



**100 years of Balfour Beatty**  
**January 2009**



# One of our most exciting projects.

To mark our centenary, we are delighted to announce our new charity programme, **Building Better Futures**.

Working in partnership with **The Prince's Trust** and **Action for Children**, and with the support of our employees across the Balfour Beatty Group, we are aiming to raise at least £500,000 by the end of the year. All funds raised will pay for community improvement projects that will raise the aspirations, motivation and quality of life of young people suffering from disadvantage.

Our aim is to fund at least 100 projects - one for each of our 100 years in business. To find out more, please visit our website at [www.bbfutures.org](http://www.bbfutures.org)

**Steven Marshall**  
Chairman, Balfour Beatty



Balfour Beatty's first 100 years have been nothing if not action packed. Technological innovation, major transportation and infrastructure networks, and regional and global expansion have all fuelled growth – sometimes followed by a period of retrenchment before the next business opportunity comes along. There was even a phoenix-like rising from the ashes of BICC at the start of this millennium.

The scope and scale of the business has changed more than the character of the company and its people. It took nearly 80 years for the group to build annual revenues to £1bn. Current revenues will be close to 10 times that, with our US business revenues alone now in excess of \$4bn.

Yet even today our corporate DNA can be traced directly back to Balfour Beatty's beginnings – not least its Scottish origins. Inevitably, our business model has evolved but the emphasis is still very much on engineering skills and delivering solutions to customer requirements. There is also a strong delivery focus, with safety and customer satisfaction a priority.

Culturally, the company remains reluctant to shout its virtues from the rooftops (although there may be some of this during our centenary year). In terms of our people, team players fit in well, drama queens less so. Seniority counts for less than quality of thinking and insight into practical application.

Balfour Beatty in 2009 is strong both financially and operationally. The group has the benefit of scale and resilience. It has thought hard about how it creates value and it has clear long-term strategic objectives.

We very much hope that our customers, employees and other stakeholders will feel the same satisfaction and pride in our centenary. And in celebrating, we hope you will work with us to write the next mutually beneficial chapter.

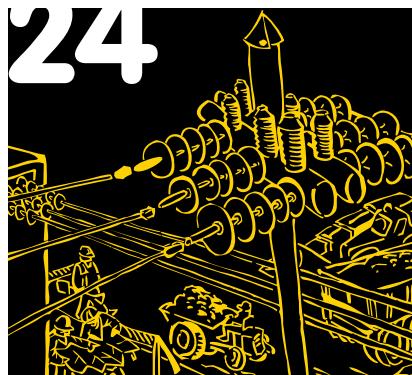
# 06



# 09



# 24



# 18

**04**

**Editor** Kate Wheal  
**Design** Mark Bergin  
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#### **06 Interview: Ian Tyler**

How the accountant chief executive has made Balfour Beatty the contracting giant it is today

#### **09 International strategy**

Expansion in the Middle East, South-east Asia and the US defines the group's global strategy

#### **12 The world in 1909**

What was happening in the year of Balfour Beatty's birth? Some of it will sound familiar...

#### **15 Balfour Beatty starts here**

Engineer George Balfour and numbers man Andrew Beatty swing into action

#### **18 Mega-projects**

The group has made its name overseeing huge projects that draw on its different businesses: Heathrow T5 rail link; King's Cross St Pancras underground station; Queen Elizabeth Hospital, Birmingham; utilities maintenance

#### **24 Client focus: the National Grid**

How the UK's power supplier has redefined its procurement strategy to meet tomorrow's demands

#### **29 Harm's length**

Zero Harm aims to take a fast-improving safety record to the ultimate level

# 29



# 32



05



#### **32 The next generation**

Innovation has become a key motivator for graduates joining Balfour Beatty – we meet three rising stars

#### **39 On the fast track**

How the world's largest fixed rail contractor is spreading its influence across the globe

#### **43 Great buildings we've made**

A collection of landmark Balfour Beatty buildings across the world

#### **36 Corporate citizen**

Balfour Beatty is paying an increasing amount of attention to its involvement in the communities it serves

#### **40 The way ahead**

Chief operating officer Andrew McNaughton looks towards a future managing key assets such as the M25

# "He told me I was unfit to employ"

**... So said James Hanson (now Lord Hanson) when a young Ian Tyler joined his conglomerate. So how did the new recruit get from there to the top spot at Balfour Beatty? Michael Glackin finds out. Photographs by Tom Harford Thompson**

**W**hisper it, but Ian Tyler, the man at the helm of Britain's biggest and most successful construction company, suffers from something of an inferiority complex. It doesn't stem from the fact that he's an accountant in an industry of engineers. It has deeper roots, going back to when the restless Tyler was a teenager.

It turns out Tyler was a reluctant scholar and parted company with school at 16 to join the world of employment. He spent three years working as a clerk for Lloyds Bank before finding his way to university through part-time study.

"Working for three years before going to college is a fantastic thing to do," says Tyler. "But when I went to university it did leave me with a massive inferiority complex. I was convinced I'd be behind the other students who had arrived straight from school. The upshot was I worked really hard for the first two years of university because I was convinced I would be kicked out for falling behind."

He adds: "It receded in time, but in a funny way it also brought out the best in me. I wouldn't tell my own kids to go out to work at 16 and see where it gets them, but it does have advantages. I ended up with a stronger work ethic. And, of course, having worked for three years, I got a full grant, didn't have to sponge off my parents and could also afford to run a car."

Tyler's work ethic has served Balfour Beatty pretty well. During his 12 years at the firm, the past four as chief executive, the company has quadrupled in size through a combination of organic growth and an acquisition programme that has snapped up US firms GMH and Centex, German rail group Schreck-Mieves, and small respected UK players such as Birse, Dean & Dyball and Cowlin Construction.

Today Balfour Beatty employs about 35,000 people in 20 countries. That's not just a long way from its origins 100 years ago, when the firm won its first contract to build a tramline in Dunfermline, but also a

far cry from 12 years ago, when Tyler joined the troubled subsidiary of an equally troubled parent, BICC. "Where I draw real satisfaction," says Tyler, "is that we've created, out of an industry that was notoriously flaky, real consistency and real growth over the past 10 years."

## Construction outsider

Describing an industry that even in the mid-1990s accounted for about 10% of UK GDP as "flaky" marks out Tyler as a construction outsider. A chartered accountant, he cut his managerial teeth crunching numbers – in the retail sector among others – rather than poring over blueprints in site huts.

Yet Tyler is quick to point out that Balfour Beatty was founded by a chartered accountant, Andrew Beatty, and an engineer, George Balfour, so the need to temper engineering flair with prudent money management has strong roots.

Still, he concedes that his background >



07



**Not all the decisions you make will be 100% successful but when things go wrong you have to learn from that and get on with things"**

> still raises the odd eyebrow. "In 2007 I was invited to speak at the Institution of Civil Engineers and I half expected to be stopped at the door and refused entry."

Needless to say he wasn't, but then it's hard to imagine anyone taking umbrage with the chatty, friendly Tyler. He became chief executive of Balfour in 2005, succeeding engineer Mike Welton, after three years as Balfour's chief operating officer and six as finance director.

"As an accountant I'm a generalist rather than a specialist," he says. "My role here is as a generalist – the management of the company as a whole. Engineering is the core of the business but it doesn't follow that all the management positions have to be filled by engineers. We're a decentralised business so the sort of decisions an engineer needs to make are taken by engineers, not by accountants."

#### Global profit surge

Few would doubt the strategy's success. In 2007 Balfour posted pre-tax profits of £201m, up 48% on 2006, on the back of £7.4bn turnover generated by contracts in the UK, US, Asia and the Middle East.

Despite the meltdown in financial markets, 2008 looked set to deliver another bumper haul. Balfour's mid-year order book stood at £12.1bn, up 6% since the end of 2007, and in the six months to the end of June the company banked a pre-tax profit of £95m on £4.3bn turnover.

The financial performance is clearly a high point. But there have been terrible

losses too. Earlier this year the group agreed to pay £2.25m after admitting payment irregularities on a 1990s contract to build the Bibliotheca Alexandrina in Egypt. In last year's Metronet debacle Balfour took a £122m hit when the tube consortium was put into administration – including writing off expected profits and its £70m equity investment in the consortium. And tragically in 2000, there was the Hatfield train crash, for which the group was fined a record £7.5m for safety lapses after the death of four passengers.

"Hatfield ranks as one of the issues that are most personally significant," says Tyler. "We learnt from it and became a very different organisation. But it is something that does affect you personally. You don't just walk home and forget it."

Commenting on more recent corporate failures, Tyler adds: "Not all the decisions you make will be 100% successful but when things go wrong you have to learn from that. I suspect that's what this company has done throughout its 100-year history. We have to take risk, or more accurately manage risk, to make money."

Somerset-born Tyler arrived at Balfour Beatty in 1996 after 14 years working with some of the City's best known figures. After graduating from Birmingham University with a degree in commerce, he joined Arthur Andersen and qualified as a chartered accountant. In 1988 he joined Storehouse, the retail conglomerate created by Terence Conran but then run by former BICC director Michael Julien. Tyler became financial controller there before moving to Hanson, the buildings material conglomerate founded by James Hanson (now Lord Hanson).

Like the company he created, Hanson had a buccaneering image. So how did numbers man Tyler get along with him? "The only contact I really had with him was when he told me I was fat," laughs Tyler. "Hanson was extraordinary. He insisted on seeing everybody's medical record and told me I was unfit to employ and grossly overweight. I wasn't sure I was overweight but it was something most members of the Hanson hierarchy had to endure from time to time."

Weight issues aside – and Tyler now cuts a trim figure – it's clear his time at Hanson underpins his management style. "It was a fantastic place to learn about running a business well because Hanson's strength wasn't its buccaneering but its ability to make businesses perform," he

says. "It was run by the management teams and almost every manager in the organisation was an accountant. Unfortunately the model had long since run its course and broke up."

Did Tyler bring the same thinking to Balfour Beatty? "Well, I'm only one part of what we've done to change things but yes, it is ultimately the same disciplines we used at Hanson. The difference is we're creating an integrated business here whereas Hanson was a conglomerate."

Tyler adds that the landscape of the construction industry has changed hugely in his 12 years at Balfour Beatty, thanks to a bullish run of economic growth and a change in clients' attitudes. "In the mid-1990s the business had a lot of strengths but the market was weak," he says. "The market today is stronger. The government has put more thinking into using the private sector through PFI, which has led them to the services we provide."

#### Secret to success

But Balfour's success isn't just due to changes in government procurement. The same opportunities were there for rivals Laing, Amey and Jarvis, all of which spectacularly collapsed. Why has Balfour Beatty prospered?

You sense the hand of the chartered accountant, curbing the desires of ambitious engineers to bid for flagship projects. "Well yes, we did put in a strong management process that prevented us taking the kind of risks that caused the demise of other businesses. But when I joined Balfour, Mike Welton became chief executive. Mike is an engineer through and through but he and I saw eye to eye on this. The two of us collectively embarked on a strategy that ensured we didn't blow our limbs off."

Tyler's 12 years at Balfour Beatty mark his longest period at one company. And so far there are no signs of itchy feet. His immediate ambition is to build Balfour's US business to match UK turnover.

There may be more acquisitions in the pipeline but for the most part the group will continue its steady progress towards expansion. "If you look at the financial markets you can see where the short-term approach has brought us," he says. "There is a long-term value and heritage in this company and a strong sense that in 100 years the business will still be here if we focus on long-term value. And that is what we will continue to do." ■



09

# Empire building

An international strategy need not be about conquering the world. As Thom Gibbs reports, Balfour Beatty has increasingly been concentrating its efforts on key regions

**O**nce an expeditionary contractor, Balfour Beatty's non-UK business now focuses on a small number of markets in which quality and technical expertise have to stay in step with the increasingly sophisticated expectations of clients.

Nowhere is this more evident than in Balfour Beatty's growing presence in the US, where the group is building a multi-disciplinary business similar to the UK's.

"We are not looking to clone our UK business," says chief executive Ian Tyler, "but to adapt it to suit local market

characteristics. Having said that, we do aim to create the capacity to integrate financing, professional and technical services, project delivery and long-term support services."

Balfour Beatty entered the US in 1986 when it acquired Atlanta-based services business Heery. Through the 1990s the group extended its reach into regional civil engineering, particularly in Texas and California, before embarking on small rail engineering acquisitions this millennium.

But 2007 and 2008 saw a step change >

- > with the acquisition of Centex Construction (now Balfour Beatty Construction US) and PPP and facilities management specialist GMH Military Housing (now Balfour Beatty Communities). Between them these businesses add more than \$70m a year of annual operating profit to the group.

**10** Balfour Beatty's approach in the US is to keep acquired management teams together and leave them to grow their own business. "We believe customers need to be owned locally and looked after by people they know and are dedicated to meeting their needs," says Robert Van Cleave, chairman and chief executive of Balfour Beatty Construction US.

The same applies to Balfour Beatty Communities. "When you are buying a business in the infrastructure field you are mainly acquiring people and knowhow," says Peter Zinkin, the group's planning and development director. "All the company's management team opted to stay with us, so we've preserved what made the business attractive to us in the first place."

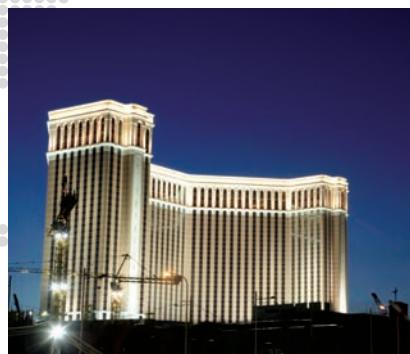
### 35 years in Dubai

Balfour Beatty has longer-standing associations than the US. One of its most successful, Dubai, dates back to the construction of Jebel Ali port in 1974. And despite the downturn in the emirate, the group has forward orders of more than £1bn there and has become a major player in civil engineering, construction and mechanical and electrical engineering.

Jebel Ali was typical of the early history of the firm's business abroad: a series of one-off projects. Yet as group chief operating officer Andrew McNaughton explains, this has changed markedly in recent years. "There has been a growing realisation that we've got something that accounts for 5% of the whole group's turnover," he says. "One of the positive things we've done is to move from being a UK company that looks at projects with



**Clients recognise people who are there for the long term. If you're going to pull out every time there's an economic downturn you'd be in and out every five years'**



an international mindset to committing to the establishment of business internationally. You have to manage and operate businesses from the country they're operating in. While I retain a responsibility for operations in Dubai, you can't manage it from London; it has to be managed and staffed in Dubai."

This emphasis on setting up permanent bases abroad has prompted joint ventures with local companies. Balfour Beatty's relationship with Dutco (Dubai Transport Company) began 30 years ago on Jebel Ali.

Group managing director Brian Osborne says: "Clients will recognise people who are there for the long term. If you're going to pull out every time there's an economic downturn you'd be in and out every five years."

The strategy has paid off in Dubai, where the company has been involved in high-profile projects in recent years. Dutco Balfour Beatty (DBB), the merged operation formed in 2002, provided

electro-mechanical works for the Burj Al Arab Hotel and most recently has built the world's biggest shopping centre, the Burj Mall. The company now employs 18,500 people in the emirate.

But things have not always been rosy, says McNaughton. "Business went through a lean time in the Middle East in the 1990s, so we shrunk down to a manageable operation so we could keep a presence in the region. By 2001 when the growth in Dubai took off, we were well positioned to grow with it."

Typically completed at lightning fast pace, projects in Dubai present challenges to construction firms that demand a tailored response. "Generally the skills for roles such as project management are transferable," says McNaughton. "But the market here, the customer base, the way they go about their business, and the contract arrangements are different."

"Projects are labour-intensive – it's not uncommon to have 2,000-3,000 people

**Previous page: the  
70-storey office  
building One Island  
East, Hong Kong**

**Left, clockwise from  
left: Burj Mall; Burj Al  
Arab Hotel, Dubai;  
Venetian Hotel,  
Macau**

**Below, left to right:  
Fort Stewart, Georgia;  
State Highway 130,  
Texas; Pentagon  
Memorial,  
Washington DC**



on site. Most construction activities operate 24 hours a day. It's accepted that working intensely is a requirement to get projects finished on time."

The Burj Mall opened in November and, featuring more than 1,200 shops, 22 cinemas, an indoor theme park, and a giant aquarium, is one of the biggest projects Balfour Beatty has tackled.

#### Cultural adjustments

As with all work in Dubai, the mall's construction called for operational adjustments to suit the culture. The extreme climate means work is often carried out at night during the warmer months of June to September; Friday is most people's day off; and the ruling sheikh has a decree over religious holidays, which can prompt sudden changes to schedules.

Such adjustments are to be expected, says Osborne, who is responsible, among other things, for Balfour Beatty's operations in Hong Kong. "Far Eastern culture is quieter than at home and less aggressive, although people tend to know what they want and are quite determined about getting their way. Not losing face is very important to them."

Yet adapting to cultural differences can be dealt with easily compared with the many practical challenges of working abroad. Group managing director Manfred Leger handles the company's rail business overseas, which he acknowledges is often

beset with technical challenges.

"Each market has its own rules and its own technology," he says. "There may be slight differences in specifications for sleepers and rails; you need a certain permit in each country; specific vehicles and tools for each country; and you may need different equipment for differing power supplies in each country."

The rail arm operates independently abroad but, where possible, Balfour Beatty teams up with local businesses that can help it navigate any difficulties.

In Hong Kong the company is part of construction group Gammon alongside Asian conglomerate Jardine Matheson, having taken over Skanska's 50% share in 2004. This tackles everything from landmark buildings to road construction in Hong Kong, Singapore and Macau.

"We look to team up with local partners, certainly in places such as China and Hong Kong, where the culture is so different from ours," says Osborne.

Another influencing factor is the working conditions of a country. "Transparency is just about top of the list when we're considering new projects," says Osborne. "We need to be able to work there safely and without any reputational damage."

"With our Far East expansion plans we have concerns about corruption in some countries, which limits progress. We do a lot of work in Hong Kong and Singapore, which are very transparent, but other

markets are going to take work – we will expand in line with the progress they make on these issues."

One thing the firm is keen to flag up is its British heritage. As Osborne says: "Any company with a British parent is seen to bring in, if not best practice, then at least different forms of working. Our safety record is better than nearly all the European countries, definitely America, and almost all Far Eastern countries – so it does carry some kudos to be a British company working in our sector."

But the group directors are well aware that sustained success abroad cannot rely on British kudos alone. The company must keep moving on the international stage to guarantee progress.

The company hopes to expand its Middle Eastern operations to the burgeoning emirates of Abu Dhabi and Qatar, as well as moving into Saudi Arabia.

McNaughton confirms: "Construction activity will slow significantly in Dubai, but it will move through the region. The real key to our strategy is ensuring that we are looking at where the business needs to be in the longer term. The sleeping giant of the region is Saudi Arabia, which has a higher GDP than any of the others."

Osborne returns to the group's recent acquisitions in the US as evidence of the group's international ambitions. "Since we bought in America, the overseas side of our business has become a bigger part of our overall turnover," he concludes. ■

# Back in 1909

**I**t is the year of Balfour Beatty's birth and while Great Britain is still a major world power it is struggling to exploit advances in science and technology. Penny Barratt takes a trip back in time and discovers that history has an uncanny way of repeating itself

12



**I**t had been a freezing winter – and the economy was equally chilling. The country was in recession: the Boer War, political uncertainty and overproduction from the 1890s building boom had taken their toll. Land values fell by 30% in a few years, prompting *The Builder* (*Building's* forerunner) to note in January 1909: "There are suburban roads where house agents boards are almost as plentiful as chimney pots."

Increased mobility, coupled with poor conditions in the cities, had led to the suburban boom. There was a new centralist approach to development marked by the Housing and Town Planning Act, which forbade the building of back-to-back houses – a symbol of poverty in industrial areas. In addition, local authorities had to prepare town planning schemes and builders had to build to proscribed standards.

Yet despite Victorian improvements to drainage and sanitary reform, diseases caused by overcrowding and poverty were still rife. With an average life expectancy of just over 50, TB, diarrhoea, and dysentery were common, and scarlet fever and whooping cough featured on many a child's death certificate. The Association of Poor Law Unions classed nearly 750,000 Londoners – a fifth of the population – as permanent paupers. >



**Selfridges**  
**(The Builder,**  
**3 April 1909)**

"On Monday last were opened Messrs. Selfridge & Co's new premises in Oxford Street. The design of the venture is as much a novelty as the venture itself. With one or two exceptions, it is the first large shop building in London in which the architecture bears any relation to the methods of construction.

Lines of support are carried right up from the ground; the superstructure is not poised to all appearance upon the upper edge of huge sheets of plate-glass hanging, like Mahomet's coffin, betwixt heaven and earth. Between the large column of the main order, what space is not occupied by the window is faced with cast-iron.

This method of emphasising the vertical supports by a stone casing in the guise of a column elsewhere leaving modern methods to speak for themselves is a bold innovation. The interior is disappointing."

13



**The UK in 1909**

» UK population 38 million  
» GDP £125m (at constant 1995 prices)  
» School leaving age was 12 but 140,000 of 10-to-14-year-old boys already worked

» Infant mortality declining: now 15 deaths per 1,000  
» Manufacturing represented 28% of output, rural economy 11%, services 50%  
» Employment stood at 70%, unemployment 3%

» About 5 million women worked (29%)  
» Central government expenditure was 10-15% of GDP  
» Employment union membership had reached 11% of the workforce

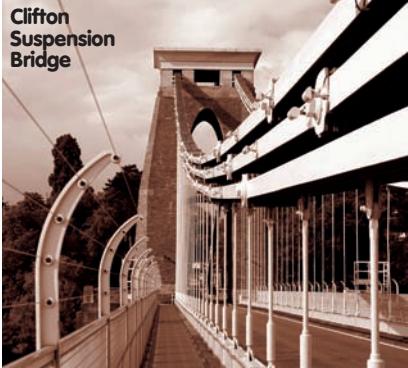
» A dozen new-laid eggs in London cost 1 shilling 4½d (6.9p)  
» There were 50,000 policemen (120,000 today)  
» A motor-driven cab could average 12mph around London – faster

than at the end of the millennium  
» Inland postage cost 1d (0.4p)  
» A copy of *The Times* was 3d (1.2p)  
» The first Boy Scout rally was held at Crystal Palace

» Hunger-striking

suffragettes were force-fed  
» The forerunner to M15, the Secret Service Bureau, was silently established  
» Ernest Shackleton's expedition to the South Pole was forced to turn back

11 miles short, but American Robert Peary reached the North Pole  
» Brick stocks cost £1 and 4 shillings a thousand; best Portland cement £28 a ton; rolled steel joists £7 and 10 shillings a ton.



**Clifton Suspension Bridge**

> Unemployment in construction was high – 16% of carpenters and joiners were out of work. In the first decade of the 1900s there was a dramatic fall in newly built homes from 150,000 to 100,000 and building was at a near standstill by the outbreak of the First World War. Local authorities were empowered to provide affordable housing but rarely did. Just 1% of housing was “public” and 89% of the population lived in rented homes. As today, the government was being urged by the press to undertake public building to stimulate the economy.

14

Against a background of rising trade unionism and the ascent of Labour voters, the old two-party system was under threat. Herbert Asquith’s Liberal government, with David Lloyd George as chancellor, introduced the People’s Budget – the first in history intent on redistributing wealth and introducing social welfare programmes paid for by higher taxes. The government oversaw medical provision for children, subsidised school meals, and introduced an old age pension and national health insurance.

The budget held income tax at 9d in the pound (or 3.75%), but proposed a higher rate of one shilling (5%) for incomes over £2,000 (more than £140,000 today). This, combined with plans for a tax on land and tariffs on imports, led the House of Lords to veto the new budget.

#### A life of leisure

But for anyone with cash to spare, it was the start of the leisure age. In homes, the first vacuum cleaner made lives easier, along with the introduction in 1909 of tea bags, electric washing machines, coffee filters and paper cups.

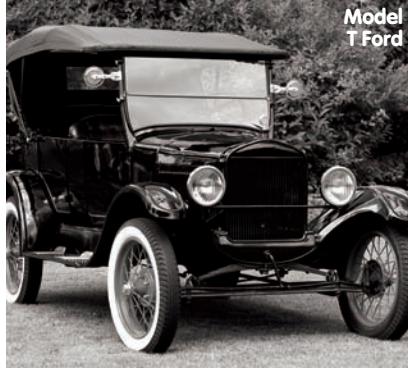
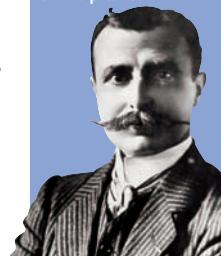
The first purpose-built cinemas were appeared and in February audiences thrilled to the first public film in colour at the Palace Theatre, London. Selfridges department store opened in the capital and Woolworths launched in Liverpool.



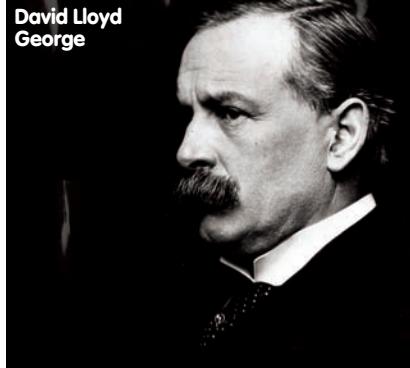
#### Aviation in 1909

**Fast development followed the first manned flight:**

- » Louis Blériot (below) claimed a £1,000 prize from the Daily Mail for making the first crossing of the English Channel in 37 minutes.
- » Glenn Curtiss won the first international air trophy (the Gordon Bennett Trophy) in Reims, completing two 10km circuits in 15 minutes 50 seconds.
- » The world’s first passenger airline was founded by entrepreneurs in Germany and used a Zeppelin service for paying customers.
- » John Moore-Brabazon made the first live cargo flight by plane when he put a pig in a basket tied to a wing-strut of his plane.



**Model T Ford**



**David Lloyd George**

The first rugby football match was played at Twickenham and a meeting at Lord’s cricket ground established the Imperial Cricket Conference for bodies “where test cricket was played within the empire”. Away from the cricket pitches, professionalism in sport spread fast: Newcastle United won the football league in England but north of the border the cup was withheld in the 1909 Scottish final after a riot broke out.

At this time, mechanical, electrical and civil engineers, architects and builders were still the superstars of the industrial world. The public had been astounded by the speed of urban growth, new roads, railway electrification, lightbulbs, the Crystal Palace and Clifton Suspension Bridge. But Britain’s reluctance to use the new materials of concrete and steel or to supervise greater use of electricity domestically and commercially put it behind the US and mainland Europe.

#### Rule Britannia?

In America, Edison proposed making a concrete house by “casting the whole fabric in a single mould” and reinforced concrete was producing 280ft span bridge arches. In England, meanwhile, architects had managed to standardise the size of bricks and a committee from the Corporation of London went on a fact-finding mission to Berlin to check out the German gas lighting system.

On the continent electric tower cranes and concrete mixers were being used on sites and prefabricated concrete sections in roads and buildings. It took the completion of the first large-scale reinforced concrete building in the UK, the General Post Office extension in London, to convince a sceptical British industry of its suitability for further use.

In terms of transport, railways were rising to their peak with well over 30,000km of routes. London alone had 329 stations. A system built as a

patchwork of local rail links run by small private firms was slowly being converted to electricity with standard gauges by pioneers such as Balfour Beatty.

But while small sections of suburban rail were electrified, for many years the heavy initial cost of electrification stalled progress. As the president of the Mechanical Engineers Institute said at the time the “improbability of any increased revenues” in 1909 meant there was “very little hope it would be adopted for long-distance mainline traffic”.

Railways were also under threat from the motor car. The Local Government Board reported in February there were 27,601 miles of main road costing £2,535,399 in upkeep a year. In 1906 Rolls Royce was founded and two years later the first Model T Fords were produced in America. The rising number of cars on the road was seen as a revenue opportunity by the government. A “consumers tax” of 3d was imposed, taking the cost of petrol to nearly 4p a gallon.

But just as non-standard tracks and power supply held back rail development, the state of the roads restricted transport. Tar-bound macadam had been applied to roads in capital cities but “tar painting” cost £40 per mile, so it was too expensive for rural areas. In addition, there were no standard road widths, road signs or accepted construction methods.

In London, at the first meeting of the new Institute of Municipal Engineers, president Mr Pegge reported: “Roads are broken up by post office telephones and telegraphs, water, gas and electric companies and hydraulic mains until the streets are like Joseph’s coat – if not in colour, certainly in contour. Of what profit is it in getting perfect gradients and true lines if they are counteracted by the constant breaking up of streets with little regard to the public convenience and still less to the value of the surface material.”

Plus ça change. ■



#### Born in 1909

- » Errol Flynn
- » Carmen Miranda
- Douglas Fairbanks
- » Jacques Tati
- Benny Goodman
- » James Mason
- David Niven
- » Matt Busby
- Francis Bacon
- » Fred Perry



## Scottish roots

Balfour Beatty has strong Scottish links. By 1910 its founders were directors of firms in Fife, Dunfermline and Falkirk and the Scottish Power Company. They opened their first Scottish office that year.

It was also in Scotland that Balfour Beatty first diversified from power generation to civil engineering. The First World War stalled the spread of electrification. But Balfour got its first commission to build an aqueduct, for the British Aluminium Company at Kinlochleven. The work was finished in two years using 1,000 German PoWs and 500 British troops of "a low medical category".

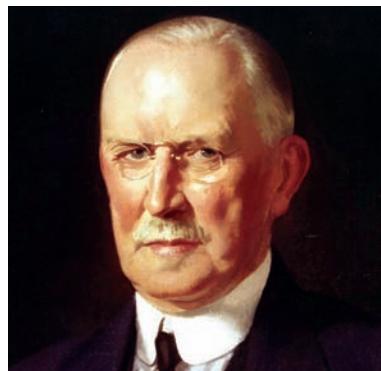
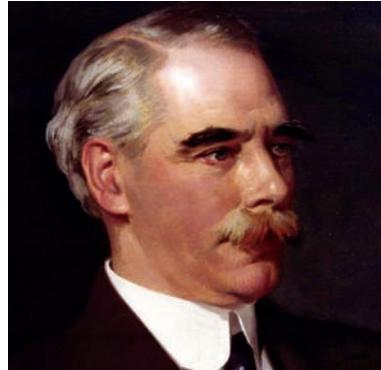
## Cheap electricity

Scotland provided the group's first major development work to provide cheap electricity. In 1926 it won a £2.5m contract on the Lochaber water power scheme (below), building a 15-mile tunnel, power station foundations, temporary generating station and pipes down Ben Nevis.

The post-war nationalisation of electricity cut Scottish operations in Edinburgh to one engineer, a site clerk and a typist. Any contract was considered. In the 1950s they even took on roadbuilding in direct opposition to dictats from London – the first contract was entitled simply "site development".

## Start of civils

It was the start of heavy civils work in Scotland. It was also the start of major diversification for the Edinburgh office into factories and commercial buildings and even concrete platforms for the oil sector in the early 70s.



# ...A POWERHOUSE IS BORN

**The early story of Balfour Beatty is one of power and enterprise, harnessing emerging forms of energy. It had its beginnings in the financing and construction of early power stations – and remains at the forefront of power, transport and other infrastructure supply today**

**G**eorge Balfour, whose family originated in Dundee, was born in Portsmouth in 1872, qualified as an engineer in 1893 and developed his expertise working for pioneering American engineer JG White in London. It was there that he first met and befriended the company secretary, an accountant named Andrew Beatty.

Edwardian society was one of increasing sophistication: electric lighting, train travel, telephones and even cars were less and less the preserve of the upper classes. The innovations were there; it was distribution and supplying the consumer that were the problems.

The government, fearful of monopolies, had kept the supply of power on a local footing, allowing only small stations to be built with no attempt to standardise voltage or equipment. In this environment, Balfour and Beatty believed that the electrification of the tramways, each route being built with its own generating plant,

would be the key to spreading cheap electricity into every corner of the country.

In 1909 the two founded Balfour Beatty from capital of £50,000. Its main purpose was financial and technical management and the company's first act was to buy shares and take over the running of several scattered tramways in Dartford, Luton and Mansfield. But after six months came an opportunity for the first construction contract – a £141,450 project to lay new track, cables and generating plant at a power house supplying tramways in Fife. The track grew a mile a week and within six months, trams were running and consumers were being supplied with electricity from the power station.

At the end of the year, Balfour Beatty showed a net profit of £6,807 10s 7d.

In the 1920s there were no fewer than 572 separate suppliers drawing electricity from 438 stations throughout the UK and the government was dithering about the solution. It was shown the way by private >





### Alistair Wivell

Alistair Wivell and his family are more familiar than most with Balfour Beatty. His father, Sandy, a former coal miner, joined the company in 1926 as a general foreman at the start of the Lochaber hydro-electric scheme.

Alistair was born on a Balfour Beatty site and was brought up in staff quarters on the hydro-electric scheme in Fannich, north of Inverness. He joined the company as a trainee civil engineer on £5 a week in 1964. His son, Neil, started work with the company in 1993 and is now a commercial manager in Scotland.

Wivell rose to become one of the three group managing directors and now chairs the Balfour Beatty Pension Fund. He recalls the "pioneering spirit among men such as my father".

### Harsh conditions

"The conditions were very tough for them on the Lochaber scheme. They had to build their own jetty to get raw materials onto the site even before tunnelling.

"They had harsh working conditions, men working day and night, and basic barracks-style accommodation, sometimes even double shifting the beds."

"There were no hard hats, limited ventilation, many accidents. Engineering techniques may not be so different today; what has really changed are the safety standards."

But he recalls the family-firm atmosphere: "George Balfour was a man of vision, a driving force and a regular visitor to sites; it was a people business."

> entrepreneurs such as Balfour and Beatty, who had long since standardised the voltage throughout large areas of the Midlands where they controlled supply. It wasn't until 1925 that parliament recommended establishing a "grid" to establish a national system of transmission lines. This would take six years to finish at a cost of £27m.

### Capital investment

In those early days of power, neither banks nor government were keen to invest in new technologies. In a forerunner of modern day PFI projects, Balfour and Beatty set about boosting the company's capital resources to fund larger projects themselves at home and abroad. In 1922 they formed Power Securities Corporation, wholly owned by Balfour Beatty and supported by three enterprises, Babcock & Wilcox and the forerunners of the Vickers Group and GEC – Armstrong Whitworth and the British Thompson-Houston Company.

Huge amounts of construction finance had to be raised for the hydro-electric projects in Scotland in the 1920s and 30s (see box p21) and by 1931, despite the major economic depression, work in hand was worth £4m.

The Second World War stopped these financial operations almost overnight. Instead Balfour Beatty had to scrape profits from essential bomb repair works, laying cables, extending power stations and, famously, building the Churchill Barriers in the Orkneys (pictured above).

Post-war reconstruction in the UK and abroad kept the firm busy throughout the 1940s and 50s but it was living on borrowed time. Clem Attlee's new Labour government introduced the Electricity Bill, which nationalised electricity supply from April 1948. Power Securities received some compensation and played a key role in creating the

### Then and now



1929 Rannoch Power Station  
Scotland



1939 Orkneys Scapa Flow

275kV "supergrid" for the new Central Electricity Generating Board, which was quickly replaced by 400kV lines.

But it was not enough. Business continued to be tough throughout the mid-1950s even though attempts were made to build up the contracting arm to replace the loss of UK power work.

It turned its sights overseas again, continuing projects such as the Wadi Tharhar project in Iraq to stop flooding in Baghdad, which called for the removal of 80 million tons of earth in four years.

But political revolution there, disturbances in South America and independence for many of the African states was gradually closing more and more doors overseas for Balfours. This was to be the impetus for finding new markets: contracts were won in Canada and Kenya, while new nuclear power plants provided diversification closer to home. By the firm's golden jubilee in 1959

the group was still a relatively small family firm with assets of more than £5m and 500 staff in the London HQ in Cheapside.

That was to change radically in the late 1960s. With the completion of the supergrid, there was no more work left to transfer old-style electricity generation to the new grid in the UK.

Balfour Beatty and BICC Construction, which together shared two-thirds of the home market, decided to merge. In 1969 BICC bought 100% of Power Securities to generate work overseas to replace the lost market in power transmission at home.

### Problematic period

It was an association that lasted until the new millennium, but initially it was a sticky period for Balfour Beatty. Problem contracts at the Dartford Road Tunnel and South Mimms meant the southern part of the business made losses while the north of England and Scotland thrived.

### Overseas milestones

Economic hardships in Europe in the 1920s turned Balfour Beatty's attention to power utilities overseas – primarily in colonies with trading ties that looked to England to develop new technologies.

In 1924 it undertook its first management contract overseeing the supply of electricity to Nairobi and Mombasa in Kenya after an employee went on safari on foot down the length of the Tana River looking for hydro-electric possibilities.

The next few years saw rapid expansion in the supply of electricity and associated expansion of transmission lines, cables, and consumer connections with water projects in Jerusalem, dams in the Dolomites and tracks in Bermuda. Here, an 11-mile railway was built at a time when the only car allowed on the island belonged to the governor. Power to tin mines was laid in Nigeria, trams in Buenos Aires and crocodiles chased from sites in Uganda.

One key early overseas client was King



Over the next two decades the group diversified, not always successfully, into housebuilding and property development. Although by the 1980s more than half of its turnover came from overseas work in 60 countries – for example Jebel Ali port in Dubai and the Mrica dam in Indonesia – Balfour was still involved in a roll call of landmark projects in the UK: the Kielder Dam in Northumberland; major works at Sellafield; large stretches of the M25 and M63; the Cardiff Bay Barrage.

Under longstanding chairman Don Holland, the company broke the £1bn turnover barrier with a record year in 1986/87 and a profit margin of more than 3%. The acquisitions of Haden and Balfour Kilpatrick made Balfour Beatty the largest M&E services operation in the UK. The company now had 25,000 staff.

But the years of real growth were to begin in the 1990s with the appointment of chief executive Mike Welton and

finance director Ian Tyler, who aimed from the outset to modernise what was still at heart a traditional construction engineering company.

Reversing the process of diversification, they returned to the company's roots. At first, the privatisation of British Rail by John Major's Conservative government caused a hiatus in spending but Balfour Beatty then played an important part in the maintenance of major railway lines and won the contract to remodel the approaches to Euston station and update the ageing West Coast Main Line.

#### **Procurement sea change**

Once the early teething troubles associated with new forms of procurement such as public private partnerships were resolved, Balfour Beatty became increasingly involved with PPP schemes – hospitals, schools, underground

maintenance and street lighting. By 1998, the group's turnover had passed £2bn.

A more selective approach to bidding and a focus on core strengths led the group to end a 30-year business structure and dispose of the BICC electrical cable side of the business. The Balfour Beatty name re-emerged as an independent public company in May 2000 and announced its focus on four core businesses:

- > Building management and services
- > Civil work
- > Rail engineering
- > Investment and developments.

Boosted by profits from the BICC sale, it bought rail electrification and traction power supply company Adtranz, which put it on the path to becoming world leader in that market.

The new millennium brought steep growth for the 100-year-old group – with turnover topping £3bn for the first time in 2000 and rising to £7.4bn in the 2007 full-year reports.

But just as its original founders, George Balfour and Andrew Beatty, set out clear business intentions in 1909, so does Balfour Beatty now claim similar simplification as two distinct businesses: a growing infrastructure investment specialist and the UK's largest international engineering, construction and services contractor.

Sticking to those roots has set the company on course to reaching its second century in good shape too. ■

Faisal in Iraq, for whom Balfour Beatty undertook big projects in the mid-1930s to control the Tigris and Euphrates flood plains for "Britain's faithful ally". It took four years to complete and involved placing 325,000 cubic yards of concrete in the form of a barrage 1,600ft long and costing £1.25m. It took George Balfour a week to travel from London just to attend the inauguration ceremony (pictured right).

By the 1980s the company was operational in more than 50 countries.



#### **In time of war**

Balfour Beatty's civil engineering experience of creating a barrage across the Tigris in Iraq was to play a crucial role in the Second World War.

Following the torpedoing of the battleship Royal Oak at the Royal Navy's main base at Scapa Flow in the Orkneys, Winston Churchill, then First Lord of the Admiralty, ordered the eastern defences to be closed.

Five of the Scottish islands had to be linked into a causeway by sealing the intervening four tidal channels – over 9,000ft across and up to 70ft deep – while contending with fast tides and 100mph winds. It took four years, 500,000 cubic yards of quarried rock and 300,000 tons of concrete facing blocks.

Balfour Beatty also played its part in the artificial harbours, known as Mulberries, which were prefabricated and towed across the Channel and sunk off the Normandy beaches to give protective anchorage to Allied Forces invading France in June 1944.

# ALL SYSTEMS GO

From underground rail networks to large PFI contracts, complex projects call for innovative solutions – and Balfour Beatty has a growing reputation for managing and delivering them. We put four projects under the spotlight

18





**C**hambers English dictionary gives the word "mega" two meanings: a 1980s colloquialism meaning excellent and a prefix, from the Greek *megas*, meaning large or great. Both are equally applicable to the mega-projects tackled by Balfour Beatty, be it PFI hospitals, railway links or water maintenance contracts. So what's the secret behind making them work? David James, managing director of Balfour Beatty Management, says the key is in understanding what the client wants.

"Clients have come to know us as a company that can provide integrated services, from the conception to completion of a project and beyond," he says. "What we do is not rocket science. By understanding the challenges and pressures and bringing a solution to the

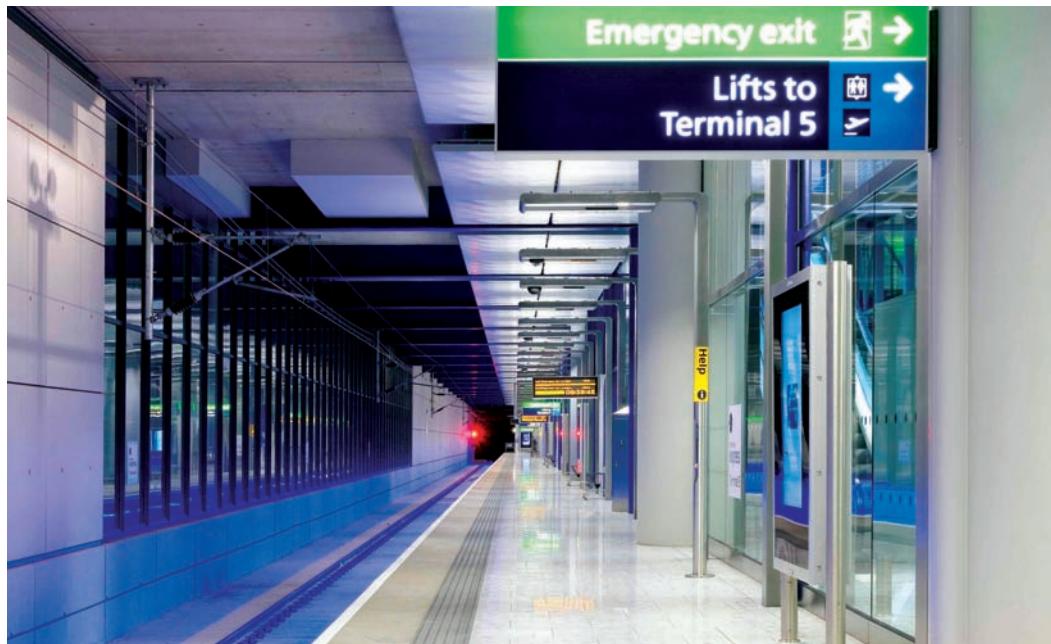


**What we do is not rocket science. By understanding the challenges and pressures and bringing a solution to the table that is inclusive and exceptional, we can fulfil the requirements of these mega-projects"**

table that is inclusive and exceptional, we can fulfil the requirements of these mega-projects."

James sees his operation as the glue that binds the diverse elements of the group together. But he adds: "The companies operate individually. Each is responsible for its bottom line and they come together when it is of mutual benefit but not as a strict policy. That way the company stays adaptable to client needs." >

# T5 proves vital link to Heathrow work



20

New platform: the T5 project has involved plenty of logistical, interteam and safety challenges

> The rail link and station at Heathrow airport's Terminal Five will become a vital transport artery. And for Balfour Beatty it has become a key source of work – £450m worth of contracts secured, including extending the Piccadilly Line and Heathrow Express to T5.

Group managing director Mike Peasland says: "A partner was required to complete M&E ancillary services to the rail contract, so we offered BAA a joint venture with Balfour Kilpatrick."

The group managed the building works for the station; installed the M&E services for the station box; it installed the power supply to the driverless vehicles between T5A and T5B; and Balfour Beatty Civils won the contract to build the spur road from the M25 into the new terminal.

BAA's management experiences on T5 led the airport operator to reassess its working policy on big construction projects and create a Complex Build Integrator framework, which Balfour

Beatty joined in 2007. This hands full responsibility for project management to a lead contractor.

"It means BAA can focus on meeting the needs of airlines and shareholders while we get on with running the construction projects," says Peasland.

Now, BAA contracts out entire projects to Balfour Beatty to procure and complete. This includes Heathrow Terminal 2 and Edinburgh airport, airline relocation moves at Heathrow and major improvements at Glasgow airport.

Andrew Thompson, operations director for Balfour Kilpatrick, was a project manager on T5 and now runs all related services work under the Complex Build Integrator. "T5 held special challenges for us," he says. "In the interchange area between T5A and the car park we had to erect a building 30m wide, while below they were building the rail station and work was at fever pitch. Ensuring the safety exclusion zones was of paramount

**Client** BAA  
**Contract** Balfour Beatty Rail Projects and Balfour Kilpatrick JV to extend the rail and tunnel systems of Heathrow Express and Piccadilly Line to Heathrow T5, station construction and fit-out

**Contract value** £450m  
**Completed** July 2007

**Scope of work**  
» Rail, trackwork, traction power, M&E works for 10km of underground rail  
» Balfour Kilpatrick: M&E on Heathrow Express and Piccadilly Line rail tunnel extensions to T5, T5 station and track transit system between terminals  
» Balfour Beatty Construction: production lead and fit-out contractor on station/interchange

importance – with so many operatives on site it proved very challenging at times."

Similarly challenging were the working relationships. "We have ways of doing things and so does London Underground," says Thompson. "The trick was to achieve a level of understanding that enabled us all to work together rather than attempting to go at it with blinkers on."

Thompson is in the midst of relocating services to allow T2A and T2B to be built on the site of Terminal 2 and the Queen's Building office block. Before these can be demolished all critical services must be rerouted. "We've built a modular gantry corridor 300m long and 4m above ground. All the services from T2 – electricity, fire alarms, CCTV, telecoms, IT – which are interconnected to the rest of the airport, are routed through this to ensure the airport remains fully operational while the old buildings are demolished."

Under way since November 2007, this is due to complete next spring.

## Building a station out of a hole at King's Cross



**Client** Transport for London  
**Contract** Construction of ticket hall at King's Cross St Pancras underground station; construction and fit-out of four-storey unit to improve access via stairs, lifts and escalators  
**Total budget** £1.5bn  
**Awarded** 2003  
**Completed** Partial completion – two ticket halls, 2006 and in 2008 to allow for Network Rail redevelopment of mainline station; full completion 2012  
**Companies involved** Balfour Beatty Management, Civil Engineering, Ground Engineering, Construction Plant and Fleet Services, and Balfour Kilpatrick

Balfour Beatty Management has played a key role in the ongoing redevelopment of King's Cross St Pancras underground station. Working as part of the ABBT joint venture – Atkins and Balfour Beatty – it passed on the contract to construct the northern ticket hall to Balfour Beatty Civil Engineering in 2006.

An integrated team comprising this division, engineering services company Balfour Kilpatrick and Balfour Beatty Ground Engineering began construction work on the £1.5bn project that summer.

Work is predominantly being conducted below ground and comprises the construction and fit-out of a gigantic four-storey concrete box. This will provide improved access to the Northern, Piccadilly and Victoria underground lines via banks of new escalators and lifts.

Project manager Robert Oag says: "Our work is almost all being done in close proximity to the public, as well as live trains and tube lines. This makes for

**Our work is almost all in close proximity to the public, live trains and tube lines. This makes for difficult conditions and working at anti-social hours so as not to inconvenience the public"**

difficult conditions and working during anti-social hours so as not to inconvenience the public."

The challenges have been wide-ranging, starting with the sheer scale of the excavations and shoring works as the team dug down and then built the station out of the hole.

"Now we are entering a phase where more intricate operations prove the most testing," says Oag. "The integration of systems – fire, smoke and evacuation alarms, security measures, CCTV, communication networks – between the completed phase one and this new phase two is reaching a critical stage."

Offsite construction has played a critical role in the construction programme, he says. "We have worked up all systems on a mimicked basis, developing them off site. There they can be tried out and tested for bugs before coming near the station.

"When we install them for real, they

should simply plug in and be operational. This level of testing may seem like overkill, but the implications of a false alarm in King's Cross are enormous, so we simply don't take that chance."

On its completion in 2010, the new underground station will be able to deal with an anticipated 90,000 passengers during the morning rush hour each day. Until then work must continue at pace and without getting in the way of the station's current 80 million passengers a year.

"The scale of the King's Cross project can't be truly appreciated because it is almost all underground," says Balfour Beatty Management's David James. "It is a massive undertaking in a dense city centre environment, where there is significant interface with the public and a very restricted work space."

"But in the midst of that, we are working to meet the critical deadline for the 2012 Olympics."

## From water mains to grass verges



Maintenance contracts and clients  
» **British Energy:** £60m per year  
» **Royal Mail:** £100m per year since 2001  
» **Department of Work and Pensions Mail centres:** £80m per year  
» **Water United Utilities:** £100m per year for five years  
» **Gas North West Gas Alliance:** £70m per year for eight years  
» **Electricity Electrical Alliance:** £100m per year for five years  
» **Roads Highways Agency:** £40m per year for five years  
**Companies involved**  
**Balfour Beatty Utility Solutions, Infrastructure Services, Management, WorkPlace**

22



Volt from the blue:  
Balfour Beatty has built on its long history of working on the UK's power networks



> Less high profile yet just as important to the balance sheet are the large-scale utilities maintenance contracts that span the UK. "They aren't as sexy as some of the buildings," admits group managing director Brian Osborne, "but they bring in significant revenue over their life spans and are important all over the country."

And he should know. His division includes Balfour Beatty Utility Solutions, Infrastructure Services, and WorkPlace (formerly Haden Building Management). Utility Solutions operates maintenance and upgrade programmes on the water, gas and electricity networks, while Infrastructure Services helps keep the UK's roads in order.

"Because they are long term, the gas and electric alliances have been set up as almost independent companies in which Balfour Beatty and the client have equal stakes," says Osborne. (see p24)

The contracts are open-book. Balfour Beatty sets target costs each year and if

the alliance beats the target the profits are shared between client and contractor.

"We've been able to reduce the real-terms cost of maintenance per metre year on year," says Osborne. His teams, with support from Balfour Beatty Management, have done this partly by rethinking the way work should be carried out. No longer do teams of men lean on shovels waiting to fill in a hole while someone lays a gas or water pipe. Instead, 15-man teams, known as 'mega-squads', work like a production line: the first group surveys the road; the second digs trial holes; a third excavates the trench; a fourth lays pipe and so on.

Phil Brookes is managing director of a key part of Osborne's stable, Balfour Beatty Utility Solutions. "Our work isn't easy to quantify immediately," he says. "But for, say, water we carry out as many as 10,000 jobs each week. These range from one man taking one hour to patch a pipe, to teams of 30 working for months on renewal projects."

**The work is unglamorous but essential. We get called at an hour's notice when people are left without water"**

The water teams are based at 32 depots from the Scottish Borders to Cornwall, and serve seven of the 10 UK water companies. There are 1,800 directly employed staff and another 500 subcontractors that work within their regions. "The work is unglamorous but essential," says Brookes. "We get called out at an hour's notice when people are left without water."

It's a similar picture at Balfour Beatty Infrastructure Services. Currently working on two five-year contracts for roads across the south of England, the company is responsible for everything from cutting grass verges and gritting roads to managing the lorry stacking system on the M20 when French port officials go on strike.

Even here, the group can draw on its management and specialist divisions. "Balfour Beatty Management has helped set up contracts with National Grid, British Energy and the Highways Agency," says Osborne. "And we can also call on our civil engineering and construction teams."

# Prefab push for Birmingham hospital



This year's module: offsite construction continues to play a big part in the construction stage of the project



Balfour Beatty Capital, the group's public-private partnership specialist, was awarded the 40-year, £553m contract for Birmingham Acute and Adult Psychiatric Hospitals in 2006. The group's shareholding in the public-private partnership overseeing the project is 40%, alongside partners Royal Bank Projects (30%) and HSBC Investment Management (30%).

The contract for the PPP, known as Consort Healthcare (Birmingham), involves the design, construction, financing, maintenance and management of the lifecycle replacement of the new hospitals for 35 years following the five-year, two-month construction period.

A joint venture team of Balfour Beatty Construction and Haden Young is running this project to build the first new general hospital in Birmingham for 70 years and the largest community healthcare development outside London.

"It is a big undertaking," says Balfour

**Client University Hospital Birmingham NHS Foundation Trust; Birmingham and Solihull Mental Health NHS Trust**  
**Contract Design, construction, finance, maintaining and managing of Birmingham Acute and Adult Psychiatric Hospitals in a PPP with Royal Bank Projects and HSBC**  
» Concession is 35 years following five years of construction  
» Balfour Beatty has committed £23m to the project between 2009 and 2010.  
Value £553m  
Completed 2012  
Companies involved  
**Balfour Beatty Capital, Construction, Construction Plant and Fleet Services, WorkPlace, Haden Young**

Beatty group managing director Mike Peasland. "We started with nothing more than an output specification from the client; a list of what departments, the departmental relationships and an accommodation schedule.

"From there, our team had to design and cost the entire project. We are now building 400m<sup>2</sup> per week."

Peasland says specialist mechanical and electrical services are always a large part of the cost of hospitals, hence the joint venture with building services contractor Haden Young and the widespread use of prefabrication.

John Hughson, head of construction on the project, says: "Prefabrication makes for safer working conditions, less manpower on site and a higher quality of finish. In that respect, we have been working with teams of Haden M&E engineers on site from the very start of the project."

Haden Young is responsible for the

prefabrication and installation of services modules, vertical mechanical risers and entire bathroom pods – factory-built elements that are tested by in-house teams before being delivered to site and installed.

"There has been colossal interaction between Balfour Beatty Construction and Haden Young from the outset," says Hughson. "Our integration is what makes the design and build project work.

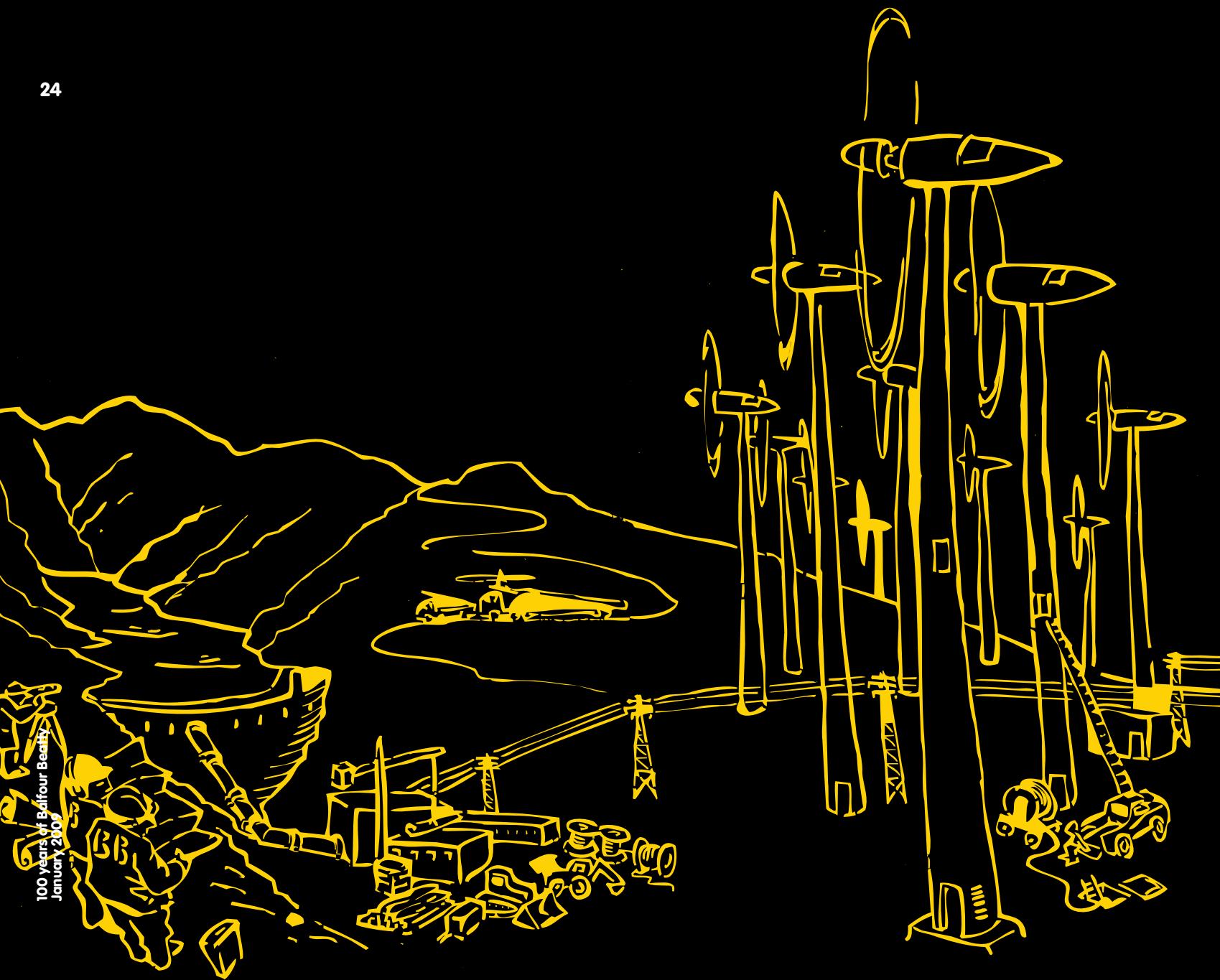
"We could do it with other firms but, in truth, when we come up against difficult issues, working with Haden is easier because, as sister companies, we can be sure we are working towards the same goal."

The mental health facilities have already opened. These will be followed by the main acute facilities in 2010. Final completion is due in 2012, when the hospital will accommodate more than 1,300 beds – 21% more than the facilities it is replacing. ■

**As the creation and management  
of its assets becomes ever more  
demanding, the National Grid is  
expecting much more from its supply  
chain partners, as Tony Whitehead  
hears. Illustration by Patrick Lewis**

# Let there be light

24



**T**he startling fact that more than a third of the UK's power generating plant will need to be replaced over the next 15 years – much within the next 10 – has increasingly become a front-bench political issue. With what sort of power should old plant be replaced? How much of a contribution can renewables, particularly wind farms, make? And what of 'clean' coal and, perhaps most controversially, a new nuclear power programme?

Whatever the shape of our future generating capacity, its creation represents a huge challenge, and not just to government and power suppliers. National Grid, whose job it is to connect all this new plant to its national power distribution network, faces a uniquely testing period. To enable it to meet the challenge, it has embarked on a new way of working with its contractors in long-term "electricity alliances". Not surprisingly the next few years will

put this form of procurement under stiff examination.

Simon Cocks, National Grid's global procurement director, spells out what is expected from the new alliances. "We have a very significant UK investment programme in the coming years," he says. "This is partly driven by concerns about climate change and the replacement of fossil fuel plant with renewables and potentially nuclear power. It is also because many of our existing assets are now reaching the end of their useful lives."

A double whammy then – and even trickier than it at first appears. "Renewables will play a role, but by their nature they often generate power away from where it is needed," says Cocks. "Scotland is suited to wind farms, for example, but the network is relatively sparse there."

Tapping renewable sources will also call for more generators of smaller

amounts of power. So, as well as stretching the network to remote locations, the Grid will also have more plants to connect.

"To do all this at the same time as we are replacing our existing assets means we will have to manage the process very carefully," says Cocks. "We don't want the whole network in pieces at once."

Quite. So the way the Grid procures new connections and replaces old kit is, to say the least, absolutely central to the business of keeping the lights on over the next decade.

#### **What are the electricity alliances?**

Forged in March 2007 the National Grid signed several five-year contracts to upgrade and develop the electricity transmission network across England and Wales, based on a model created to handle its gas network.

The gas contracts were big but the new electricity ones are bigger. Worth some >





**“Five-year contracts mean we are able to give contractors more insight into planned workloads and better understand their resource requirements”**

> £2.5bn over the five years, 15 contracting organisations are involved. This is hardly surprising when you consider the scale of the Grid's operation – 7,200km of overhead line, 700km of underground cable, 313 major substations at the nodes of the grid, and the construction of connections to new power stations and smaller plant.

Even individually, these contracts are substantial. Balfour Beatty has one of the largest, covering the east of England and worth around £500m over the five years.

26

concept and design phases, they can help us with constructability, lean building and incorporating safety by design both during construction and throughout the lifetime of the asset.”

In essence, says Cocks, the alliances allow the parties to work more closely, understanding each other's needs better, learning from each other both technically and commercially to reap the benefits of longer term planning.

In the current financial climate, many contractors might view such long-term arrangements with a financially stable client as something of a cushy number. But a look at how the contracts operate quickly dispels any such notion.

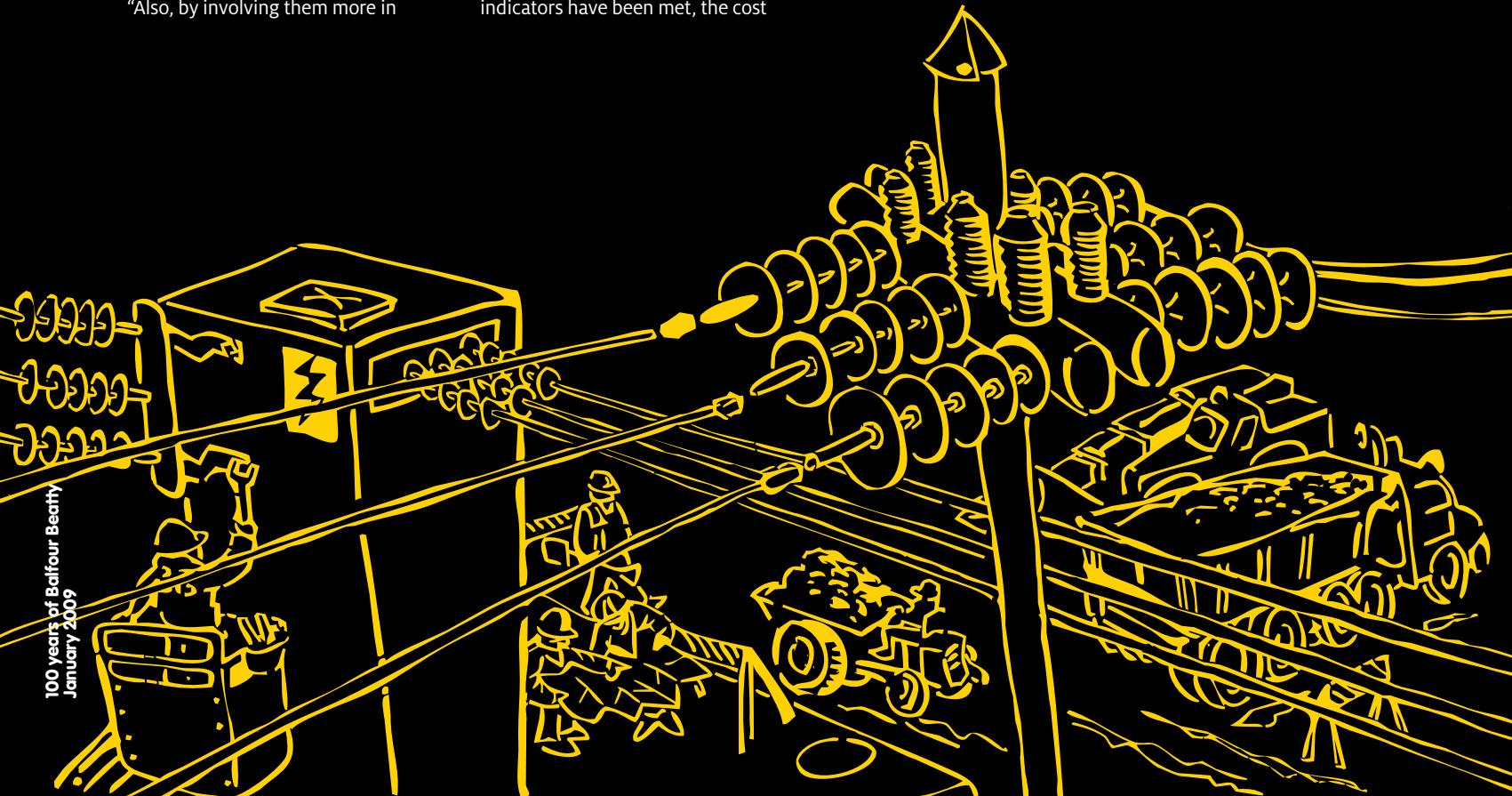
Put simply, each year's work is given a target cost that has been subject to a cost-assurance process to ensure the contractor is not being over-generous in its pricing. If on completion of the work the actual cost is less and key performance indicators have been met, the cost

“Also, by involving them more in

#### **Long-term involvement**

So what has changed under the new arrangements? “We used to have a more traditional arm's length relationship with our suppliers,” says Cocks. “Five-year contracts mean we are able to give contractors more insight into planned workloads and better understand their resource requirements.

“Also, by involving them more in



difference becomes gainshare – that is, it is split 50:50 between client and supplier.

There is also a cost ratchet mechanism, so that if, say, a 10% saving is made in the first year, that then becomes the benchmark for the next year so that further gainshare will have to result from further savings.

Says Cocks: "Essentially we work with risk and reward mechanisms, and the cost ratchet provides us both with a clear incentive to innovate and deliver efficiencies year on year."

You can see how well this could work. But does it in reality?

"We are extremely pleased," says Cocks. "In its first year of our alliance with them, Balfour Beatty delivered one of the biggest and most challenging national packages at well below target cost levels and with a safety record better than anything we had achieved before."

In fact, savings of up to 18% were achieved in the first year.

This bears out Cock's assertion that the contracts are "an opportunity to align our core values of safety, reliability and efficiency in a different commercial relationship with our partners".

#### **Benefit to contractors**

It seems that this is as good in practice as it sounds in theory. Kevin George, manager of the Electricity Alliance East and technical director of Balfour Beatty Management, says: "The ability to plan ahead is highly beneficial, not least because so much planning is involved. Last year, for example, we worked on around 17 projects simultaneously but had more than 80 in various stages of planning."

He adds: "Bidding for work in smaller packages is also very expensive: invariably you don't win every bid and the abortive costs are high. That is an expense we no longer have and a saving we can pass on."

He concurs with Cocks that a five-year

timescale (with an option to renew for a further five years subject to satisfactory operation and regulatory approval) allows technical, financial and safety planning to become much more efficient.

It has also fostered a more collaborative approach between the different alliance contractors. "It is in our interest to share best practice. We all benefit from driving costs down," says George. "That would have been unheard of before, when we were in constant competition with each other and we all guarded our technical and commercial secrets like they were our crown jewels."

He is also confident that the contracts are resilient enough to withstand any volatility in labour or materials markets brought about by the present financial turmoil. "The cost ratchet works both ways," he explains. "If costs were to rise unavoidably, and we suffered as a result, overspend can also become the next year's benchmark. The incentive to >



**We used many of the co-operative features we had developed through our relationship with Balfour Beatty when we designed the alliance framework in the first place”**

- > improve remains but there is a recognition that outside circumstances can change.”

There is also a certain amount of flexibility within the contracts to allow for the unforeseen, explains Cocks. “If, for example, a section of overhead lines needed urgent replacement, we could bring that work forward and re-prioritise other work. If an entirely new project became necessary, due to a new generator in a new location, for example, then we can go to our regulator and ask for more money to do that. That new work can then be taken on as extra by the alliances as appropriate.”

#### Integrated teams

Other aspects of the alliances help to ensure the National Grid gets what it needs from the arrangement. For example, Grid staff are embedded within the alliances at both management supervisory and at contract technical level to ensure the job is done to the correct standard. Those staff also help keep an eye on how contractors are dealing with the owners of land through which National Grid assets pass.

“This is a massive thing with us,” says Cocks. “Ever since the Grid was created in the 1920s the management of landowners has been crucial and it is in the lifeblood of this organisation.”

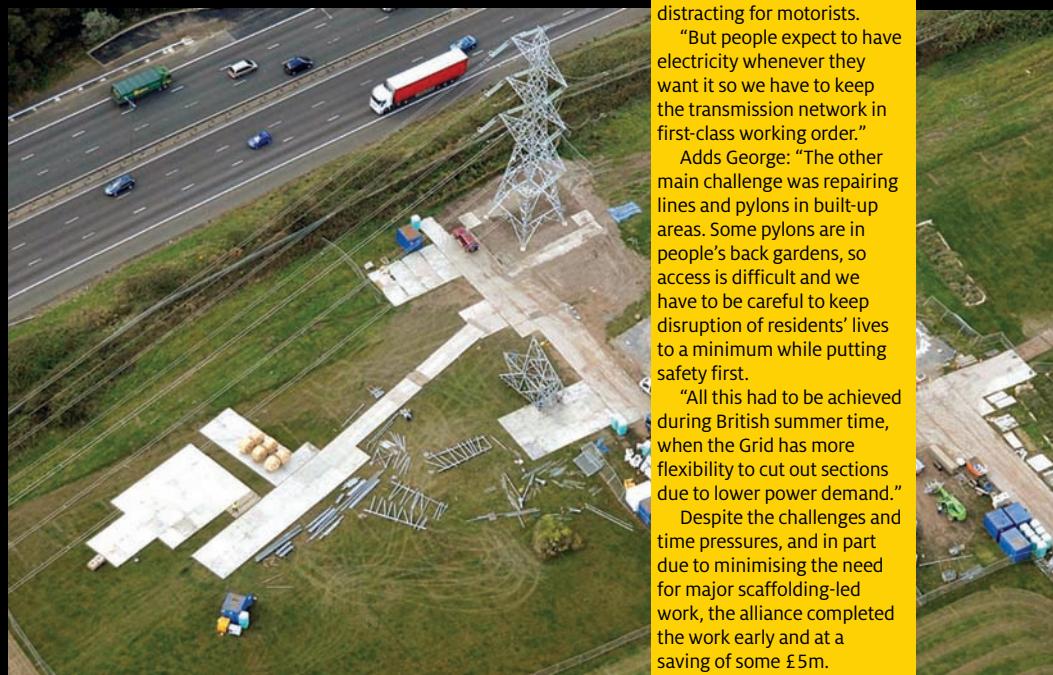
So was Cocks nervous about handing over more control to muddy-booted contractors? “In fact they are used to working with the landowners and are very sensitive to our requirements on this,” he says. “Balfour Beatty has been involved with the Grid for many decades and fully understands how important it is to keep the landowners on side.

“Although alliances were first used for our gas network, we actually used many of the co-operative features we had developed through our relationship with Balfour Beatty when we designed the alliance framework in the first place.”

The alliances are clearly delivering benefits for both contractor and client, but can Cocks be confident they will continue to do so in the coming years? After all, the credit crunch was only just being spoken of as a possibility when the contracts were signed early in 2007. The world is a very different place now.

Cocks agrees times have changed but is adamant that alliances are the right route to take. “Now more than ever people are looking for stability. Because our income is based on regulated entities we are a relatively stable client, but I think the features of our alliance contracts show there is no complacency and we continually strive for greater efficiency in delivering safe, reliable networks.

“In uncertain times it is even more important that our suppliers have the greatest visibility we can offer regarding future workloads. A stable, long-term, well-managed partnering arrangement that delivers continual efficiency improvements is exactly what you need in times like these.” ■



#### Down to the wire

Although in many ways typical of the work carried out by the electricity alliances, the replacement of power lines east of Birmingham was particularly challenging. The project involved a major 275,000V power route slung 13km across 47 pylons situated in both industrial and residential sites. But what made it a potentially expensive project was that the route zigzagged across the M5 three times.

“The traditional way of replacing cable across a road is to scaffold either side and sling a net to ensure cables cannot drop on traffic below,” says Electricity Alliance East manager Kevin George. “But to do this three times across a motorway would have been expensive and disruptive, so we brought in new safety technology using specially designed catenary support mechanisms when working above the carriageway.”

#### Balancing act

Working in trolleys hanging more than 30m above the motorway, engineers pulled themselves across the lines that span the six lanes of the motorway to remove the spacer bars that hold the lines apart. Once completed, new power lines were winched into place and the old ones removed.

National Grid project manager Jas Harrar said: “When doing a job like this, safety is the priority. We have to work when the motorway is quieter because the sight of three men hanging from overhead power lines can be distracting for motorists.

“But people expect to have electricity whenever they want it so we have to keep the transmission network in first-class working order.”

Adds George: “The other main challenge was repairing lines and pylons in built-up areas. Some pylons are in people’s back gardens, so access is difficult and we have to be careful to keep disruption of residents’ lives to a minimum while putting safety first.”

“All this had to be achieved during British summer time, when the Grid has more flexibility to cut out sections due to lower power demand.”

Despite the challenges and time pressures, and in part due to minimising the need for major scaffolding-led work, the alliance completed the work early and at a saving of some £5m.

## Into the Forth dimension

The apparently endless task of painting the Forth Bridge is a modern legend. But Balfour Beatty Regional Civil Engineering has risen to the challenge in a £18m phased operation that will finally bring the job to an end in 2012. And on the way it has smashed health and safety expectations – on a bridge that in its year of construction in 1890 claimed 70 lives and 25,000 recorded accidents.

Even using today's industrial processes, this is a project fraught with potential hazards. Harnessed scaffolders erect screens as East Coast Main Line trains roar across the 2.5km cantilever bridge; grit blasters tackle 120 years of paintwork as ships and yachts sail down the estuary; steelwork is repaired and three coats of paint applied while the public go about their lives on the roads and in houses at each end. As Ken Brown, the project manager who has worked on the bridge for four years, says: "In this environment there's no second chance."

Yet a stringent safety approach has helped the company slash its accident frequency rate (AFR) – the number of reported incidents per 100,000 man hours worked – to 0.03 by 2008, the seventh year of its contract. Indeed, two million man hours were reached last year without a single reportable accident being recorded. "This compares with AFR rates in civil engineering that as recently as a decade ago were discussed in whole numbers," says Brown.

So what makes the Forth Bridge so safe? "The key is planning," says Brown. "It's not mission impossible; it's just about making sure everyone is committed."

He has taken it upon himself to spread the safety culture introduced on all Balfour Beatty projects in the group's Take CARE campaign of 2005. Inspired by the >

29

A recently launched health and safety campaign promises to cut out serious accidents altogether. Too good to be true? James Clegg meets the man behind Zero Harm

# The zero hour

Andy Rose is grinning but there is a look of disbelief on his face as he recalls finding an old photograph recently. "It was me on my first site with Balfour Beatty in 1972. I had hair down to my shoulders, a donkey jacket and Wellington boots. No safety helmet, no gloves, no goggles and I was pretty invisible against the background of the site." He shakes his head: "It's quite shocking but it's useful to see how we used to do things. It reminds us how much progress we have made."

Thirty years on, having held the managing directorship of various operating companies and portfolios within Balfour Beatty, Rose is in a good position to take his younger self to task. In April 2008 he became group managing director responsible for engineering and safety. It's a newly created position that emphasises a big commitment to health and safety – a commitment made explicit by its Zero Harm programme.

Launched in October, the initiative aims >



> behavioural psychology messages of the campaign, he set out to open his team's eyes to the dangers of being unwittingly "half asleep" on the job.

"It's about engaging the workforce to show that it's everyone's responsibility to make the workplace safe," says Brown.

Workers are expected to take five minutes before embarking on any job to check the area is hazard-free – no slips and trips, no loose material, no untested cabling and so on. As an extra incentive, the worker making that month's most significant "safety intervention" is rewarded with vouchers.

This is backed up by regular site tours by managers (including Network Rail) and at least 20 "toolbox talks" a month at which managers give briefings on anything from skin hazards to protective eyewear.

All this to ensure that the unthinkable doesn't happen – even when someone is not fully concentrating on the job in hand.



30

- > to reach an accident frequency rate (AFR) of less than 0.1 per 100,000 man hours worked by 2012, no fatalities and no seriously disabling injuries or long-term harm to Balfour Beatty staff or the public.

Stephen Williams, chief inspector of construction at the Health and Safety Executive, welcomes the initiative. "It shows the leadership we need from the construction industry. We all need to work hard to change the culture of the industry to a position where harm and ill health are simply not tolerated."

Rose admits it is ambitious but adds: "The expectations of employees, clients and society are going this way. Zero Harm isn't just a campaign; it's a way of life."

There is no ignoring the huge impact the Hatfield rail crash of 2000, and the subsequent court case, had on Balfour Beatty. Yet its in-house safety record has shown a huge improvement since then. Since becoming a plc, also in 2000, the

number of people employed on Balfour Beatty projects has grown massively. A combination of wholly owned and significant joint ventures has taken the total number of subcontractors from about 50,000 in 2000 to 130,000 in 2008. But there's been a drastic fall in AFR from just over 0.6 in 2001 to about 0.2 in 2008.

### Safety measures

The improvement has been achieved in several ways. Safety management systems include internal and external audits and incident investigation teams. Working parties recommend solutions for issues from working at height to temporary traffic management. And behavioural safety initiatives have been introduced.

Added to this, a growing emphasis on offsite manufacturing is taking work into a more controlled environment, and the design process is increasingly geared to designing out risk.

## Landmarks in UK construction safety

### 2001 FEBRUARY

Construction safety summit called by John Prescott and Bill Callaghan, chair of Health and Safety Commission, to address unacceptable number of deaths in the construction industry.

### 2002 APRIL

Health and Safety Executive (HSE) sets up construction division reporting directly to Kevin Myers, its chief inspector of construction.

### APRIL/MAY

HSE launches "blitz of sites" in London, Scotland and northern England as part of a rolling programme of site inspections. Of 667 sites, 316 prohibition notices are issued and 64 improvement notices.

### 2003 JUNE

More inspections as part of Don't Fall For It, a European Union campaign against falls from height. Out of a total of 2,875 sites visited across the UK, 664 prohibition notices and 157 improvement notices are issued.

### 2004 MARCH

HSE site inspections as part of the Healthy Handling campaign to tackle work-related ill health in London and the South-east include 350 site visits and 66 enforcement notices.

### 2005 FEBRUARY

Construction health and safety summit held to review progress since the 2001 summit.



**This is a four-year mission... What we're doing with this project is driving the stakes so firmly into the ground there's no going back"**

**Andy Rose**

So how do you go from this point to achieving zero harm? The first basic step is working out how many people and suppliers work for the business, says Rose. The end figure, described by Rose as a "very conservative" estimate, is 500,000 people over the course of a year.

The next step is to engage them all in contributing to – or in the case of suppliers or subcontractors, aligning their business to – the programme's aims. Rose says: "The nice thing is that everyone wants to do it. The only question is how."

He does not pretend to have the answer yet. "I'll tell you in 2012," he says. "This is a four-year mission. If we try to come up with all the solutions tomorrow we might make an incremental improvement but we won't deliver a sustainable performance that will carry forward from 2012. What we're doing with this project is driving the stakes so firmly into the ground there's no going back."

Rose sees his mission as creating a culture of safety that even has an impact on the language used by subcontractors. "So if you are talking to a supplier you say: 'I want my deliveries on a Zero Harm truck, with Zero Harm offloading, driven by a Zero Harm driver'."

#### **Monitoring challenge**

On a basic level, the company will examine how it monitors health and safety. It already records data on a real-time system that can be used to share data throughout the group. But Rose insists new metrics will be needed. "One of the questions I've posed is: in 2012, when there are no accidents to look at, how will we monitor our performance?"

Spreading good practice is key, says Rose, although he admits that information sharing can be problematic. "Fatalities are few but cannot be overlooked," he says. In 2007, for example, 18 lives were lost, all

outside the UK – four in wholly owned companies and 14 in joint venture firms. But one incident was responsible for multiple worker fatalities after a speeding motorist crashed into a site in Dubai.

The incident points to the associated difficulty of exporting UK safety standards to countries with different approaches to corporate responsibility. As Rose says: "The challenges include widely different regulatory regimes and a mix of cultures and languages on a lot of projects.

"Previously, we provided central guidance to expectations on managing health and safety but we've never provided anything as strong as Zero Harm. Our partners in other countries – Dubai, Hong Kong, the US – have welcomed it."

Rose is optimistic the campaign will succeed. "The challenge we've set looks daunting but we believe we can do it as we've seen our progress in the past. We're confident we can get there." ■

**2006 MARCH**  
Lord Hunt, then minister for health and safety, chairs the conference "Buying for life, construction in the public sector", calling for renewed commitment to safety in construction.

**SEPTEMBER**  
Battersea crane disaster kills two workers, Jonathan Cloke and Michael Alexa.

**JANUARY**  
Liverpool crane collapse kills worker Zbigniew Swirzynski.  
**SEPTEMBER**  
Building launches Safer Skyline campaign to cut crane-related accidents.

**SEPTEMBER**  
Strategic Forum sets up working groups to deliver the construction industry's Framework for Action, as defined by work and pension minister Peter Hain's construction forum.

**APRIL**  
Health and Safety Commission (HSC) merges with the HSE.

**SEPTEMBER**  
Strategic Forum launches crane safety initiative on the anniversary of the Battersea collapse.

# Flying starts

Joining a large construction company as a graduate is no pushover these days. We meet three Balfour Beatty newcomers who've all brought something extra to the job

32

**W**e should never lose anybody through lack of career development," declares Paul Raby, human resources director at Balfour Beatty. "There are very few businesses in the world that can offer more opportunities to develop and broaden your career than Balfour Beatty."

And he should know. Raby's own job has got a lot more interesting as Balfour Beatty's traditional construction and civil engineering base has broadened. "We have 26 operating companies operating in 20-plus countries," he says. "That's reflected in the range of people we employ and will be employing in the future, and the opportunities and the culture that creates."

Balfour Beatty has long been a big employer of graduates but in the past few years the profile of those recruits has changed considerably. In 2008 it took on 185 graduates in the UK and about 70 across the US, Germany and

Hong Kong but only half had an engineering background. "We're competing with investment banks and services companies for talent," says Raby. "We're recruiting people with all sorts of backgrounds."

Balfour Beatty's individual businesses used to tour Britain's university milkrounds separately, sometimes competing for the same students. One of Raby's first initiatives was to unite all the businesses under the Balfour Beatty brand and launch an umbrella graduate recruitment website that, among other things, tightened up the applications process.

The group's decentralised management style means that once a graduate joins, the individual businesses take over. But each provides a structured development package with management and leadership training that is consistent across the group.

At senior levels, Raby's target is that >

Christine Allen  
Sub agent  
Civil engineering division

CLASS OF 2001



JAMES TURNER

“

I love the industry with a passion: every day is different and I love being able to see the physical effects of my labour”

Christine Allen's only been with Balfour Beatty since 2001 but she already has an impressive CV. Now a sub agent, one rung below team leader, she is responsible for all the structures at the A3 Hindhead tunnelling project. Already a chartered civil engineer, she's hit the books again for an MBA. "I wanted to get a broad experience as early as possible so I wouldn't be limiting myself," she says.

In 2005 she even spent a month in Indonesia as a Balfour Beatty relief volunteer after the tsunami, rebuilding homes and a school. "It was very different," she says. "You learn about civil engineering from first principles, making sure you get best value out of everything."

Allen loves being on site and wishes people would realise how rewarding a career in construction can be. "Historically it was seen as male dominated and adversarial. There are still more men than women on site but I've had no problems. We should open the doors to schools to let people see how much we've changed. I love the industry with a passion: every day is different and I love being able to see the physical effects of my labour."

She believes the industry is more inclusive. "Everything traditionally seen as a barrier to encouraging people to work on site is being broken down. At Hindhead we've got people with geography and languages degrees – we just need people who can solve problems."

As Britain moves into recession, construction firms have a key role in making projects more affordable for clients, says Allen. "We can help by being honest about what they can get for their money. It's about having a good relationship with the client, making sure you understand them and they understand you."



## CLASS OF 2005

### **Emma Garner Construction planner Balfour Beatty Construction Northern**

Site engineering was a bit of a let-down for Emma Garner – “I got a bit bored; it wasn’t as interesting as I thought it would be,” she admits. So it’s just as well her graduate employer had plenty of other jobs she could try her hand at.

Things had looked up during her sandwich year at university, when she worked with Balfour Beatty. “They let me try different things and move around the commercial and design side,” she says.

So when she began her career-proper in June 2005, an opportunity in the planning team sounded like a much

better option. “It incorporates everything: engineering, commercial and design. You have to have an understanding of it all. We plan progressions for the construction team to work towards, and monitor progress on a monthly basis to show we’re meeting targets.”

Inspired by her planning role on the £600m Birmingham hospitals project, Garner came up with an idea for the annual chairman’s innovation prize in 2007 – a progress monitor based on an Excel document.

“It breaks the hospital down into levels and zones, and shows level by level and zone by zone where we are,” she explains. “If we’re behind by four weeks, that square goes red, orange for two weeks and green if we’re ahead. The

directors can see immediately without having to flick through 150 pages of programmes.”

To her surprise, she won. “It’s so simple – everyone else’s entry seemed really technical and really good whereas mine was just a progress monitor that goes red, orange, green like a traffic light.”

Garner had heard about construction planning at university, but there are many more roles that she hadn’t. “There’s quite a lot you can do that no one knows about. You just think site engineer, QS... But now we have health and safety graduates, logistics managers – I never knew you could do that full-time.

“And there are things that fall on the borderline, like tenant liaison officer, where you need

to have knowledge of the built environment but it’s more customer focused. We need to raise awareness of what you can actually do in the industry.”

Garner thinks the area in need of most improvement in the construction industry is communication between different trades at handover points on projects. “We know which trades follow on from each other, but we need to get better at the interactions between, say, groundwork and steelwork, or with M&E and fit-out.

“We need to break down barriers and make them aware it’s not just a case of finishing on site and that’s it apart from a bit of snagging. On a project like Birmingham, they may have to come back a few times.”



We need to break down barriers and make the different trades aware it’s not just a case of finishing on site and that’s it apart from a bit of snagging”



## We want people who can communicate with colleagues upwards, downwards, internally and externally. Then they have to have leadership and business skills"

34

75% of appointments should be sourced internally – a target that's currently being beaten. On the 14-strong executive committee, three of the group managing directors joined straight from tertiary education. Raby himself has been at Balfour Beatty for 12 years and in the group HR role for the past four, responsible for the company's 40,000 full-time employees.

Rising up the ranks demands a comprehensive set of skills, not just technical qualifications. "We like to think that the future generation of leaders will also have personal qualities such as emotional intelligence, drive and interpersonal skills. We want people who can communicate and work with colleagues upwards, downwards, internally and externally," says Raby. "Then they have to have leadership and business skills."

One opportunity for graduates to shine is The Big Idea, a prize for innovation awarded each year by chairman Steven Marshall. Now in its third year, it gives all graduates who have been with Balfour Beatty for a year the chance to submit ideas that could improve the business.

The best four or five are invited to give a 15-minute presentation to the executive panel, followed by 10 minutes of questions – a daunting prospect but a great chance for newcomers to impress Balfour Beatty directors.

Last year's winner, Michael Gibson (right), devised a mobilisation planning technique for a major energy project; the year before Emma Garner (see p33) developed an Excel spreadsheet that brought together all the facets of the £600m hydra-headed Birmingham hospital project into a simple, powerful management tool.

### Ideas people

Good ideas have come from all the entrants. One of Raby's favourites came from a graduate with Balfour Beatty WorkPlace (formerly Haden Building Management), who designed a personal organiser for gas technicians that replaced inefficient paper-chasing with real-time transfer of information to resolve problems immediately. "He went to a manufacturer and asked them to make a prototype. Now he's presenting to firms externally," says Raby.

This is exactly the kind of entrepreneurial thinking The Big Idea is designed to encourage. "We hire graduates who are innovative and creative and we want to encourage them to challenge the status quo," says Raby.

Graduates are welcomed into the fold at the highest levels right from the start. Each March, when members of the new intake have been in post for six months, they are invited to a group graduate conference to augment their

induction to the operating company. Presentations are given by the chairman and the chief executive and graduates from previous years have their say. It is here that the winner of the innovation prize presents their idea and throws down the gauntlet to the new intake.

As from 2008, graduates who've been with the group for a year have a chance to meet the company bosses in a more intimate setting. At the end of their first year, they are invited to meet members of the executive committee in groups of between six and 10.

Last year's meeting lasted three hours, and graduates were encouraged to be frank about their training and anything that could be improved. As a result, Raby says he's focusing on ensuring that the quality of graduate training stays high and opportunities within the group are understood.

Despite the general downturn, three quarters of Balfour Beatty's work is on public sector projects and in government-regulated infrastructure sectors that are subject to five-year investment plans. So recruitment continues to be a priority.

"We're well placed," says Raby. "We do not expect our graduate recruitment to tail off. We need good people at all levels to enable us to grow and to develop our people as future leaders – whatever the economic situation." ■



The economic situation is going to challenge the way the construction industry works and the way it sees itself. It's got to work smarter"

**Michael Gibson**  
Customer services manager  
Balfour Beatty WorkPlace

## CLASS OF 2006

It's a great time to be a graduate in building services, says Michael Gibson. "Everybody's trying to be one step ahead of everyone else. We need to have the best ideas and the best ways of saving clients money in the long term."

Gibson graduated in 2006 with a degree in geographic information systems. At the time Haden Building Management (which became Balfour Beatty WorkPlace in November) seemed the best fit.

He started in September 2006 as a trainee at Chelsea & Westminster Hospital and now manages £3m of M&E services across the South-east for property management firm NB Entrust. "Within a year, I'd like to think I could be an area or general manager, and operations director in two years," he says.

Gibson is proud of his speedy rise through the firm but what excites him most is the constant innovation in his job. With the rising profile of the green agenda, building management specialists are at the forefront of cutting carbon emissions and helping clients respond to changes.

"The economic situation is going to challenge the way the construction industry works and the way it sees itself. It's got to work smarter," says Gibson. "Clients are more demanding on energy saving and efficiency; they want intelligent buildings that can reduce their carbon footprints."

As a newcomer to the industry, Gibson thinks construction has been perceived as a narrow-minded sector. "The industry needs to think a little more innovatively. We need to say: 'We can provide you with intelligent buildings that can look after themselves'.

"Balfour Beatty has to think right through from construction to maintenance to meet these targets. We need to say: 'yes, it will cost more to install but it can save 30-40% of your energy demands.'

This is becoming a much easier sell. The advent of the EU's energy performance certificates, which will give every building an eco-rating, has focused clients' minds. "Obviously there's a lot of kudos to be had in having a decent certificate," says Gibson. He is currently working with contractors to install condensing boilers – "a hell of a lot more efficient than traditional ones" – and with building management system companies to avoid wasting energy on out-of-hours functions.

"It means the plant isn't working all day and night. It will shut down and start up in the morning when people arrive. Clients are really pushing for these efficiencies."



VANDALS RULE ON SCHOOLS PFI PROJECT...

FOOTBALL ACTION KICKS IN...

# Giving it some

**As if it weren't enough to erect iconic buildings, maintain the UK's roads, railways and utilities and nurture an overseas business, Balfour Beatty is also striving to be a good corporate citizen**

**W**hen Neil Findlay started work overhauling Stoke's schools, he didn't expect to find himself organising football matches. But a youth sports programme funded by his company has become a critical way of keeping costs down on the PFI project.

"We had 3,306 panes of glass broken in 2001 and 15 cases of arson," says Findlay, interim general manager for Transform Schools, the PFI body set up by Balfour Beatty Capital Projects and investment group Innisfree in 2000 to upgrade Stoke-on-Trent City Council's schools estate.

The 25-year project, which takes in the maintenance and improvement of five special schools, 17 secondary schools and 80 primary schools, had become a target for vandals, both in and out of school time, who damaged everything from windows and gutters to roofing.

To help tackle the problem, Transform, in partnership with the council, launched a football coaching programme in 2002,

primarily aimed at children excluded from local schools. Its first three years were funded by the Football Foundation and the Lottery but when the funding ended in 2005, Balfour Beatty stepped in, investing £270,000 over the following three years.

The revitalised initiative, Football Action, has involved a larger number of schools and forged a crucial link between schools and local football clubs.

The vandalism statistics speak for themselves. Among the 10 schools ranked highest for vandalism incidents, the most notable improvement has been seen in schools running Football Action courses. "Overall, there were 64% fewer incidents in 2008 than when we started," says Findlay. "In 2008 there were only 563 panes of glass broken and arson incidents fell from 15 in 2001 to two in 2007."

He adds: "Although there are enough funds to run until March 2010, this year will be about measuring our achievements in behaviour improvement so the



TIGHTENING UP THE GAME...

ILLUSTRATIONS: NICK KOBILUCH

programme can be shown as a success, not just as a vandalism prevention project."

It also demonstrates that corporate responsibility has a direct impact on a company's bottom line. Balfour Beatty head of corporate responsibility Tim Sharp is in no doubt about its role. "Every day we add something to the social capital of the nation by doing what we do," he says. "So it's appropriate that we extend that to the communities who use it."

Acknowledging the wide range of issues under corporate responsibility – training sustainability, safety, occupational health, ethics – he is keen to focus on Balfour's community values, which have taken shape over the past three years. "It's still early days, but we are keen to mobilise the energies of Balfour Beatty people," he says.

There is no lack of relevant activity across the group, which has long supported charities such as Action for Children and the Prince's Trust. But it now aims to create a coherent strategy to guide >



#### Ground force

Balfour Beatty makes regional donations to communities body Groundwork through its Building Better Communities scheme, launched in 2005 to turn derelict land into viable public space. In 2006, for example, it gave £10,000 to Groundwork Hertfordshire, as well as volunteer help from the M1 widening team to clear a footpath along a disused railway line. And in 2007 the civil engineering operation's King's Cross team got to grips with local bird life, helping kids make bird boxes in Palmer's Field, north London (right)



**Ready for action: mayor Boris Johnson launches the 2008 London Youth Games**



**38** > the actions of both group headquarters and the operating businesses. "We also need to extend awareness along our supply chain," says Sharp.

The community push will be crystallised in this year's Building Better Futures campaign, in association with the Prince's Trust and Action For Children (formerly National Children's Homes). Marking Balfour Beatty's centenary, the campaign will support and raise money for 100 projects initiated by the charities.

It will provide specialist play equipment for at least five of Action For Children's centres for disabled children. The charity's fund raiser, Caroline Beaumont, says: "Balfour Beatty has supported us for the past two years but the work we'll be doing as a result of Building Better Futures simply wouldn't take place without the campaign's input."

#### Youth opportunities

As for the Prince's Trust, Balfour Beatty has been involved with the youth opportunities charity since April 2006, when it became a founding member of the Construction & Business Services Leadership Group. This fundraising forum for UK construction firms has helped hundreds of young people into work through the Get Into Construction initiative, providing site visits, work placements and financial support.

As part of their centenary campaign, Balfour Beatty staff will be fundraising for

the Prince's Trust Community Cash Awards, which allows disadvantaged young people to run community projects ranging from revamping neglected parks to running anti-gun crime groups.

But sport is never very far away from Balfour Beatty's extra-curricular activities. The company has also struck a six-year partnership with London Youth Games, Europe's largest youth sporting event. A £1.7m sponsorship between 2007 and 2013 promises to double participation from the current 25,000 children. "It means that for the first time in our 31-year history we have financial security to take the games to a new level," says London Youth Games chair Anthony Kendall.

As a condition of its commitment, Balfour Beatty wants a fifth of its funding to be channelled into grass roots sports development in schools, with an emphasis on coaching. It also aims to encourage the uptake of low-participation sports such as boxing, cycling and judo.

The sponsorship is not simply financial. "We're not just putting money in but trying to plug our organisation properly into the programme," says Sharp. The group has signed up sports events coordinator Limelight to help match the right Balfour Beatty volunteers to the right sport in the right part of London.

So it looks as though more Balfour Beatty staff can expect to add a spot of match scoring or a coaching session to their site work. ■



#### The road to responsibility

Balfour Beatty projects on Britain's roads have proved fertile ground for corporate responsibility.

Sustainability lessons learnt during the widening of the M25 near Heathrow in 2003 and 2004 have been passed on to today's widening of the M1 south of Luton. A total of 92% of the aggregate needed for the project, a joint venture between Balfour Beatty and Skanska, is being recycled from a combination of onsite demolition and construction waste and supplies from local processors.

The joint venture even secured early planning permissions from three authorities to establish its own recycling centres at junctions 8, 9 and 10. This has saved money on materials, reduced construction traffic and cut programme delays caused by lorries carrying aggregate getting caught in congestion.

Matthew Fleetwood, materials engineer for Balfour Beatty on the project, is in little doubt about the impact of the strategy. "There have been a million fewer lorry miles than would otherwise have been travelled, which has contributed to a 1,715 tonne reduction in CO<sub>2</sub> emissions."

The impact on locals is something that dominates Ian Whyte's agenda. As community relations manager on Balfour Beatty's A3 redirection project in Hindhead, Surrey, he has plenty of stakeholders to reassure. The project – moving the London to Portsmouth road away from the town of Hindhead and local beauty spot the Devil's Punchbowl onto a new four-mile road with a mile of tunnel (pictured right) – is under the scrutiny of the Environment Agency, the National Trust, the Forestry Commission, wildlife enthusiasts and

local protest group Stoat (Save The Old A3).

"Normally you're just dealing with people and traffic but here you're dealing with 4.5 miles of woodland," says Whyte.

All subcontractors have to be debriefed on the nesting and hibernation habits of local wildlife. "We can only take down trees out of the nesting season [before April] and we've got to leave tree stumps in place until after hibernation [after April]," he says.

Good communication has been key. This has involved setting up two viewing platforms, one at either end of the site; building a visitor's centre; and giving presentations everywhere from schools to Women's Institute meetings.

Whyte believes this openness has spilled over from the project team spirit between Balfour Beatty, Atkins, Mott MacDonald and the Highways Agency. "The team spirit is excellent," he says. "There's a feeling that everyone wants to get it right."

The locals and users of the A3 have faced complicated temporary traffic arrangements which, for an area long dogged by congestion and tailbacks, was a major concern. But the traffic management has been a success. "If anything, for most of the time it's allowed the traffic to move more smoothly than before we started in 2007," says Whyte.

The new road will be complete in 2011 but a further year of works will be needed to hand over from the old route.



**For as long as it has existed Balfour Beatty has been a part of the rail industry. But the acquisition of Adtranz in 2000 has pushed it up the global contracting premier league**

# The beaten track

**H**igh speed and sustainable. That's how the rail construction market is shaping up for Balfour Beatty, whose rail turnover of £1bn is now a hefty contributor to the group's £8bn global turnover.

Two step changes have put it where it is today, a full-service rail infrastructure contractor tackling everything from track, electrification and power supplies to signalling and maintenance.

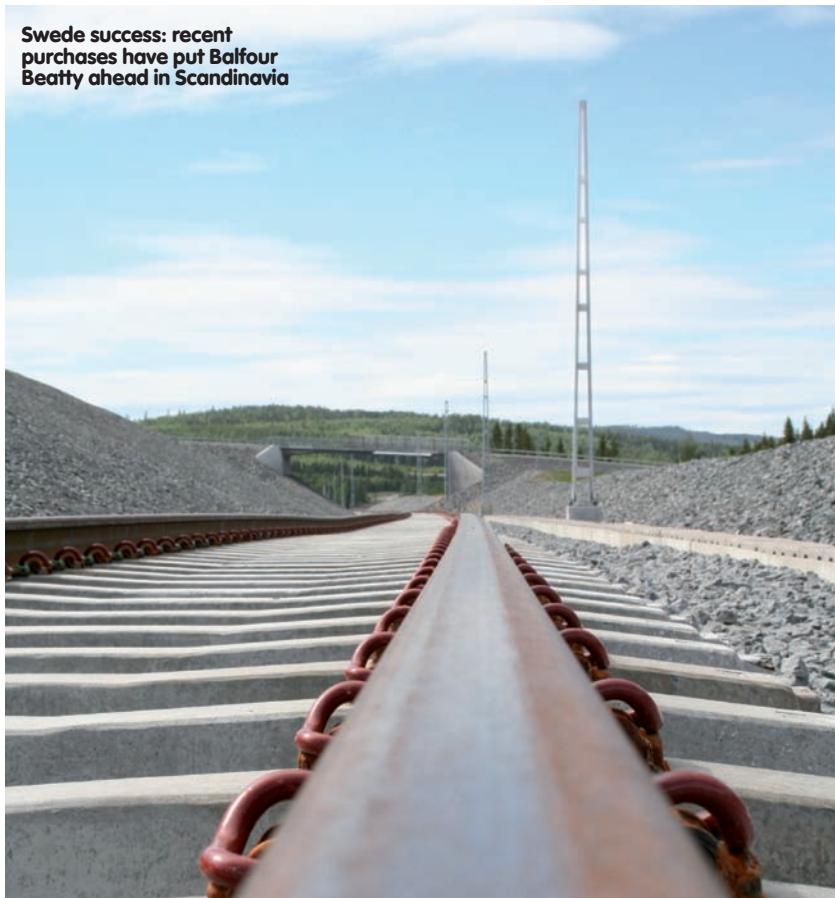
In the UK, the privatisation of British Rail in the 1990s allowed the group to buy two maintenance firms and a track renewal operation to become the UK's leading private sector rail infrastructure firm. Balfour Beatty Rail Services now has a 25% market share in renewal work in the UK. It has recently become a 50:50 partner with Alstom in Signalling Solutions, delivering a

full signalling service to Network Rail.

Globally, the group's biggest stride forward was in 2000, when rail systems group Adtranz was sold off – rolling stock going to Canadian conglomerate Bombardier; and electrification and traction power supply to Balfour Beatty. The purchase opened the door to Germany, Italy, Spain, China, Malaysia and South America and created a large rail capability within the group. "At the time it made a huge contribution to the group's business," says international business development director David Bill.

A strong foothold in Germany was beefed up by the acquisition of trackwork specialist Schreck-Mieves in June 2008, transforming Balfour Beatty Rail Germany into a multi-discipline contractor. As a

**Swede success:** recent purchases have put Balfour Beatty ahead in Scandinavia



**Swiss role:** the Gotthard Tunnel takes shape

result, says Bill, Deutsche Bahn has become as big a customer for the group as Network Rail is in the UK.

In recent years the focus has been on global expansion, with acquisitions in Sweden, Italy and the US. Its projects extend to laying track in Chile, upgrading track in Australia, and in Brazil it is negotiating for a trackwork contract that will help transport iron ore from mines to the coast for shipment. Meanwhile, it has secured an electrification contract in Malaysia and is in the running for further electrification work in Algeria.

The group's strong construction presence in the Middle East and South-east Asia has given it a launch pad for rail operations there. With regional partner Gammon, it is preferred bidder for the Downtown Line in Singapore and it is eyeing contracts in Hong Kong next year.

## Getting technical

Technically, the group continues to move forward. Safety developments are a priority, with efforts focused on remote condition monitoring to relay data on switches and crossings. In 2007 Balfour's takeover of UK business Laserail made it a leader in laser-based measurement.

Such technical expertise is being used in projects such as the Gotthard Tunnel in the Alps. As part of the Transtec Gotthard consortium, Balfour is supplying the complete rail infrastructure for this 57km rail tunnel – the world's longest – using specialised plant and equipment to overcome the limited access.

Increased focus is going to high-speed lines. Bill points to Italy, where, as a member of the Saturno consortium, the group is delivering a 350km/hr network throughout the country. In the US, high-speed rail is a growing market. And in the UK Balfour is part of a working group with Network Rail to discuss 5,000km of new electrified lines that will help the UK meet its carbon emission targets. ■



**There's no escaping the gloomy forecasts, so it's more important than ever that construction firms offer their clients more. Graham Ridout finds out how Balfour Beatty is gearing up for the future**

## Beyond construction

The world of building and construction continues to evolve. But the real challenges will be in adapting to the changes that society, the economy, technology and the business world throw the industry's way.

Group chief operations officer Andrew McNaughton says these considerations are nothing new to Balfour Beatty. "If we look back over the past 10 to 15 years, our organisation and business streams have become far more sophisticated," he says.

"We have moved dramatically from being only a contractor. Yes, we still are a deliverer of construction assets but the skill sets we've developed are moving more upstream to the ability to manage with customers the assets they've got and to plan the use of those assets."

These changes will have a profound effect on virtually every area of the business – from highways to rail; health to education; power generation to civil engineering. An example of this is the

M25, where a 30-year concession to design, build, finance and operate the motorway is being finalised. The concession covers operational management and maintenance, together with any upgrading or widening schemes on the network, including the Dartford crossing. Balfour Beatty has been selected as the preferred bidder and it is hoped the details can be finalised this spring.

McNaughton sees the project as a step change that will see the company moving more into operational management and maintenance. He says: "This will switch the emphasis away from construction knowhow towards managing and operating the motorway in ways that create additional traffic capacity."

"We will be operating the network in a much more intelligent way. The question of tolling comes into play; the question of more information and communication mechanisms for travellers comes into play. So what does that mean for us as a

highway constructor? Inevitably, the existing network will still have to be managed and maintained over its lifecycle but the market we have to look at is how we generate value for the customer."

McNaughton continues: "We moved our thinking towards asset management and asset operation. It is not new for us. Our acquisition of regional airports – Exeter International and Blackpool – is taking us to a position of operational management of an asset rather than the construction of the asset being the driver."

It is a similar challenge with rail, where Network Rail has a huge enhancement programme to deliver on a tight budget. "Innovation is the way forward," says McNaughton. "We have to develop new ways of working and get efficiency and effectiveness out of the resources that both we and Network Rail have available."

Government decisions on power generation and distribution will also have a big impact on Balfour Beatty's workload. >



**We will be operating the M25 network in a much more intelligent way. The question of tolling comes into play; the question of more information and communication mechanisms for travellers comes into play"**

## Building in the future



### Scotland, Wales and the South

Despite the recession, Balfour Beatty Construction Scottish & Southern managing director Bob Clark says about 70% of the company's £560m turnover is in the public sector. He is optimistic about funding. "We tend to understand the direction government procurement is going," he says. "We were one of the first companies to get into PFI projects in education and health."

A key strength of the group is that it can call on 25 sister companies to work on large projects – specialists such as Stent for piling or Mansell for its experience on heritage buildings such as the House of Parliament.

Clark believes sustainable and ethical construction will increasingly come to the fore, calling for closer monitoring of how materials are sourced.

He says: "How ethically the products are produced; the health and safety implications; and whether the people producing them are treated fairly are going to be important considerations."

"That is a challenge that will face us more in the future, especially as most clients still want the lowest cost."



### The North

Construction Northern managing director Dave Donaldson believes lessons learnt through PFI can be channelled into other areas. "We are trying to leverage that knowledge back into the private sector," he says. "With PFI, you start with a blank piece of paper, so we've got pretty good at design management over the past 12 years. That resonates with developers such as Hammerson and LandSecs, which all want more sophisticated buildings."

As Donaldson says, retailers focus on footfall. "It is the same with school designers who plot the flow of people through schools. So there is a lot of common ground between retail and school design."

One PFI lesson already being applied to projects is in customer care. All offices now have help desks and access to project details so that client problems can be sorted out more easily.

Donaldson sees building ties with trade contractors as an ongoing challenge. "We are setting up learning hubs and talk to them about where we are going as a business."

Working with a select group of subcontractors has created long-term relationships and helped firms develop new skills. "One Leeds brickwork contractor has become a facade contractor," he says. "As the brickwork contracts began to dry up it started erecting facades using FSS and Metsec frames."



### Mansell

Hard times or not, Mansell managing director Steve Waite is upbeat about expanding his business even further than Balfour Beatty has since it acquired the 101-year-old firm in November 2003.

Part of the success, says Waite, has come from the successful integration of Hall & Tawse, Dean & Dyball and the building division of Birse Construction.

He sees offsite manufacturing as a key ingredient for growth. "We aim to get smarter in offsite," he says. "The skills of our airports division, which works in safety-critical environments in limited time slots, have been used to design and produce offsite proposals for London Underground refurbishments. Orders have already been secured for Aldgate East tube station and the East London Line to deliver tunnel liners and ceiling grids that incorporate service facilities."

Offsite will also help it build on its eight-year relationship with student accommodation specialist Unite. The pair recently completed an 11-storey student block in London's East End.



> Of the challenges this poses, McNaughton asks: "Does it mean we build smaller community-led power generation projects that are more sustainable – solar panels on houses, local wind generation plants, local waste-to-energy plants? Or do we have mega-projects such as barrages, nuclear power and offshore wind power?"

"Each will have a real impact on the infrastructure. We have not just to create the assets that generate the power but also to create the network to distribute the power. Constructing new power plant will take us into markets that have been dormant for some time. It is going to bring opportunities in areas where we need to engage in an innovative way."

Opportunities will also arise as local authorities outsource services. "The likelihood is they will look to outsourcing a broader range of services," says McNaughton. "We currently undertake highway maintenance and street lighting. The next move is likely to be far more complex asset management and the delivery of more complicated services."

These could include waste management or managing and maintaining car parks and leisure parks.

He also feels private sector involvement in healthcare and education might lead to working alongside the public sector by providing, say, management services. "These are the key markets for us and our delivery mechanism is likely to continue to develop to be closer to the customer."

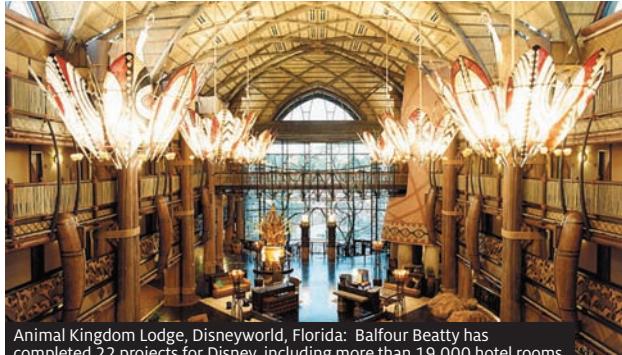
Despite the changing landscape, there will still be a requirement for core construction and technical engineering skills, says McNaughton. But he adds: "The skill sets will change – people with design skills will be looking for people who design for manufacturing, who design for commissioning, who design for maintenance. We'll also need broad social science skills that will allow us to work with customers in understanding their asset portfolios and delivering them." ■



**Constructing new power plant will take us into markets that have been dormant for some time... We need to engage in an innovative way"**

**Andrew McNaughton**

# Some we made earlier



Animal Kingdom Lodge, Disneyworld, Florida: Balfour Beatty has completed 22 projects for Disney, including more than 19,000 hotel rooms

Here's how buildings constructed by Balfour Beatty have left their mark across the world



Unicorn Theatre, London: the UK's first purpose-built children's theatre is on the south bank of the Thames



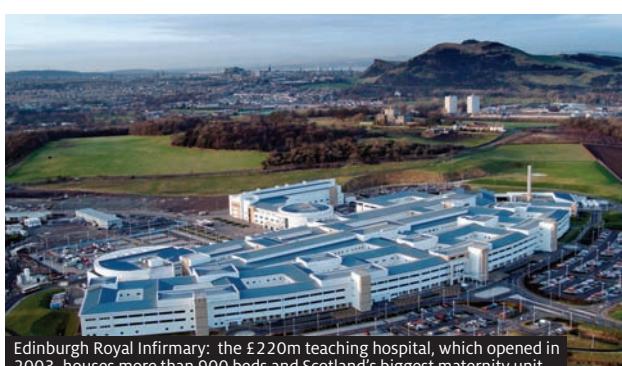
Hong Kong Airport, Terminal A: this 40,000m<sup>2</sup> building includes a baggage hall the size of Wembley Stadium



Barking Power Station, east London: the turnkey project to build a 1,000mW combined cycle gas fuel power station was completed in 1995



Georgia Aquarium, Atlanta: The world's largest aquarium contains more than 8.1 million gallons of water, 100,000 marine animals and 500 different species



Edinburgh Royal Infirmary: the £220m teaching hospital, which opened in 2003, houses more than 900 beds and Scotland's biggest maternity unit



Dubai Training Centre: built by Dutco Balfour Beatty in Jebel Ali in 1995, it specialises in health and safety and construction skills



# Proud of our past. Passionate about our future.

Balfour Beatty enters its second century determined to build upon the successes of the first.

We are proud of our strong team of talented people and have a clear strategy for the future that builds on our experience, expertise and financial strength.

Whether building and maintaining schools and hospitals, upgrading and extending utility systems, enhancing rail, road and transport networks or creating facilities for the Olympics, we are looking forward to the challenges of the next 100 years with confidence and enthusiasm.

**Balfour Beatty**

