Crossrail’s finance team has taken innovative steps to place environmental and social considerations at the core of the project.

**THE BUSINESS**

Crossrail Limited is the company that is building a new railway through the centre of London. It is a huge enterprise and, at £14.8bn, is Europe’s largest civil engineering project. Crossrail will deliver a high frequency, high capacity service to 38 stations linking Maidenhead and Heathrow in the west, to Shenfield and Abbey Wood in the east, via 21km of new, twin-bore tunnels under central London. It will add 10% to London’s public transport capacity and will bring a further 1.5m people within commuting distance of London.

**THE IDEA**

Crossrail is not simply about improving the transport system in the south-east of England. It is creating long-term benefits across the country through employment opportunities and transforming critical aspects of the engineering and construction industries. ‘We are investing public money in a world class railway and we have a broad obligation to spend it the right way’, says David Allen, Crossrail’s Finance Director. ‘Once you have grasped that I think you have quite an interesting context for the way you structure the organisation and your finance team’. ‘The scale and scope of the project presents a whole range of opportunities’, says Robert Flanagan, Director of Finance Operations.

**THE INNOVATION**

The company set up a sustainability committee, chaired by the CEO and attended by the Executives and senior management. This committee’s remit is underpinned by a triple bottom-line approach to environmental, social and economic initiatives. As a result, a whole range of initiatives have been embedded in the Crossrail structure.

To create a new generation of skilled engineers, the company set up a Tunnelling Underground Construction Academy (TUCA). ‘There has never been one before’, says Flanagan. ‘It doesn’t just train people for our own projects, but also creates a skilled workforce that will be invaluable to other engineering projects in the future’.

The same type of internally driven initiative applies to waste disposal, a huge issue in a project of this size. When it came to dealing with the earth excavated during the tunnelling process, the traditional solution would have been landfill. Instead, Crossrail chose to create a nature reserve in partnership with the RSPB at Wallasea in Essex. ‘Right now, the private sector wouldn’t have done that’, says Flanagan. ‘Landfill would have been easier and, in some circumstances, perhaps even cheaper in the short term, but the legacy would have been dumping millions of tonnes of clay’. The ingenious solution was to create a complete wildlife reserve. ‘It is putting something back into nature,’ says Flanagan. ‘When someone asks: “Where do you dump the earth?” the answer is that you don’t dump, you create. And Wallasea removes 2.2m tonnes of carbon out of the atmosphere per hectare, per annum’.

And there are innovations in the railway itself: ‘We are looking to use titanium rails’, says Flanagan. ‘They are more expensive than conventional rails, but the benefit is their length of life’, he says. ‘You don’t have to maintain them so frequently and if you combine that with making the trains lighter then the wear on the rails is less because titanium is a harder material.’
In the end, he says, ‘it increases the life of the rails, reduces the maintenance cycle and the replacement cycle, and reduces the amount of energy required to run the railway’. A traditional finance function would have ruled out the first step, the choice of titanium rails, on the grounds of cost.

As part of the governmental social contract, the supply chain for Crossrail had to be spread as widely as possible across the UK, not just where the railway is located. ‘Businesses throughout the UK have benefitted’, says Flanagan. ‘It is not concentrated in the South-East’. So far, some £9.7bn has flowed through the supply chain right around the UK. A map of suppliers shows that 1,701 businesses have secured work on Crossrail with 62% from outside London and 58% being SMEs. To date, 29 project bank accounts have been set up to ensure that suppliers do not face traditional delays in payment. ‘We use forecasts to supply these accounts’, says Flanagan, ‘so there is no hindrance in passing the money on to the suppliers’.

Safety is another issue. Crossrail was aware from the outset that the tunnelling work would disrupt both the environment and local communities. In particular, danger would be posed to cyclists by the many heavy goods vehicles. ‘50% of cyclist accidents in London are encounters with heavy goods vehicles’, says Flanagan. Crossrail decided to take action to deal with the potential problem. All hauliers had to install additional equipment to, amongst other things, reduce ‘blind spots’ for drivers of heavy goods vehicles. ‘We reduced accidents by introducing a lorry driver training course that set new standards for the industry’, says Flanagan. ‘Drivers have to pass before they can drive any vehicle for the project. So far over 4,500 drivers have been through the training and they will go on to other projects where the improvement in safety will be passed on’. The ‘Crossrail Compliant’ sticker displayed on an HGV windscreen is fast becoming the recognised standard across the industry.

FINANCE FUNCTION LEADERSHIP

Government approval of Crossrail hinged on demonstrating that the project would deliver long-term financial and economic benefits to the UK. Extensive financial modelling provided that assurance and, subsequently, the finance team had a decisive influence over investment and change decisions. ‘The team is divided into two’, says Allen. ‘There is the financial control team that ensures money flows down the supply chain. This includes people whose job is to support our project management teams in making smarter decisions. There is also the planning function, which meets with all functional heads regularly and supports them in all sorts of analysis, both financial and non-financial’.

‘The leadership of the finance teams is plugged into all of the governance functions’, says Allen. ‘And the sustainability committee helps shape priorities’. Overall, the finance team, he says, ‘is pushing the business to make the smarter call’.

POSITIVE LONG-TERM IMPACT

The project aims to create a legacy of skills creation, from the tunnelling academy through to the lorry driver training.

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Another example is the creation of a system called Building Information Modelling (BIM). ‘This is a way of modelling the assets we create so they can be maintained sustainably’, says Flanagan. Everything Crossrail builds will be captured within the project’s BIM system. ‘For example, if we build a station all the drawings are captured electronically. All the rooms are there in 3D, everything is shown with suppliers, product numbers and so on’, says Flanagan. ‘Theoretically, if a light bulb fails you could go into BIM, click on it, and raise a purchase order. This would be a first for the industry’, he says.

LESSONS FROM THE CASE STUDY

For Allen, the first lesson is ‘it is vital for leaders in a finance team to display an interest in broader outcomes than just short term cost. You have lost the battle if you are obsessed with cost’. Flanagan adds: ‘Just because something doesn’t make immediate financial sense don’t discard it. Taking 2m tonnes of carbon out of the equation is not the first thing that an accountant would think of’.

Allen says: ‘It is important for finance teams to be confident that it is worth looking at other measures; their expertise and insight should not be limited to the world of financial reporting standards.’

‘Think big’, emphasises Flanagan. This is what created initiatives like the tunnelling academy, BIM and the Wallasea nature reserve. ‘None of them would have been built if we had restricted our thinking’.

‘Recruit people with an inquisitive and persistent attitude’, says Allen. The sort of thoughtful collaboration across disciplines that has been paying dividends at Crossrail needs top-notch minds and very bright people.

The nature and the culture of employment need to be carefully thought through and cultural disciplines created. ‘All our sites are extremely well thought through,’ says Flanagan, ‘everywhere is very orderly and very, very tidy. It makes people feel great about coming to work’. In its last employee engagement survey, Crossrail achieved a 73% employee engagement score. This compares very well to the average upper quartile score for all companies surveyed by Harris of less than 50%. And there is a spectacular 81% employee engagement within the finance function. ‘I do think that the company’s values are important in bringing about behavioural change’, says Flanagan, ‘particularly in terms of our absolute commitment to safety and to showing respect for one another’.