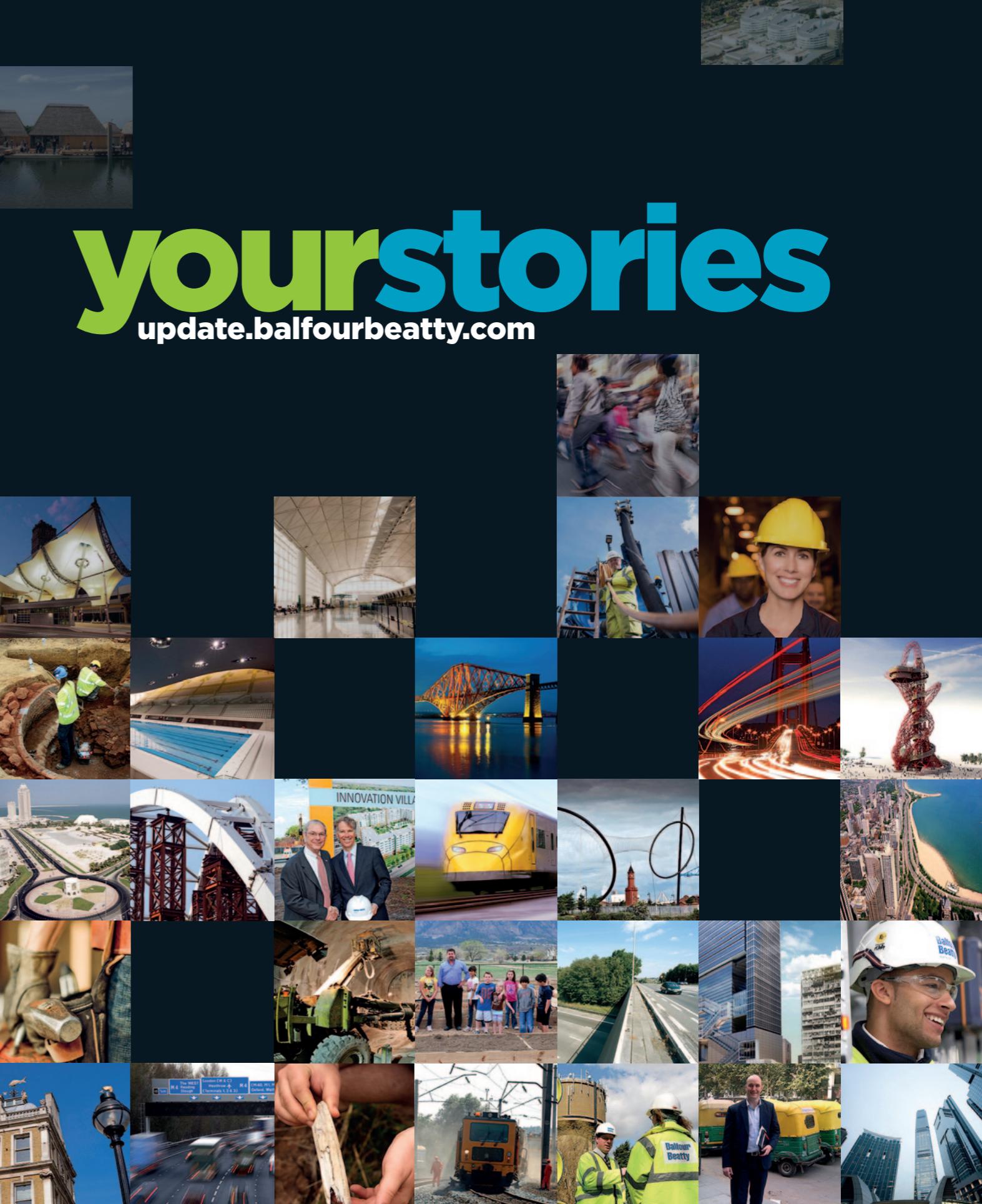
## The Aquatics Centre

- Balfour Beatty built the Aquatics Centre
  - It was delivered ahead of schedule in July 2011
  - More than 3,630 people worked on the construction project
  - The venue was designed by award-winning British architect Zaha Hadid
  - Some 17,500 spectators will fit inside the venue during the Olympic Games
  - It includes two 50m swimming pools and a diving pool
  - The sweeping roof weighs more than 3,000 tonnes and has an aluminium covering, half of which is recycled, resting on three supports
  - More than 850,000 ceramic tiles have been installed in the pools and changing rooms, and at the poolside

Hosting the Olympic Games will be such an honour for everyone in London. undoubtedly, it will inspire both children and adults to get active, but it will also be a real chance for the public to get excited about sport and their country. We had a taste of what it was like to have the home crowd supporting us at the World Cup, and it made the world difference to know that they are here with you. It will be a remarkable experience for athletes performing in the pool and for the crowd to watch.

This was Team GB's best performance at a World Cup and the first time we have qualified for a spot every event, putting British diving an all-time high. We have some great experience in the team and some incredible youngsters coming through, so London should prepare for something really special in the summer.

The World Cup has shown that I have earned my place among the best in the world. I really believe that I have got something to offer Team GB, and everything goes to plan I will get that opportunity. To be able to do that in London's Olympic pool, in front of home crowd, would be the best feeling ever.



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