



CROSSRAIL SUSTAINABILITY REPORT 2014

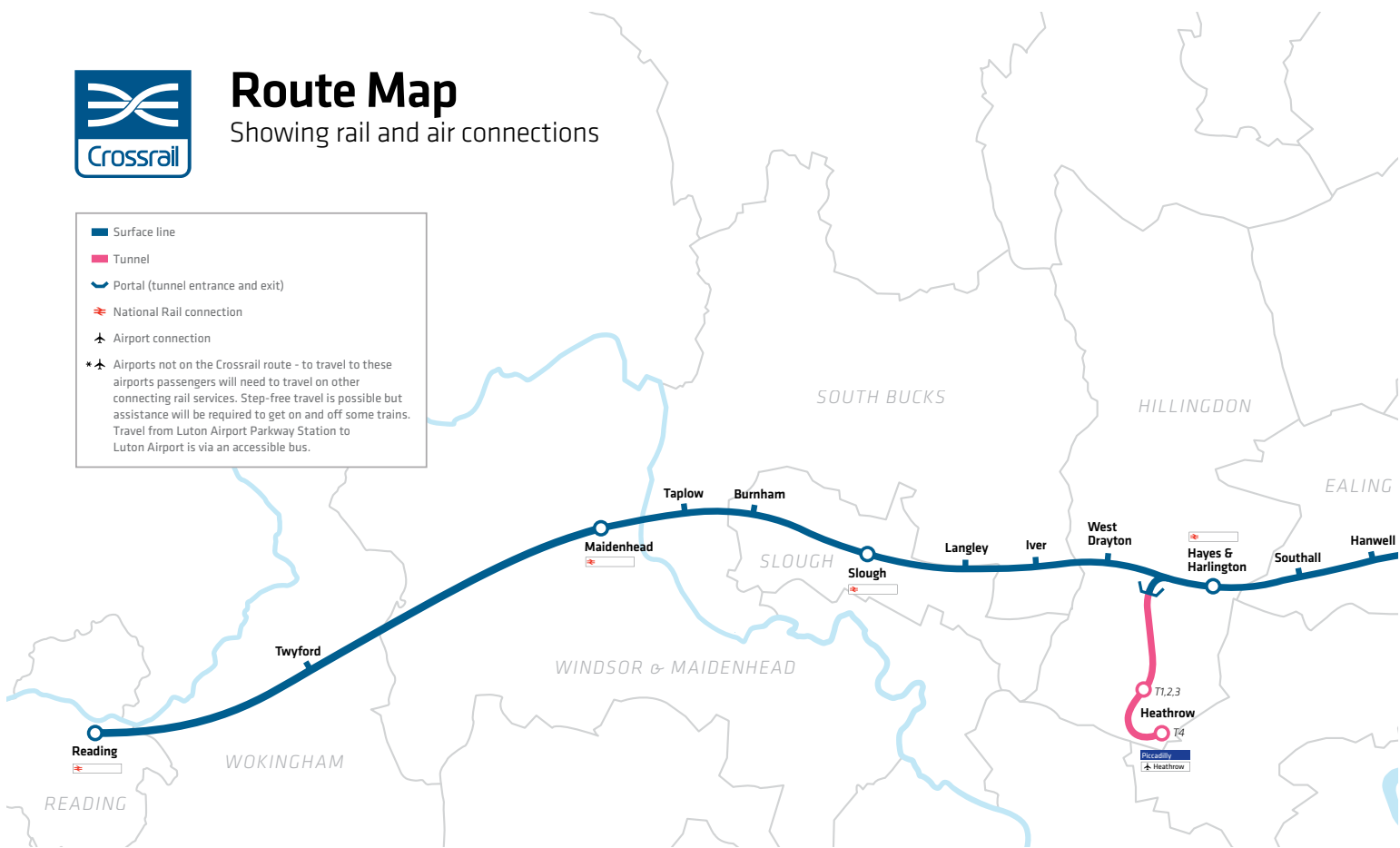




Route Map

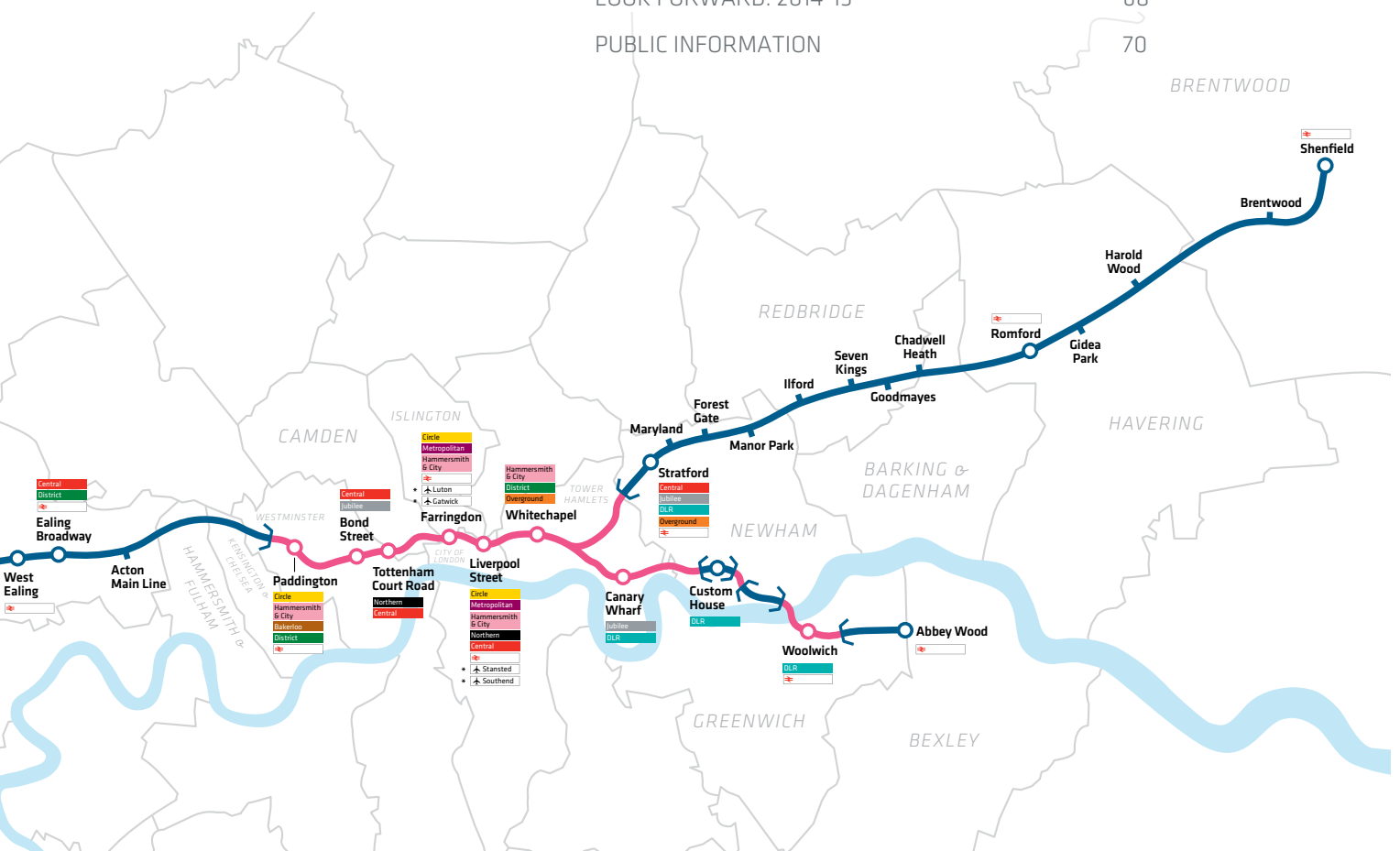
Showing rail and air connections

- Surface line
- Tunnel
- Portal (tunnel entrance and exit)
- National Rail connection
- Airport connection
- * Airports not on the Crossrail route - to travel to these airports passengers will need to travel on other connecting rail services. Step-free travel is possible but assistance will be required to get on and off some trains. Travel from Luton Airport Parkway Station to Luton Airport is via an accessible bus.



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MOVING LONDON FORWARD

A NEW SUSTAINABLE RAILWAY FOR LONDON AND THE SOUTH EAST

Crossrail is one of the most ambitious transport construction projects undertaken in a generation. As Europe's largest construction project, Crossrail's legacy will be more than just the delivery of a world-class railway; sustainability has been at the heart of the project since its inception.

From Reading and Heathrow in the west to Shenfield and Abbey Wood in the east, the Crossrail route covers over 110km of track. It includes 21km of new twin-bore tunnels, 10 new stations and will serve a total of 40 stations. Crossrail will, for the first time, deliver a direct connection between all of London's biggest employment centres linking Heathrow with the West End, the City and Canary Wharf. The new railway will increase rail capacity in London by 10%, reduce journey times, ease congestion and improve connections. Services start running in the central, tunnelled section in 2018 and Crossrail will be fully operational in 2019.

The principal reason for building the railway is to secure London's competitiveness as a world city. This requires an efficient and reliable transport system that keeps people moving and supports the future population and economic growth. The challenge is to achieve this responsibly and sustainably, with the minimum environmental impact.

A total of £14.8bn of funding is available for the delivery of Crossrail. The new railway will support regeneration across the capital and benefits the UK as a whole. Crossrail is estimated to generate at least £42bn for the UK economy.

Crossrail's intention is to lead the way in constructing and delivering a sustainable and energy efficient railway fit for the future. Crossrail will have a long-lasting impact on how people travel around London and the South East.



VISION AND VALUES

Crossrail's mission is to 'move London forward' by designing, building and delivering a railway that will secure London's place as a competitive world city. Given the scale and importance of the project, sustainability had to underpin everything we do.

Crossrail is the first project of this scale in the UK to consider sustainability in its decision-making from day one. The organisation takes a holistic 'whole life' approach. It aims to minimise the negative impact on the environment and maximise economic and social benefits throughout the railway's construction and into the railway's operation. Crossrail's activities span all aspects of London's life, impacting many communities along the route, and the organisation takes this responsibility very seriously. Crossrail has a 120-year 'design life'. Of the energy required by Crossrail, 85% will be used to run the operational service. The actions undertaken today will have long-lasting benefits for London, the South East and the UK.

The breadth of Crossrail's sustainability activities range from the handling of excavated spoil from our construction sites, to promoting cycle safety by introducing compulsory training and safety equipment for all HGVs operating on the project, and a roadshow of events across the UK to promote the extensive opportunities that exist in the supply chain.

Crossrail values

Safety: we put safety first

Inspiration: we believe it is in our power to change things for the better

Collaboration: we are stronger together

Integrity: we keep our promises

Respect: we treat people as we would like to be treated

Crossrail's sustainability vision is:

To build Crossrail sustainably

- Seeking to minimise the impact on the environment and the community throughout construction
- Ensuring a diverse supply chain benefits from Crossrail work and that materials used on the project are sourced sustainably
- Providing a legacy of skills, learning, expertise and experience that can be handed on to the next generation of major infrastructure projects
- Moving a step closer to a more inclusive and safer construction industry

To design and deliver a world-class railway that can be operated sustainably

- Embedding energy saving and emissions reduction in the rolling stock and station designs
- Promoting safety, comfort and wider social and environmental benefits in the design of Crossrail stations, trains and public spaces
- Helping to securing London's place as a competitive world city

This holistic approach is aided by two key priorities within the Crossrail organisation:

Safety is Crossrail's number one value. The organisation believes that all harm is preventable, that everyone working on the project has the right to go home unharmed every day and that we must all work together to achieve this.

Innovation is embedded within the organisation. The innovate18 programme promotes new thinking and new ideas, particularly in the field of sustainability.

By achieving this vision and delivering Crossrail on time and within available funding, Crossrail's legacy will be a world-class railway which secures London's place as a competitive world city, a wealth of skills, experience and expertise to assist future major infrastructure projects and a perceptible improvement in the safety and inclusion of the construction industry.

Crossrail's sustainability story is told through the well understood themes of social, economic and environmental sustainability and is designed to meet the aspirations of joint sponsors (DfT and TfL), stakeholders and future passengers.



FOREWORD:

ANDREW WOLSTENHOLME CHIEF EXECUTIVE

This third Crossrail annual sustainability report marks the completion of the first half of the Crossrail construction programme and looks forward to the last full year of major civil engineering construction and tunnelling work. Crossrail is being delivered on time and within its available funding. We are on schedule to deliver a world-class railway.

During 2013-14, we maintained our focus on Crossrail's construction activities and designing a railway that will operate sustainably once it is open. We also sought to minimise the environmental impact on those living or working in the vicinity of our construction sites.

Our vision for sustainability is ambitious and covers both the construction of the railway and the design of sustainable operations. Firstly, we aim to minimise the impacts of Crossrail's construction phase; to work with a diverse supply chain to ethically source materials used on the project; and to drive improvements in safety, skills, learning and expertise to handover to the next generation of infrastructure projects.

Secondly, we aim to achieve 'whole life' energy savings through the design of stations and rolling stock; to deliver wider social and environmental benefits in safe, accessible and comfortable public spaces; and to secure London's place as a competitive world city through its contribution to the city's integrated transport network.

The scale of the challenge is considerable. However, I believe that we have been able to go much further than previous projects in embedding sustainability in our decision-making.

Crossrail's sustainability story is impressive. This report sets out the scale and diversity of activities taking place right across the project. We have attempted to deliver sustainability in every area of the programme from handling excavated material, air quality, water management, to skills, the supply chain, community investment activities and many more too numerous to mention here.

In the past year, we have made significant progress on constructing the running and platform tunnels and Crossrail's new stations. The final tunnel drives will continue from the east towards Farringdon later this year, and the remaining platform tunnels and interconnecting passageways will be excavated. 98% of the spoil removed from our sites is being handled sustainably, the vast majority of it carried by rail and barge. We are proud of our association with the RSPB, where a large proportion of this spoil is helping create a new wetland habitat for birds on the Essex coast.

As the civil engineering and tunnelling works draw to a conclusion, the focus of the project moves towards fitting out the stations and tunnels and installing the systems required to operate the railway. There will be increased activity on the surface sections of the route, both to the east and west, where Crossrail connects to existing Network Rail infrastructure. Once these systems are in place, extensive testing will be undertaken ahead of the central London section opening in 2018.

Safety is Crossrail's number one value and we strive to make Crossrail a safe place to work. Tragically we weren't able to deliver on this promise in March when one of our colleagues

Rene Tkacik, a worker at our Fisher Street site, was killed. This incident has deeply affected everyone working on Crossrail. It has served to reinforce my view that one of Crossrail's legacies must be to make the construction industry safer.

We are committed to protecting vulnerable road users when in the proximity of our worksites and those operating vehicles on Crossrail business. 6,700 drivers have been trained by Crossrail and we were the first project to mandate additional safety equipment on all HGVs.

Despite all these efforts there were two fatalities involving cyclists and one pedestrian during the year. It is essential that we learn the lessons from these tragic incidents to prevent them ever happening again. Our thoughts remain with their families, friends and work colleagues. I continue to believe that there is nothing on Crossrail that cannot be done safely and that all harm is preventable.

Building a railway through some of the capital's most densely populated areas means we need to be considerate to our neighbours. We are aware that noise, vibration, lorry movements and roadworks can be disruptive and inconvenient. We seek to maintain the highest standards possible, in relation to environmental controls over noise, vibration and air quality. For example, we have changed our plant equipment and tunnelling support machinery to improve air quality and have continued to focus on reducing noise levels.

This year Bombardier was successful in winning the contract to design, build and maintain Crossrail's train fleet. We set a demanding challenge for those bidding for the rolling stock and depot contract, asking them

to show they had the capability to deliver a cost effective, state of the art, lightweight, energy efficient fleet of trains that will serve the Crossrail route. Bombardier will build the trains in the East Midlands, securing many highly skilled manufacturing jobs in the UK.

Through the Tunnelling and Underground Construction Academy, we are delivering a legacy of improved skills in the industry. A total of 283 apprentices have found work on Crossrail, well on our way to a target of 400 over the course of the project. The UK supply chain has also benefited from Crossrail with three in every five contracts awarded to firms outside of London. Crossrail is estimated to be supporting 55,000 jobs throughout the country, benefiting every region in the UK. Small and medium size enterprises are delivering 62% of the work.

Constructing Crossrail has involved gathering together a wealth of knowledge on how to plan and deliver a major infrastructure project. Sharing this knowledge, best practice and learning with the rest of the industry, including Thames Tideway and High Speed 2, will continue to be an essential part of our work.

This report offers a detailed record about Crossrail's sustainability performance over the last year. It highlights the innovative work taking place across the project to deliver a sustainable and world-class railway for London, as well as setting out some of the challenges the project has faced during the year.

The coming year will bring different and new challenges. We will continue our focus on delivering a sustainable railway. I hope you enjoy reading this report and I commend it to you.

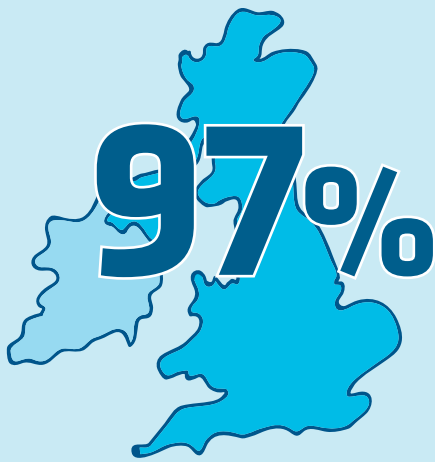
Andrew Wolstenholme OBE



REPORT HIGHLIGHTS

2013-14

ECONOMIC SUSTAINABILITY



of Crossrail-related contracts have been won by UK companies

62%

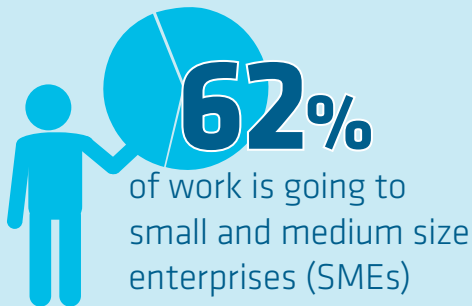
of contracts won by businesses outside London



National Audit Office endorsement that Crossrail is on course to achieve value for money



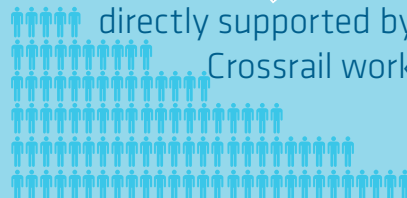
Crossrail remains on schedule and within the funding available



of work is going to small and medium size enterprises (SMEs)

11,000 jobs

directly supported by Crossrail work



ENVIRONMENTAL SUSTAINABILITY

Implementation of the most comprehensive **noise mitigation** strategy for the temporary railway built for tunnel construction



38%

energy saving on lighting delivered by an innovative LED tunnel lighting solution

SOCIAL SUSTAINABILITY



have attended the Crossrail Lorry Driver Training Programme



100 schools and 10,000 students and staff

have been engaged in the Crossrail project through the Young Crossrail programme

283 apprentices working on the project



840 UK jobs, including **230 new posts** and **80 apprentices**, have been secured by the award of the rolling stock contract to East Midlands-based Bombardier



Close to 2,800 local people from London's boroughs and/or the previously unemployed are now working on Crossrail



of construction material (by value) has been derived from recycled content – beating our target of 15%

8%

On target to achieve our **8% carbon dioxide (CO2) reduction**

which would save approximately 57,000 tonnes of emissions

73%

of non-exempt Crossrail construction equipment is fitted with diesel particulate filters or Euro stage 3b engines to reduce harmful emissions



THE NEW TRAINS ARE COMING...

During 2013-14, the contract to provide Crossrail's fleet of new trains and maintenance depot was awarded to Bombardier. The contract was procured by Crossrail and awarded by Transport for London. This £1bn state of the art train procurement is critical to the railway's future success and sustainability. The trains will include specifications that will have long-lasting and sustainable benefits that include saving energy, improving efficiency, achieving economic value and protecting the environment.

The trains will be manufactured and assembled at Bombardier's plant in Derby, supporting an overall 840 jobs, including 230 new jobs and 80 apprentices - supporting the UK's manufacturing and skills base.

The new Crossrail fleet of trains will be just over 200m long, lightweight, built to be high-performing with an emphasis on energy efficiency, using intelligent on-train energy management systems designed to have a positive environmental impact and deliver a sustainable, reliable service.

The trains will be fitted with systems which will significantly reduce energy consumption.

These include:

- Lightweight construction of the rolling stock. Bombardier's bid offered the lightest train and exceeded the tender specification
- An aerodynamic shape that reduces drag even in tunnels
- Regenerative braking which allows the energy generated by slowing the trains to be captured and returned to the electricity grid
- Intelligent LED lighting with an ambient dimming feature to lower lighting levels when possible. This is expected to reduce energy consumption by 64%, or an annual saving for the fleet of trains of nearly £500,000
- An acclimatisation system that adjusts the heating/cooling of the train to the most efficient and comfortable temperature for passengers
- Carriage insulation to reduce heat loss
- Energy efficient gearboxes and drives which reduce the amount of energy used by the train as it accelerates and decelerates
- Driver Advisory Systems (DAS) which guide the driver to use optimal energy efficient driving techniques such as the optimum speed and acceleration required to meet the timetable while minimising energy use



- Benefits of designing a sustainable train:**
- Expected 20% reduction in energy costs with the use of regenerative braking
 - Noise reduced by 50%
 - 25% weight reduction to save energy
 - 90% of the materials used in the composition of the train are recyclable

The trains will be modern, high capacity and energy efficient. They will include spacious interior layouts, wide interconnecting gangways between carriages and seating layouts that meet the needs of passengers. The trains are a key stepping stone to the long-term sustainability of the new railway and will prove a model to future railway projects. The first new trains are due to be delivered in 2017.

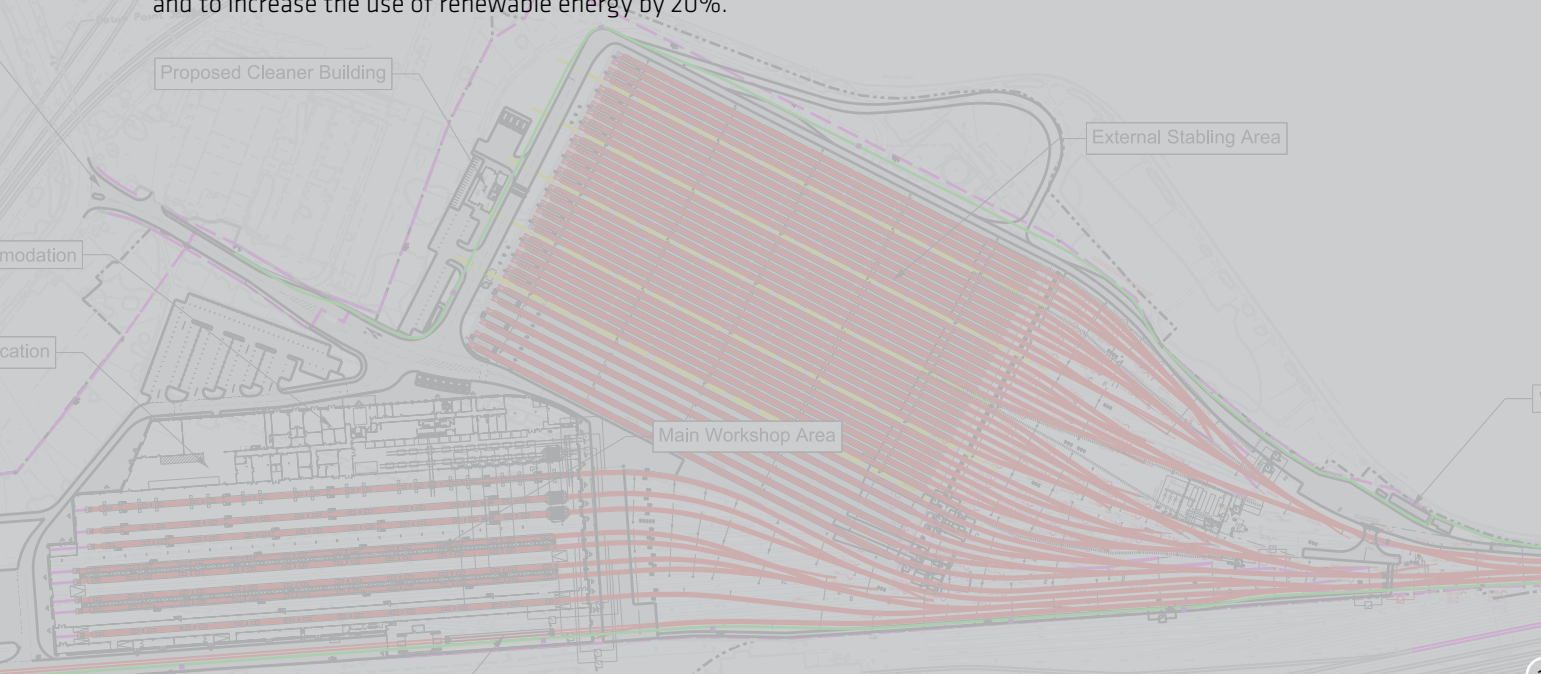
Old Oak Common: a sustainable depot

The trains will be maintained at a new facility at Old Oak Common. The supply, delivery and maintenance of the new trains at the depot will support 260 construction jobs and 16 apprenticeships.

The commitment for the depot is to reduce CO2 by 20% and to increase the use of renewable energy by 20%.

At the Old Oak Common depot, Bombardier is committed to meeting the BREEAM 'Very Good' standard by incorporating features such as rainwater harvesting, roof-mounted photo-voltaic (PV) panels and fluid recycling at the train wash plant.

A renewable energy source using PV cells placed on the rooftops of some buildings in the depot and twinned with underfloor heating, increased wall and roof insulation will decrease heat loss through the building fabric. This holistic approach to energy retention and production will mean a reduction in CO2 emissions of over 35%.



IMPROVING AIR QUALITY

An estimated 15% of London's soot particle emissions are caused by construction works. Since 2010, Crossrail has been introducing cleaner equipment to reduce the negative impact on air quality due to the project's construction activities.

In 2013-14, Crossrail increased the amount of construction plant equipment fitted with emissions controls across all its sites. The organisation worked with its tier one contractors to add diesel particulate filters and Euro stage 3b engines to machines wherever possible. The team also focused on fitting emission control devices to equipment which is difficult to adapt, such as crawler cranes.

As a result of this initiative, by the end of 2013-14, 73% of all plant equipment and machines were fitted with emissions controls or Euro stage 3b engines.

19% of all machines are exempt from this programme as emission control devices cannot be fitted. This means only 8% of all Crossrail machines are without emissions controls where they could be fitted, a 12% improvement on last year.

This is a huge step forward in Crossrail's environmental programme to further reduce emissions. It benefits both Crossrail's workforce and those who live and work in close proximity to Crossrail sites.



AWARDS

2013-14

ANNUAL SUSTAINABILITY AWARDS

Crossrail's inaugural Sustainability Awards took place in July 2013 to recognise the success of the supply chain in delivering Crossrail's sustainability agenda. Winners were celebrated in five categories:

ENVIRONMENT

Environmental Engagement

BAM Ferrovial Kier JV for environmental improvement by increasing levels of engagement across five targeted improvement areas: environmental awareness; empowerment; training; involvement; and initiatives.

Innovation & Exemplary Environmental Performance

Crossrail and Dragados Sisk JV for introducing an intelligent LED lighting system which provides high quality lighting in tunnels while minimising energy consumption.

SOCIAL

Providing Work Placements

Dragados Sisk JV (DSJV) Document Control Team for providing local school pupils and University of East London undergraduates the chance to help roll out a live Document Management System as part of the DSJV Summer Academy.

Young Crossrail & Community Investment

Laing O'Rourke for community investment initiatives in boroughs neighbouring the City, in particular at St Luke's Community Centre. It has provided well rounded and lasting benefits by installing a kitchen utility area, which has enabled St Luke's to generate further income to expand and support its community projects.

ECONOMIC

CompeteFor usage & Fair Payment / Prompt Payment

Morgan Sindall for actively using and placing 99% of Pudding Mill Lane contracts to a value of £34m through the CompeteFor website portal for fair and transparent procurement.

VALUES AWARDS

Crossrail's annual Values Awards celebrated the contributions of Crossrail and contractor employees in March 2014. All quarterly Values Award winners from across the project were shortlisted for the annual awards and invited to the event where we announced highly commended candidates and an overall winner for each value.

Winners included:

Safety Award

Ian Singleton, Sweeper Driver, Kilgannon Costain Skanska JV, Paddington

Highly commended: Heather Ho, SCL Engineer, Bam Ferrovial Kier JV, Farringdon

Inspiration Award

Andy Tschiderer, SCL Sprayer, Bam Ferrovial Kier JV, Western Tunnels

Highly commended: Peter Leyton, Agent, Balfour Beatty Morgan Vinci JV, Whitechapel and Liverpool Street station tunnels

Collaboration Award

Bill Quigley, Site Manager, Crossrail, Bam Ferrovial Kier JV Western Tunnels

Highly commended: Sunni Kanteh and Lauren Cody, Security Guard and Site Nurse, Western Tunnels

Integrity Award

James Melvill, Associate Structural Engineer, WSP, Bond Street

Highly commended: Patrick Kearney, Senior Construction Manager, Laing O'Rourke, Farringdon

Respect Award

Geoffrey Wilks, Site Manager, Crossrail, Balfour Beatty Morgan Vinci JV, Whitechapel and Liverpool Street tunnels

Highly commended: Yvonne Hawkey, Community Relations Representative, Hochtief Murphy JV, Thames Tunnel

APPRENTICE AWARDS

The annual Crossrail Apprentice awards took place in March and celebrated the contribution of apprentices to the programme.

Winners:

Crossrail Apprentice of the Year (Tunnelling)

Rudy Nieddu, Balfour Beatty Morgan Vinci JV (Whitechapel)

Construction Apprentice of the Year (General)

Chloe Etheridge, Barn Ferrovial Kier JV (Farringdon)

Corporate/Business Services Apprentice of the Year

Ben Khan, Balfour Beatty Morgan Vinci JV (Finsbury Circus)

EXTERNAL AWARDS

Public Sector People Managers Association (PPMA) National Awards 2014

Crossrail won the Excellence in Employee Engagement prize (jointly with Barking & Dagenham Council) beating strong competition from Birmingham, Nottingham and Chelmsford City Councils.

The PPMA is the voice and association for HR and organisational development professionals working within the public sector.

Chartered Institute of Public Relations (CIPR) 'Inside Story' Awards

Crossrail won the award for best employee engagement programme 2014 beating competition from Anchor, British Airways, Roche and the Royal Bank of Scotland.

The CIPR is the professional body for public relations practitioners in the UK.

National GO Awards 2014

Crossrail was recognised at the National Government Opportunities (GO) Excellence in Public Procurement Awards.

The GO Awards recognise public sector procurement excellence, celebrate the UK's thriving business community and is the benchmark for measuring progress in public commissioning.

GO Team of the Year Award

Winners:

The Rolling Stock and Depot Procurement Team for their procurement of rolling stock for Crossrail.

GO Outstanding Contribution Award

Winner:

Martin Rowark, Crossrail Procurement Director

Inspiring Safety Awards 2013

The Inspiring Safety Awards are designed to recognise individuals and organisations that go the extra mile adopting a contemporary approach to safety aimed at inspiring the people around them to achieve safety excellence.

Winners:

Crossrail for Most Inspiring Initiative for Gateway

International Visual Communications Association (IVCA) Awards 2013

Winners:

Crossrail for 'Walk the Talk' – an interactive training session

Crossrail won two Gold awards for best Experiential Campaign and best Interactive Corporate Communications and a Bronze award for Live Event.

Finance for the Future Awards 2013

Winner:

Crossrail in the Public Sector Award category

For an ethos of sustainability championed by the Chief Executive and embedded throughout the organisation. Crossrail culture is not simply to deliver a railway; it has a mission of 'Moving London Forward'. The finance department plays an active role ensuring sustainability is central to investment and decision-making. Impacts on the environment, stakeholders, and long-term benefits are all assessed.

Rail Business Awards 2014

Highly Commended: Sustainability Excellence category

For the holistic approach to sustainability in building Crossrail

Environment & Energy Awards, 2014

Highly Commended: Environmental Leadership Award for Organisational Behavioural Change category.

For the Green Line scheme and the leadership shown by Crossrail, its contractors and partners in improving environmental performance across the board.

Brake, The Road Safety Charity Annual Awards 2013

Winner:

Crossrail in the Safe Vehicles Award Category

For comprehensive checking and maintenance procedures, vehicle specification, modification and use of technology.



Crossrail Chairman, Terry Morgan CBE, (right) congratulating Rudy Nieddu on winning the Crossrail Apprentice of the Year award alongside Lord Deighton, Commercial Secretary to the Treasury.

Terry Morgan said: “Crossrail has succeeded in nearly doubling the UK average for filling its apprenticeships with people not in work. With one in seven young people unemployed in the UK, there is significant opportunity for other sectors and industries to adopt a similar approach to attract new skills, while providing employment for those not in work.”



COMMUNITY INVESTMENT ACROSS THE PROJECT

Crossrail is working with its contractors across the project to support a diverse portfolio of initiatives that engage and invest in the communities in which we are working.



North Woolwich family fun



Cleaning and reforesting at Old Oak Common



UCL's Slade School of Modern Art: Bird Nest



Marylebone project: Ladies at lunch



Renovating Cemetery Park Tower Hamlets



St Joseph's School, Camden playground murals



Moving Paddington Forward

Crossrail delivered on its commitment to local businesses and residents when Paddington's Eastbourne Terrace reopened to buses following a two-year closure to enable Crossrail works on the new station.

Sir Peter Hendy, London's Transport Commissioner, is also a qualified bus driver and marked the milestone by driving his Routemaster bus down the reopened road, filled with members of the community and workers on the project.

The road had been closed and traffic diverted to allow 400 people to work on the site to construct the new 250-metre long station, 20 metres underground.



Building bridges at Work Week, Canary Wharf



Pudding Mill Lane bankside restoration

REPORT STRUCTURE AND SCOPE

This third annual sustainability report is a review of performance of the financial year 2013-14 for the entire Crossrail programme.

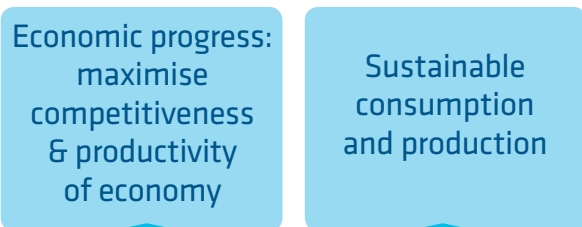
The report includes the 'on network' sections being delivered by Network Rail as well as the central section in London being delivered by Crossrail Ltd. Crossrail's central section includes the construction of 21km of new twin-bore tunnels under London. The 'on network' works involve the reconfiguration and upgrade of route infrastructure on the Heathrow spur and 90km of two existing main line railways and the construction of new train stabling facilities at Ilford Yard.

The report has been designed to be comparable with our sustainability reports from previous years. Data on Crossrail's performance is presented and supported by additional information to provide context. Performance is analysed and opportunities have been identified to improve our performance on sustainability. The report is illustrated with case studies that identify best practice and highlight innovations which have benefited the project or the wider industry.

The main part of the report is devoted to detailing Crossrail's performance against a number of performance indicators. The report concludes with a look forward to 2014-15, details of our organisational profile, stakeholder engagement, other reporting requirements and board membership.

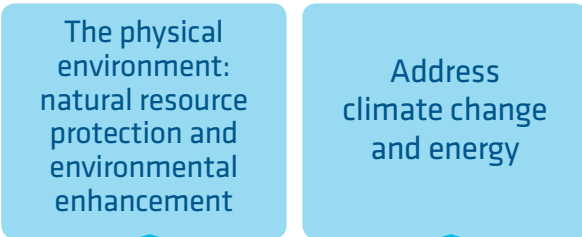


CROSSRAIL SUSTAINABILITY THEMES



ECONOMIC PROGRESS

ECONOMIC



THE PHYSICAL ENVIRONMENT

CLIMATE CHANGE

ENVIRONMENTAL



HEALTH AND WELLBEING

SAFETY AND SECURITY

EQUALITY AND INCLUSION

SOCIAL

CROSSRAIL'S KEY SUSTAINABILITY PERFORMANCE INDICATORS

- Location of businesses awarded Crossrail-related contracts and their values
- Delivery of 'whole life' value
- Number and size of businesses awarded Crossrail-related contracts
- Environmental assessment ratings

- Recycled content by value
- Recycling and reuse of waste material
- Crossrail's carbon footprint
- Environmental complaints

- Construction health and safety
- Health and safety performance index
- Diversity in Crossrail's workforce
- London living wage
- Strategic labour need and training compliance
- Apprentices
- Jobs brokerage service and local employment
- Volunteering
- Work experience
- Young Crossrail's audience reach

TfL sustainability framework

Crossrail sustainability themes

CHAPTER 1

ECONOMIC PROGRESS

- **11,000 jobs directly supported by Crossrail work**
- **62% of contracts won by businesses outside London**

As well as providing London and the South East with a world-class, high capacity, affordable railway, Crossrail will generate significant economic benefits across the UK.

During the construction phase alone, Crossrail is creating thousands of jobs and requiring the services of regionally-based manufacturers and other suppliers.

Crossrail has now completed the vast majority of its procurements; all contracts to date have been let without a successful legal challenge – a record, it is hoped, that will be maintained until all procurement has concluded.

Once operational, the wider impacts of Crossrail are worth up to £42bn to the UK economy. Crossrail is a key part of London's future and, in an economy that is inextricably linked to that of the whole country, it will be a catalyst for safeguarding the UK's economic future too.

As Crossrail passed the halfway mark in construction in early 2014, the project continues to deliver the programme on time and within its available funding.

Supporting Economic Growth

Crossrail will have a beneficial impact on the lives of commuters by providing better access to the capital. It will bring 1.5 million extra people within 45 minutes of London. It will provide strategic interchanges for local, national and international business and leisure travellers.

The project is also delivering economic benefits throughout the UK. During the construction phase, Crossrail expects to support 55,000 jobs in the UK and create in the region of 75,000 business opportunities.

It is estimated that Crossrail supported an additional 20,910 jobs throughout its supply chain in 2013-14, up from the 13,800 additional jobs supported in the year 2012-13. This year's figures

included an estimated 12,200 outside London, up from 8,310 in the previous year.

As Crossrail approaches its peak construction phase, there are currently 11,000 people working on sites across London and the South East.

Ensuring Value for Money

Crossrail is committed to achieving value for money for the taxpayer.

Over the course of 2013 the National Audit Office (NAO) carried out an investigation into the Crossrail project. Findings published in January 2014 showed that taxpayers' interests in the project have been well protected and, as long as risks are carefully managed for the remainder of the programme, the project is on course to achieve value for money.

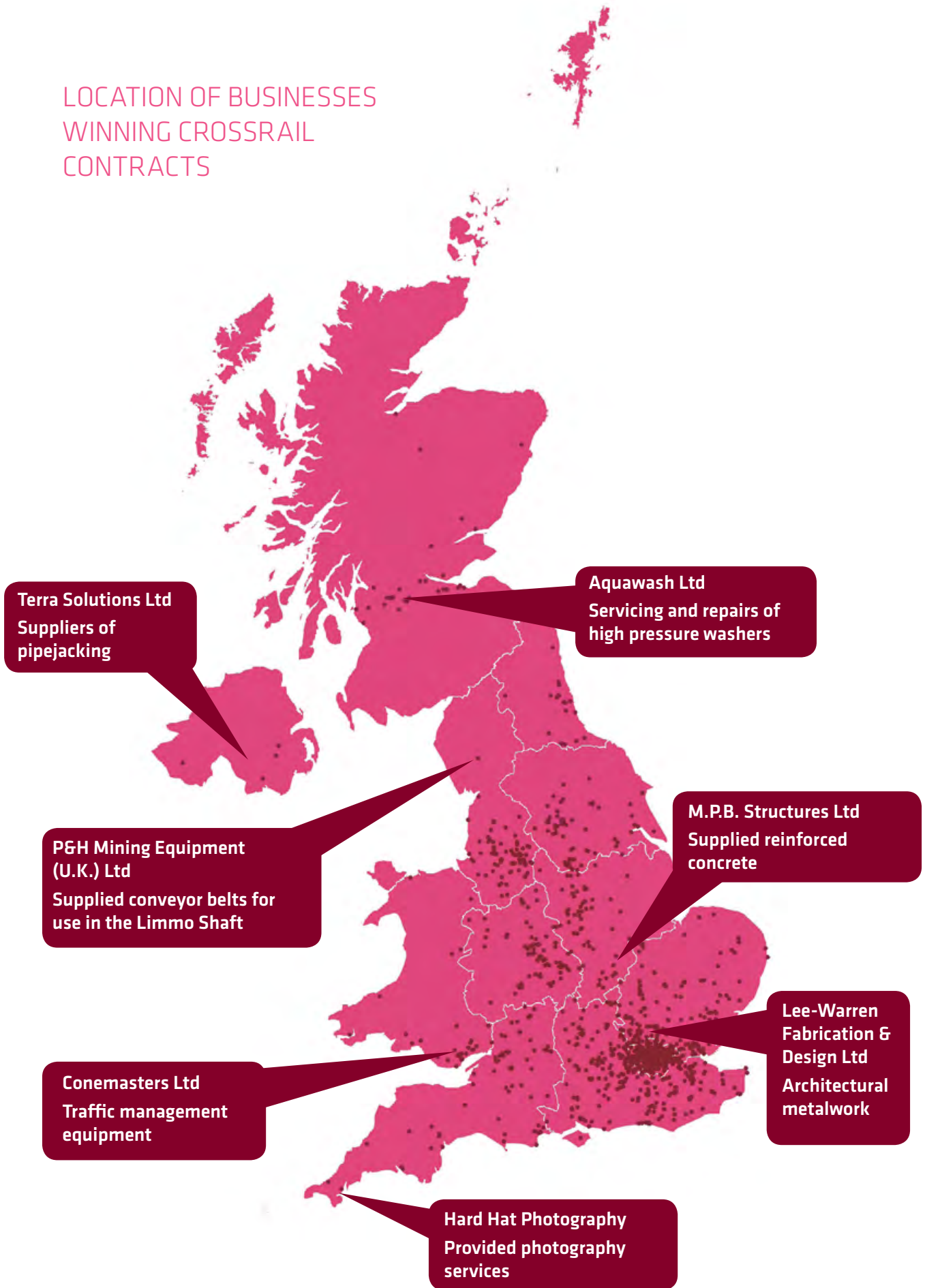
Amyas Morse, Head of the National Audit Office, reported that: *"The sponsors and Crossrail Limited have so far done well to protect taxpayers' interests, by taking early action to stop costs escalating and, during construction, tightly managing the programme. There is still a long way to go and the Department must continue to manage risks to protect its investment in Crossrail."*

Responding to the report, Margaret Hodge, Chairman of the Public Accounts Committee, said: *"The Crossrail project has been well managed and controlled to date. It is on track to deliver on time and within budget, and they deserve praise for their success so far."*

The NAO also confirmed that forecast costs on the project remain within the available funding of £14.8bn and that Crossrail is on course to open on schedule.



LOCATION OF BUSINESSES WINNING CROSSRAIL CONTRACTS



Indicator 01 – Location of Businesses Winning Crossrail Contracts

Crossrail monitors all its critical construction contracts throughout the supply chain. This allows the project team to identify any risks to the critical path of the project and also gives an overview of the makeup of our supply chain.

The picture for 2013-14 shows that 97% of our contractors are based in the UK and three in five of these businesses are based outside London.

The map (left) shows the geographical distribution of the Crossrail supply chain, demonstrating the far-reaching impact the project is having beyond the capital and the South East.

During 2013-14, the focus of the contract procurement programme has been track work, power supply, signalling and communications. During this time the contract for the design, build and maintenance of future rolling stock and depot facilities was let – the largest so far. The Derby based train manufacturer, Bombardier, was awarded this contract by Transport for London.

The vast majority of the procurements at the tier one level have now been concluded.

Crossrail had previously mapped the supply chain, showing which regions of the UK were comparatively under represented. The 'Heat Map' (overleaf) has been updated to reflect the impact of last year's procurement activity. The map shows that the strongest areas of activity remain in the South, East and North West but all areas of the UK are benefiting from work on the project.

As the nature of the work changes so too do the suppliers needed to deliver it. Crossrail has continued to engage with stakeholders throughout the UK in order to promote supply chain opportunities across the country.

During 2013-14, Crossrail undertook the following activities:

- Hosted and attended 'Meet-the-contractor' and 'Meet-the-Buyer' events, where potential suppliers met representatives from all Crossrail's main contractors, to discuss possible opportunities. Several attendee organisations have since won work on the project
- Regional road shows presented opportunities on the project to the English regions and devolved nations
- Presented to 250 potential suppliers at the CompeteFor Supply Chain Summit

- Hosted drop-in events in Parliament to assist MPs to promote the opportunities to businesses in their constituencies
- Received over 15,000 page views on the Current Opportunities section of the website in the last year. In total, the supplier section has had over 100,000 views

Approximately 2,000 opportunities were advertised on CompeteFor.

Indicator 02 – Delivery of 'Whole Life' Value

The whole life value of Crossrail can be assessed by looking at the transport impacts and additionally the wider economic benefits. While having significant transport benefits for London and the South East, including an increase in capacity by 10% to the London network and significantly improving journey times, the wider benefits are even greater.

The strategic need for Crossrail has become clearer over time as increased population and employment growth in London has been forecast. This was confirmed by the 2014 NAO report looking at the project. The report also states that Crossrail's benefits are expected to outweigh its costs.

The Department for Transport forecasts that Crossrail will bring £1.97 of transport benefits for every £1 of cost, and there is also potential for it to bring wider economic benefits. If these wider economic benefits are included, the benefit-cost ratio increases to 3:1.

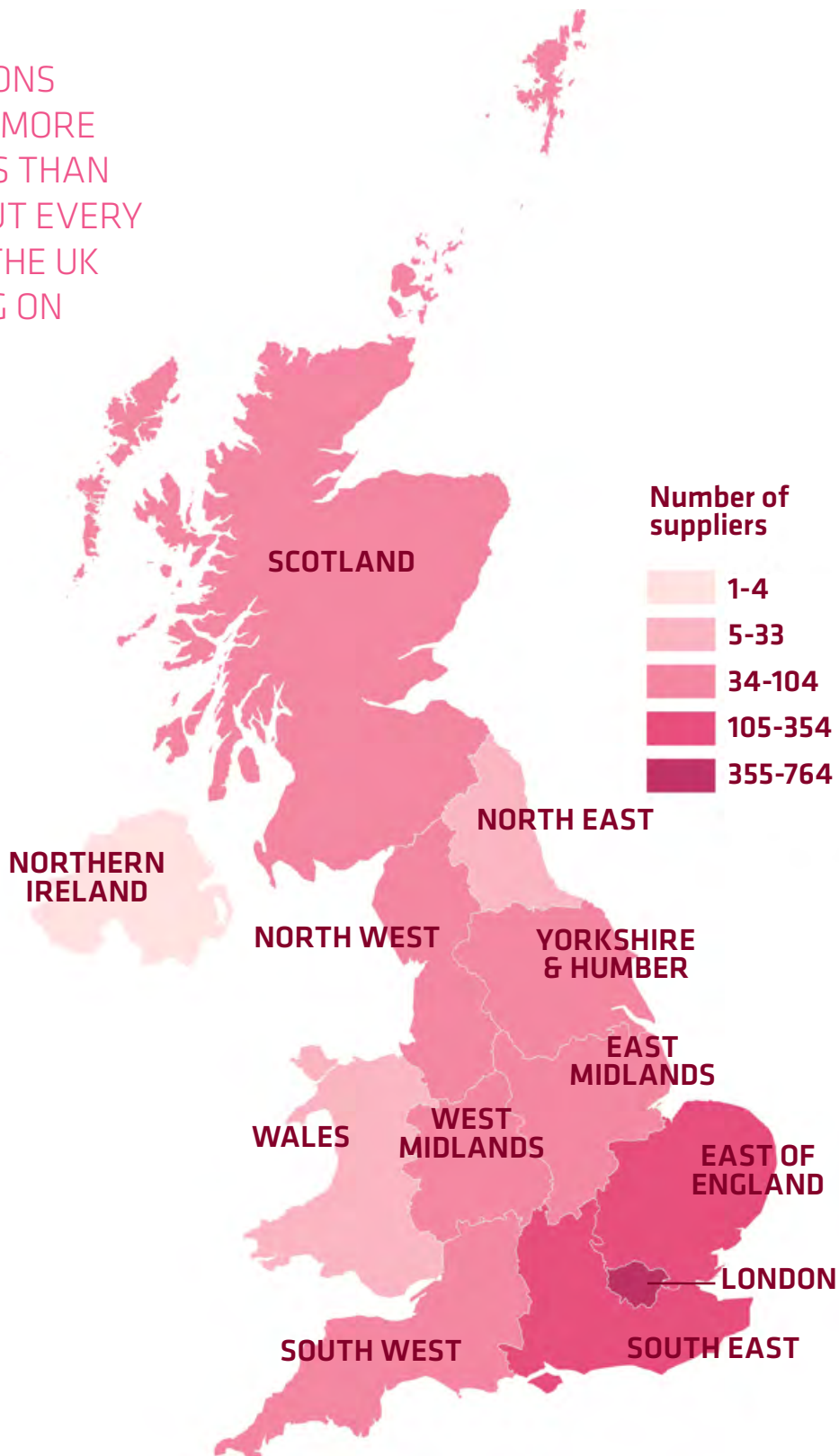
Indicator 03 – Number and Size of Businesses Awarded Crossrail-Related Contracts

Crossrail has placed a heavy emphasis on attracting a wide and diverse base of potential bidders for Crossrail work. This ensures that businesses in the UK – regardless of size or location – are aware of the project's opportunities, ensuring the right suppliers are delivering the project and in turn increases competition and improves value for money.

Crossrail monitors all major contracts on the project. This has, in turn, been used to monitor the number and sizes of the businesses engaged on the project. This sample indicates that Crossrail will create 75,000 business opportunities over the lifetime of the construction phase and that currently nearly 62% of Crossrail's construction contractors are SMEs.

This represents an increase over the year of SMEs in the Crossrail supply chain. This increase is the result of a programme of engagement with the supply chain and the widespread use of CompeteFor by tier one contractors.

SOME REGIONS
HAVE WON MORE
CONTRACTS THAN
OTHERS, BUT EVERY
REGION IN THE UK
IS WORKING ON
CROSSRAIL



CompeteFor

CompeteFor is a free service that enables businesses to compete for contract opportunities linked to major public and private sector buying organisations.

It is designed to be a fair and transparent procurement process and does not therefore favour suppliers of any particular size. However, it is intended that CompeteFor maximises opportunities available to SME companies. Crossrail requires that

its tier one contractors advertise all appropriate opportunities on CompeteFor and our data shows that almost 80% of all contracts awarded in the last year were advertised on CompeteFor.

Despite procurement by Crossrail Ltd nearing completion, the project still has over four years of construction remaining and there are still many opportunities within the supply chain over the coming years for businesses of all sizes.

CASE STUDY



LIFTING GEAR UK

With their head office based in Skelmersdale in Lancashire, Lifting Gear is a small company with 48 employees and an annual turnover of £4.5m. The company specialises in the supply of lifting and handling equipment, especially for heavy lifting projects. The company's work on Crossrail has enabled it to develop an expertise in lifting Tunnel Boring Machines (TBMs) into position at tunnelling sites. The company has won six contracts on Crossrail, helped by being registered on CompeteFor.

The picture (above) shows the Lifting Projects Team (specialist division of Lifting Gear UK Limited) lifting out an Erector Beam (25 tonnes) with a large 1,000 tonne mobile crane. Lifting Gear UK moved the sections of Crossrail's TBMs Mary and Sophia into place at the Plumstead site in south east London, prior to tunnelling under the River Thames. Moving both machines required Lifting Gear UK to use innovative techniques developed with the main contractor. The safety critical operation was extremely complex and had minimal margin for error. The quality of their work was recognised when the company won an award for safety from Crossrail for their recent activities at North Woolwich for the removal of TBM Sophia.



**A TBM section
can weigh almost
100 tonnes**

SUSTAINABLE CONSUMPTION AND PRODUCTION

- **99% of waste material reused or recycled**
- **97% CEEQUAL 'excellent' rating achieved by Crossrail's Paddington Integrated Project (PIP)**
- **32% of construction material from recycled sources, surpassing the 15% target for the second year running**

Sustainable consumption and production involves examining how goods and services are produced and considering the impact of materials across the whole life cycle of the project. Crossrail is committed to ethically sourcing equipment and products where possible and ensuring that it is using cleaner, more environmentally-friendly products to ensure the carbon footprint and other environmental impacts remain low.

CEEQUAL

All tunnels, portals and shafts linking underground levels to the surface, including ventilation and emergency access routes, are evaluated through the Civil Engineering Environmental Quality (CEEQUAL) assessment scheme. At client and interim design stage the evaluation of all these structures were rated as 'excellent'.

Two of these structures have now been completed and have maintained their 'excellent' ratings. Crossrail reported on the first of these, the Royal Oak Portal, in the 2012-13 report. Since then, the Paddington Integrated Project (PIP) has been completed and its rating confirmed. The PIP scored particularly well in its design and management of landscape issues. In the project team's dealings with local community and stakeholders it scored 97%.

Last year's report identified one particular area for improvement in carbon and energy management, which scored 37% for the Royal Oak Portal structure. The score for this part of the assessment was 66% for the PIP. The challenge now will be to maintain and, if possible, improve on that performance during the remaining works.

This improvement in performance is a result of significant effort from Crossrail's project management teams working with its contractors and their supply chains to seek opportunities to improve on energy performance. Work has been

undertaken over the past year to gain a better understanding of Crossrail's carbon footprint, embedded carbon reduction and fuel efficiency in construction has helped to achieve this improvement.

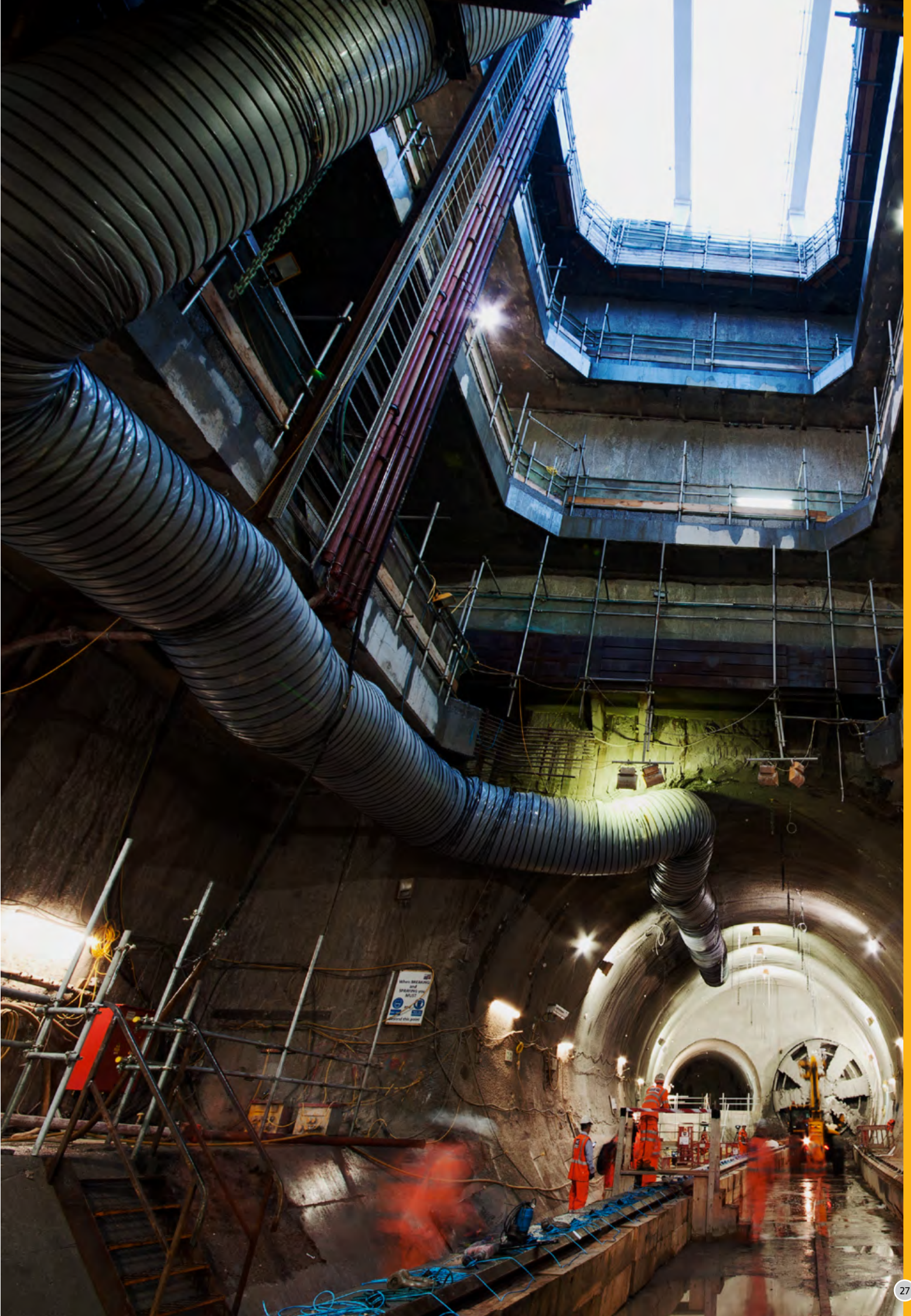
BREEAM

Crossrail has adopted the Building Research Establishment Environmental Assessment Methodology (BREEAM) for all its stations in the central section. As reported in the 2012-13 report this is the first time anyone has applied this methodology to evaluate an underground station. Crossrail has continued to work closely with the Building Research Establishment (BRE) to ensure that the criteria are appropriate to this particular type of construction.

This pioneering approach means that Crossrail has not had the benefit of established performance benchmarks for this building type. Crossrail, therefore, has an important part to play in helping to define performance for other such buildings, leaving a legacy for future projects.

At the pre-assessment stage, all stations were at 'very good' in the rating system. During 2013-14, formal design stage assessments were submitted for Paddington and Whitechapel and were ratified as 'very good' and 'excellent' respectively. Both Tottenham Court Road and Liverpool Street have been submitted for design stage ratification and the results of this are awaited. Ratings of 'very good' are expected which will keep us on target for the post-construction assessments.

Custom House, the only above ground station in the central section, was also submitted for design stage assessment and achieved a 'very good' rating under the BREEAM bespoke scheme.



Maintaining the 'excellent' rating for Whitechapel station remains a challenge. This station was an exception in having a target of 'excellent' based on the design submitted for assessment. However, as the design has progressed several changes have had to be made which has placed some credits at risk. The contractor for this station is working extremely hard with Crossrail Ltd to maintain this rating, but faces technical and cost challenges. The outcome will be included in next year's Sustainability Report.

Having pioneered BREEAM on Crossrail, this has allowed other projects to adopt the methodology. The requirement is now included on forthcoming works at London Underground's Bank station and the new stations on the Northern line extension.

Indicator 04 – Environmental Assessment Ratings

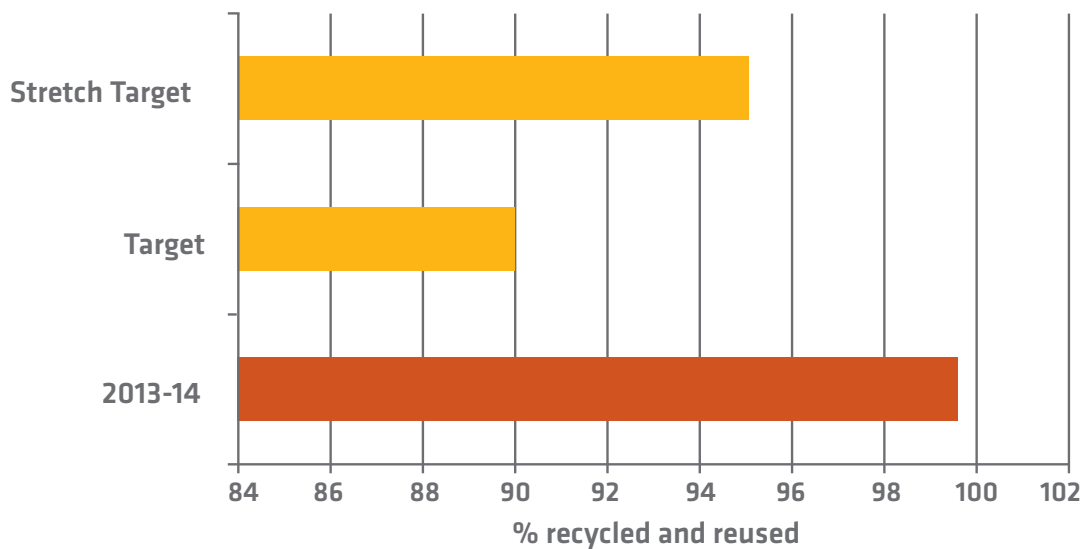
CEEQUAL	Client Design Assessment	Post Construction Assessment
RUNNING TUNNELS WEST	Excellent Achieved	Excellent on target
RUNNING TUNNELS EAST	Excellent Achieved	Excellent on target
THAMES TUNNEL	Excellent Achieved	Excellent on target
SPRAYED CONCRETE LINING STRUCTURES	Excellent Achieved	Excellent on target
PADDINGTON INTEGRATED PROJECT	Excellent Achieved	Excellent Achieved
ELEANOR ST/ MILE END SHAFTS	Excellent Achieved	Excellent on target
VICTORIA DOCK PORTAL	Excellent Achieved	Excellent on target
PUDDING MILL LANE	Excellent Achieved	Excellent on target
ROYAL OAK PORTAL	Excellent Achieved	Excellent Achieved
CONNAUGHT TUNNEL	Excellent Achieved	Excellent on target
STOCKLEY PARK VIADUCT	Excellent Achieved	Excellent on target

BREEAM	Design Stage Assessment	Post Construction Assessment
TUCA	Very Good Achieved	Excellent Achieved
PADDINGTON	Very Good Achieved	Very Good on target
BOND STREET	Very Good on target	Very Good on target
TOTTENHAM COURT ROAD	Very Good on target	Very Good on target
FARRINGDON	Very Good on target	Very Good on target
LIVERPOOL STREET	Very Good on target	Very Good on target
WHITECHAPEL	Excellent Achieved	Very Good anticipated
CUSTOM HOUSE	Very Good Achieved	Very Good on target
ROLLING STOCK DEPOT	Very Good on target	Very Good on target
ABBEY WOOD	Very Good on target	Very Good on target

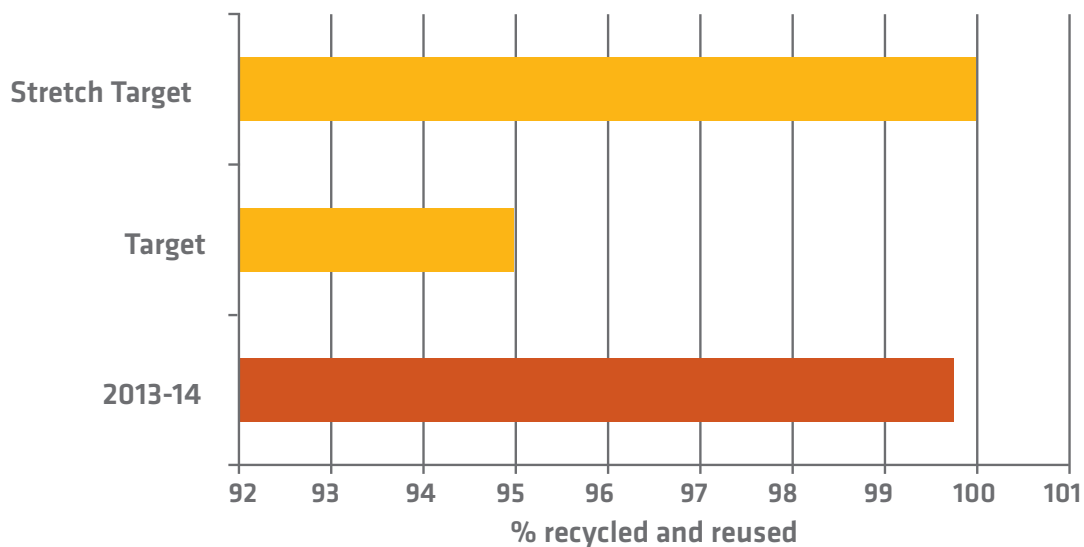
Indicator 05 – Recycled Content by Value

Recycled content by value is the standard industry metric developed by WRAP (the Waste Resources Action Programme) for the measurement of recycled content within construction products. Crossrail has set a target of 15% recycled content by value across the programme, with a 'stretch' target of 20%. At present, Crossrail is surpassing this figure and is able to reconfirm the figure published in the 2013 report of 32%. This consistency reflects the early stage exercise undertaken by the contractors and the continuation of similar construction over the last year using similar materials – largely steel and concrete. As the transition to architectural finishes, cladding, flooring and so on is made later in the construction programme this figure is likely to change. Crossrail's contractors will assess the opportunities to procure products with higher recycled content of these items where they exist and where there are no commercial constraints.

Construction and Demolition Waste



Excavated Material



Indicator 06 – Recycling and Reuse of Waste Material

Crossrail generated 1.9 million tonnes of excavated material in 2013-14 as a result of excavation works on the east to west route tunnels. When combined with the material generated in previous years, a total of over 4 million tonnes of material has been excavated.

Crossrail has set challenging targets to achieve reuse and recycling best practice for the construction industry, as set by the government-funded WRAP.

A much smaller volume of construction and demolition waste was generated in 2013-14, comprising 42,000 tonnes.

With demolitions now largely complete, most of this waste was generated during construction. Crossrail aims to reuse or recycle its excavated material where possible. So far over 99% of this waste has already been reused or recycled.

Excavated material is being reused or recycled in a variety of ways, including at Wallasea Island where it is being used to develop a nature reserve habitat in collaboration with the RSPB. Other examples include sites at Ingreborne Valley, Goshems Farm, East Tilbury Quarry and Pitsea (all located in Essex), where the material is being used to create agricultural land, nature reserves and recreational facilities.

CHAPTER 3

CLIMATE CHANGE AND ENERGY

- **38% energy savings using LED tunnel lighting when compared to using standard lighting**
- **73% of all plant equipment and machinery fitted with emissions controls**

Crossrail is committed to calculating and reducing its carbon footprint and remains on target to reduce carbon emissions during construction by 8%.

Indicator 07 – Carbon Footprint

Crossrail remains on track to achieve this 8% target with the current figure slightly in excess of this. It will save approximately 57,000 tonnes of CO2 emissions.



A saving of 57,000 tonnes of CO2 emissions would be enough energy to run over 12,000 homes for a year or to fly 114,000 people across the Atlantic

Crossrail has been working with station design teams to minimise the operational energy use in its stations. Crossrail has also set out specifications for the rolling stock provider with the aim of minimising energy use during operation. This is an important element of the whole life carbon and energy story of Crossrail, as it accounts for the greatest component of energy usage. Crossrail's carbon footprint model predicts net CO2 emissions (measured in tonnes of CO2) resulting from the construction and operation of the railway. Total CO2 emissions from the construction phase of the Crossrail project are estimated to be in the order of 1.7 million tonnes.



Once the railway is operational, there will be annual savings in the order of 70,000 to 225,000 tonnes of CO2, largely due to the displacement of car journeys and replacement of diesel trains on the existing network

The least optimistic 'payback' period is between 7 and 26 years, with the most likely range being 9 to 13 years after opening beyond which there will be net savings in CO2. The variation in the figures includes possible differences in service operating patterns and specification of rolling stock.

Lighting

Some examples of energy saving initiatives during construction include switching from generators to mains power and using LED lighting and hydrogen fuel cell lighting. By quantifying the reductions Crossrail will be able to provide valuable legacy information for other projects and to the wider contractor community who want to achieve similar energy savings.

Since September 2013, lighting in some of Crossrail's tunnels has used 36watt LED luminaires supplied by Aurialis. Monitoring the energy consumption indicates that LED tunnel lighting uses about 62% of the energy of standard light fittings.

Ventilation

The design of the tunnel ventilation system during construction includes inverter controls for all ventilation fans. In this way, energy consumption can be matched to the performance requirement as tunnel construction advances and low pressure air boosted fans are placed in key locations to reduce the demand on power.

Lifts and Escalators

Crossrail has now procured its lift and escalator suppliers who have begun to look at the specific designs for each station. Early indications show that a 23% improvement in energy consumption, during operation, is likely as a result of Crossrail's particular specifications. The procurement of lifts and escalators is part of a Transport for London replacement contract so that the wider London Underground network will also benefit from these energy savings.



CASE STUDY

REDUCING CARBON

While being the world's most used building material, modern concrete has a significant carbon burden through carbon dioxide released in the conversion of chalk into calcium oxide in cement manufacture and hydrocarbon derived fuels used in cement kilns. Crossrail is working with the David Ball Group in testing Cemfree®, a cement-free concrete that activates ground blast furnace slag (GGBS) producing an ultra-low carbon alternative to concrete mix designs that traditionally use Portland cement. For over 100 years GGBS has a proven track record of significantly increasing the durability of concrete.

Portland cement (OPC) generates 913kg of CO₂ for each tonne of finished product. It accounts for around 5-8% of total CO₂ emissions in the form of greenhouse gases, making it the third highest man-made producer of CO₂ after transport and energy generation.

Modern advances have gone some way to replacing OPC content, but Cemfree® can result in its complete removal in concrete mix designs. This has led to a significant reduction in the embedded CO₂ of concrete.

**Test panel made
from cement-free
concrete**



Rolling Stock

Crossrail has successfully procured a contractor to provide the rolling stock. Bidders for the Rolling Stock and Depot Contract responded very positively to the challenges set in both the train and depot specifications.

The rolling stock contract was awarded by Transport for London to Bombardier Transportation who offered the lowest overall train weight. As a result they are on course to better, by a significant margin, the energy per mile targets set in the original tender documents. All the energy management features requested are now embedded in the contract specification including metering, remote start-up, optimised regenerative braking, and 'sleep modes' for heating and ventilation. The next step will be to work with the Crossrail Train Operating Company, once appointed, to ensure that these features are used to their full potential. Likewise Bombardier will be working with the signalling contractor to ensure that the Automatic Train Operation settings are fine-tuned to deliver the most energy-efficient traction and braking cycles for the train.

At the Old Oak Common depot, Bombardier has accepted the challenge to meet the BREEAM 'very

good' standard by incorporating features such as rainwater harvesting, roof mounted photo-voltaic arrays and fluid recycling at the train wash plant.

Sustainable trains and facilities are integral to the design. Using them effectively is the next challenge, but the quality of the successful bid gives a strong starting point for Crossrail's goal of achieving 'best in class' environmental performance for the rolling stock.

Carbon Reduction

To further leverage carbon reduction opportunities Crossrail has convened a Carbon Working Group. The group consists of corporate Sustainability Managers who work collaboratively with Crossrail to identify and maximise opportunities for more carbon reduction on the construction project. The stimulus for the formation of this group lies in part with the publication of the HM Treasury document: The Infrastructure Carbon Review (November 2013). Many of Crossrail's tier one contractors have signed up to it by way of a commitment to reduce carbon in their public sector projects. Crossrail is believed to be the first project to bring together its tier one contractors in this manner and hopes to harness this combined knowledge and expertise to derive better solutions.



CHAPTER 4 PHYSICAL ENVIRONMENT AND NATURAL RESOURCE PROTECTION

- **Using surplus groundwater to treat and process excavated materials saves 2 million litres of potable drinking water per week**
- **Implementation of comprehensive noise mitigation strategy for temporary railway built for tunnel construction**
- **150 voles, 8,200 common lizards and 30 adders rehomed**

Crossrail takes its environmental and social obligations seriously. It is conscious of protecting natural resources, alert to recording and archiving archaeological artefacts found during tunnelling, creating an urban environment that encourages property development and taking the passenger and local community experience into account.

As a result, Crossrail will leave behind a legacy of learning, protection and sustainable practices to ensure minimum disruption during the course of construction and a positive impact on economic and social growth in the long-term.

Crossrail has an ISO 14001 certified environmental management system in place and insists that its contractors have an equivalent accreditation.

Crossrail's systems are subject to a process of audit to ensure that they are being effectively deployed. Audits are undertaken by Crossrail, the contractors themselves and by independent certification bodies. Crossrail was not subject to any regulatory enforcement actions during the year.

The Environmental Minimum Requirements (EMR) are rules to which those building Crossrail must adhere. Local authorities and statutory agencies worked with Crossrail to develop the EMR.

A key part is performance against the Construction Code, which is a comprehensive document setting out how to mitigate the impacts of construction. Crossrail placed conditions in its contracts to ensure its contractors comply with the requirements. Regular inspections and audits confirm the terms are met, with any non-conformance quickly identified and rectified. More information about the EMR can be found on the Crossrail website.

Air Quality

As part of the EMR, Crossrail has a duty to reduce particulate emissions from construction machinery where practical. The use of diesel particulate filters or cleaner Euro stage 3b engines will contribute to better air quality in London, especially for communities around Crossrail's sites.

Since introducing the requirement for cleaner engines in 2010, Crossrail has been working with its tier one contractors to put this in place and to overcome concerns about equipment reliability, maintenance issues and adverse fuel consumption.

In 2013-14, Crossrail increased construction plant equipment that is fitted with emissions controls and introduced checks across all sites. Of plant equipment, 73% is now fitted with emissions controls or Euro stage 3b engines. Consultation and trials proved that it is not practical to fit emissions control to a further 19% of plant. Crossrail also tackled more difficult equipment like crawler cranes, which have now been fitted with emissions controls on many of its sites.

Water

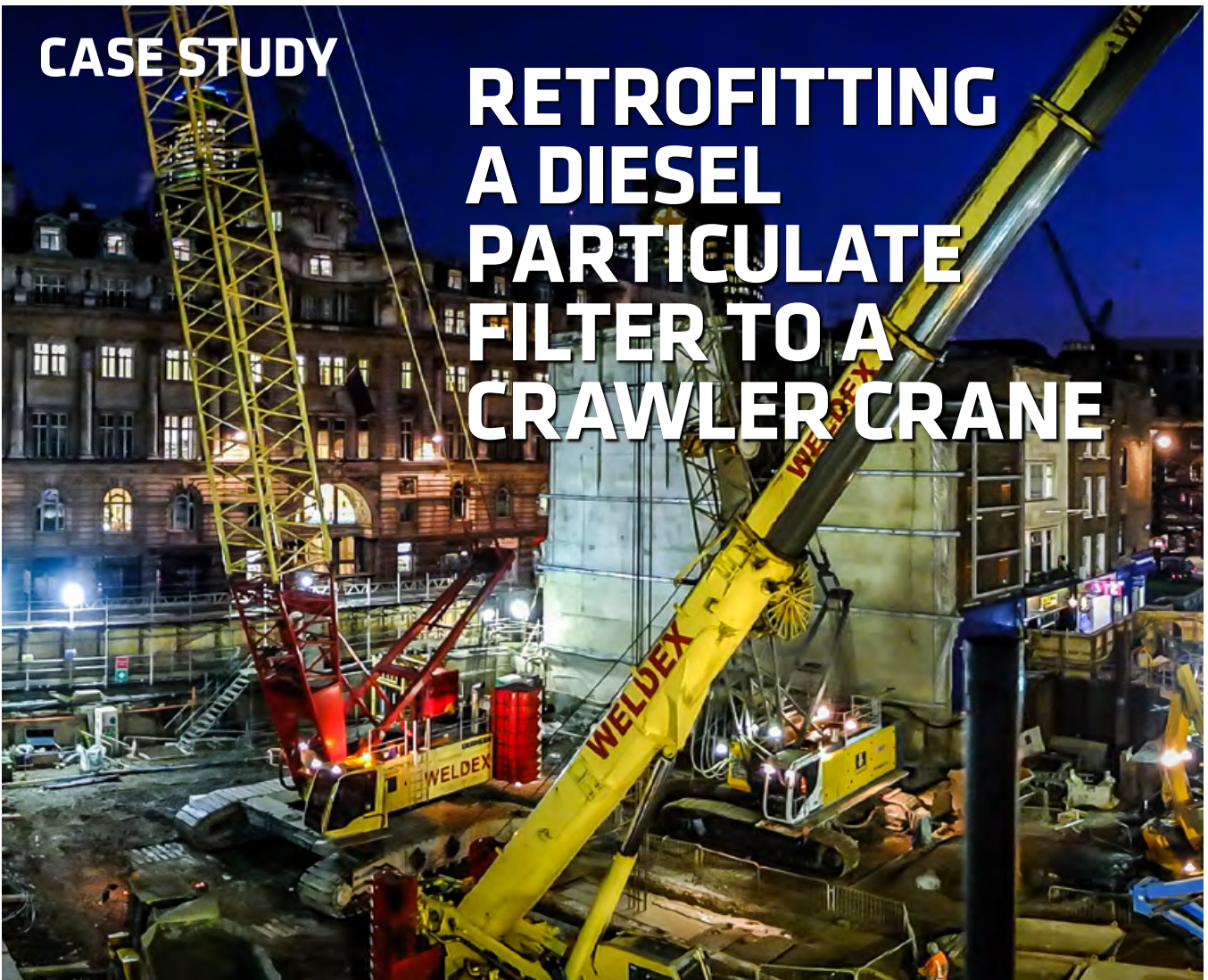
During construction, Crossrail concentrates on protecting water from pollution and carefully monitors how much water is used. Crossrail aims to gather data that will help form benchmarks for large construction projects in the future and to share this information with the construction industry through organisations such as Constructing Excellence.

Crossrail works to save water wherever possible. Some of the sites have installed systems for harvesting, storing and using rainwater. This example will be followed at Whitechapel station where rainwater will be harvested to irrigate its green roof.



CASE STUDY

RETROFITTING A DIESEL PARTICULATE FILTER TO A CRAWLER CRANE



Crossrail requires construction plant over 37kw/h power capacity to have a Euro stage 3b engine or an approved diesel particulate filter (DPF) retrofitted to achieve the emission standard required. To date, achieving compliance with large (over 50 tonnes) crawler cranes and piling rigs has been problematic due to warranty issues, the potential for decreased performance and cost.

Morgan Sindall, working with their supplier Magnor Plant, successfully provided the first retrofitted crawler crane on Crossrail at the Pudding Mill Lane project in Stratford. A DPF has been fitted to a 50-tonne crawler crane that is currently being used to support structural concrete works on the project. Subsequent performance or efficiency of the crane has not been affected.



Use of DPFs is just one way to reduce vehicle emissions. Manufacturers are increasingly moving towards cleaner engine technology that can deliver emission reductions and save fuel

CASE STUDY

WATER SAVINGS USING GROUNDWATER FOR TBM PROCESSES

In order to construct new tunnels between Plumstead and North Woolwich, two TBMs must travel through chalk beneath the River Thames. This generates a chalk slurry 'spoil' which requires treatment before it can be taken from site for beneficial reuse. A slurry treatment plant is used to treat and process the excavated material. These processes would usually use a substantial

volume of potable drinking water with estimates reaching as much as 300,000 litres every day. The Hochtief Murphy JV team through innovation have dramatically reduced this by using surplus groundwater from their dewatering scheme for processes such as Bentonite mixing, slurry dilution and grout mixing.

Using surplus groundwater will save over 2 million litres of potable water a week, equivalent to an Olympic size swimming pool



Green Line Recognition Scheme

Crossrail recognises that improving environmental performance means helping everyone involved to understand what needs to be done and providing the motivation to do it. Because of this the Green Line Recognition Scheme was developed. It increases awareness of good practice and encourages better environmental behaviour at all Crossrail construction sites.

The scheme recognises contractors achieving set standards of environmental issue management and workforce engagement.



In 2013-14, Green Line Recognition was awarded to six contracts, bringing the overall total of contractors awarded under the scheme to 15

Crossrail's work on the Green Line was recognised with a Highly Commended Award at the 2014 Environment and Energy Awards. The judges thought that Crossrail showed: *"that leadership not only comes from Crossrail Ltd but also their contractors and partners. They are improving environment and performance across the board."*

Biodiversity

The main biodiversity focus during construction is wildlife and habitat protection. Water voles are known to inhabit most of Wallasea Island's ditches and as the construction programme at the island includes extensive reshaping of the existing water courses, the voles have been rehomed. The work was undertaken over a period of two years and completed in 2013-14.

150 water voles living at Wallasea Island were carefully moved to nearby areas and over 8,200 common lizards and 30 adders have been rehomed as part of the works



Crossrail is also looking at how it can improve the biodiversity of sites after completion. Where there are suitable conditions, provision will be made in the design of the buildings. For example, Crossrail has installed over 500 sq m of new green roof at the Paddington Integrated Project. Crossrail is continuing to explore other opportunities, for example at the head house at Connaught Tunnel and the main station building at Whitechapel.

The urban characteristics of Crossrail's central London stations often mean reduced scope for biodiversity improvements. Most of this work, where possible, will be undertaken during the later stages of the project. Suitable places have been identified where careful species selection can provide an appropriate landscape design and improve biodiversity. These include the tunnel portal at Pudding Mill Lane, Paddington New Yard, Limmo Peninsula, Stepney Green and Mile End and at Old Oak Common depot. On the Crossrail surface section, Network Rail is using DEFRA's biodiversity offsetting pilot scheme to calculate its impact in developing the railway. The aim is to achieve zero net loss by investing in areas of equal habitat value.

A CHALK GRASSLAND HABITAT IN PITSEA

Crossrail's eastern tunnels from North Woolwich to Plumstead are driven through chalk. This is different to Crossrail's other tunnels which are predominantly within the clay layer. The tunnelling process creates chalk slurry that is then dried in a treatment plant to form a chalk 'cake' to allow its reuse.

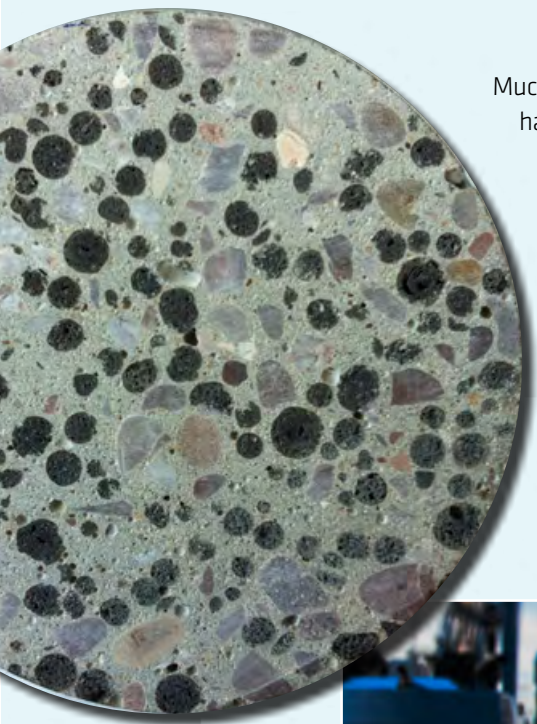
187,179 tonnes of chalk has been transported to Pitsea in Essex where it is being used to restore a landfill site to a grassland habitat. This type of habitat has been identified as threatened in the UK's Biodiversity Action Plan.

The remainder of the chalk is being transported to Kingsnorth where it is being reused to fill a void created by remediation of the site so that it is suitable for future land development.



CASE STUDY

INNOVATIVE WAYS OF RECYCLING WASTE



Much of the excavated material has been transferred to Wallasea Island RSPB reserve. However, Crossrail has also been investigating other ways to reuse some excavated material such as London clay.

One possibility is the conversion of this material into an aggregate that can be used in concrete, thus

keeping production local, lessening the demand on natural stone aggregates from other parts of the country and reducing Crossrail's carbon footprint.

The challenge is to remain within the constraints of European construction product standards while developing concrete mix design procedures using these aggregates to increase the efficiency and sustainability of concrete structures.

During 2013-14, Crossrail has used the innovation programme to fund work with Nustone Ltd and the University of Wolverhampton to develop and test the aggregate material.



INDICATOR 08 – Environmental Complaints

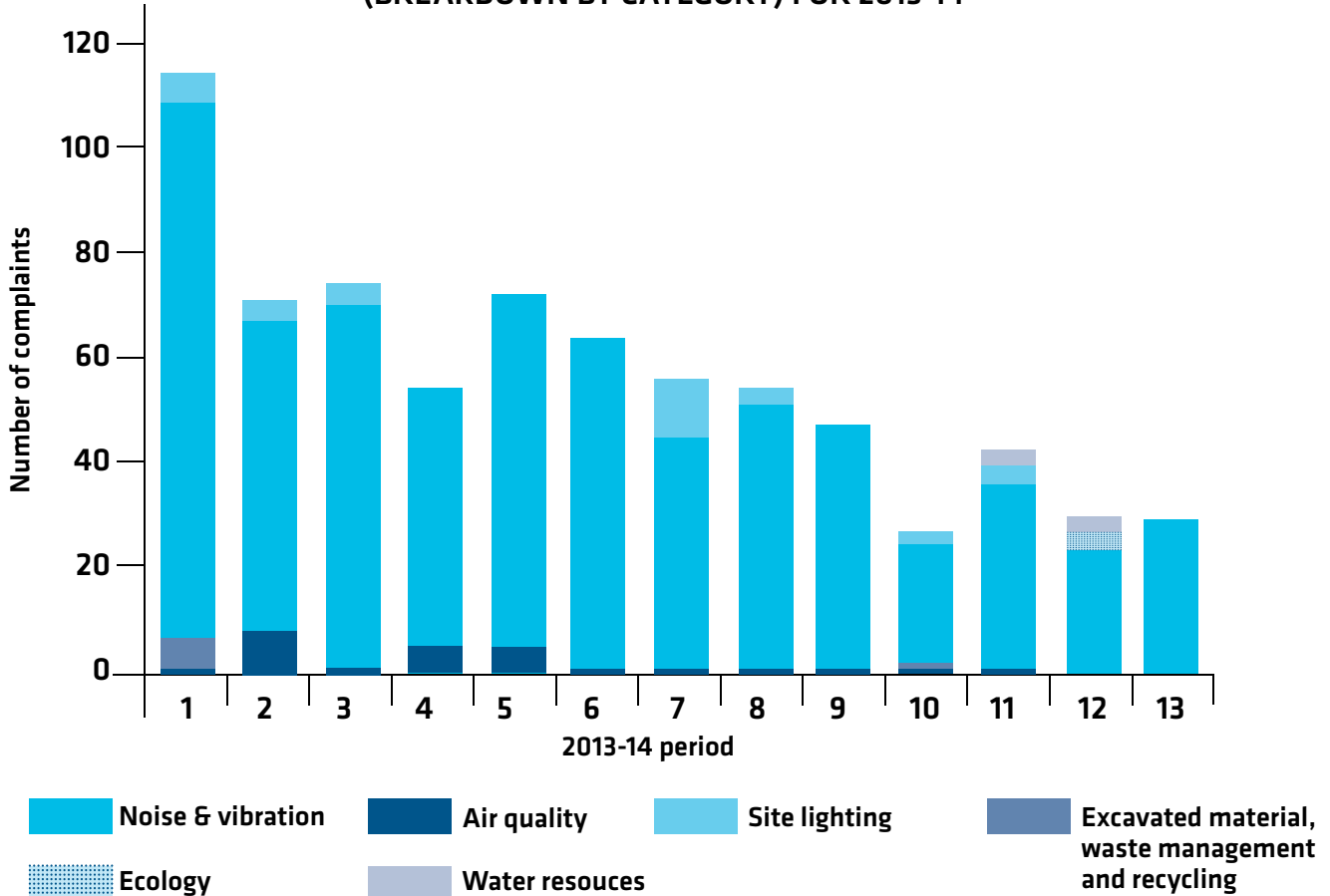
Crossrail’s construction, especially within densely populated urban areas, inevitably affects those living and working near the sites. The aim is to minimise disruption to local communities and the whole project has had an Environmental Impact Assessment (EIA). An environmental statement was also published and presented to Parliament to accompany the Crossrail Bill in 2005.

The process identified sensitive locations where working methods must be approved by the local authority in order to ensure that disturbance is minimised. All of Crossrail’s contractors must use industry best practice to minimise inconvenience and there is a 24-hour helpline so that people affected by the works can seek advice or register a complaint. Complaints are reviewed swiftly and each issue raised is investigated. Where possible, Crossrail changes its working practices to reduce or eliminate the problem.

Of the 731 environmental complaints received by the Crossrail Helpdesk in 2013-14, 93% were related to noise and vibration. The main locations for these complaints were areas where people live close to the works, for example at Whitechapel, Bond Street and Farringdon. There were 127 complaints from across the surface section of the route including Maidenhead, Stockley, Acton and Abbey Wood.

During the year, Crossrail worked with all its main construction contractors to ensure they use the best practical means to minimise the impact of construction, especially noise and vibration, and have put measures in place to help those most affected. Whitechapel continues to receive the highest number of complaints. The majority of complaints were due to the tunnelling works for the new Whitechapel station. The most affected residents have been offered temporary rehousing.

TOTAL NUMBER OF ENVIRONMENTAL COMPLAINTS (BREAKDOWN BY CATEGORY) FOR 2013-14



TEMPORARY CONSTRUCTION RAILWAY

Crossrail's Tunnel Boring Machines (TBMs) can travel over 50m a day and install over 200 concrete segments. Keeping the TBM well stocked is critical to maintaining production. This is done via a temporary construction railway laid behind the TBM to move people and materials to and from the surface. The trains and rolling stock are relatively small, but carry heavy loads on narrow track directly bolted to the tunnel. The interaction of train wheels and rails causes vibrations which can transfer to the buildings above. This is referred to as ground borne noise.

Crossrail is implementing comprehensive mitigation measures for noise from the temporary construction railway. Best practice requirements for noise from the railway have been set out and Crossrail has been working with its tunnelling contractors to demonstrate that the ground borne noise does not exceed the limits set out in the EMR. This includes specific criteria for sensitive locations such as theatres, concert halls, recording studios, religious buildings, courts and lecture theatres.



Archaeology Fieldwork Programme

Crossrail's archaeology programme is one of the largest undertaken on an infrastructure project, in the UK. It will leave a lasting legacy of learning, experience and knowledge. The methods and techniques used on the project will allow archaeology and heritage best practice to be incorporated into future infrastructure projects, through academic institutions in the UK and abroad. The findings will also be of great interest to local communities and the general public.

In 2013, Crossrail hosted fact finding visits from leading archaeologists from the UK and the Japanese government in order to share experiences around planning, managing and communicating information on the historic environment through national infrastructure projects.

During the reporting period, archaeological investigations have continued to reveal significant discoveries at many of the construction sites across London:

- At Farringdon eastern ticket hall: evidence of a 660-year-old burial ground has provided important new information for a collaborative international research programme into the causes and impact of the Black Death pandemic which caused widespread devastation across Europe in the 14th century
- At Liverpool Street: investigation within the lost River Walbrook revealed that the ancient channel preserves a remarkable collection of human remains including many skulls from the Roman period. A Roman road and rare evidence of the manufacture and reuse of Roman doors incorporated into a river revetment was discovered
- At North Woolwich: excavations for Crossrail's tunnel portal have revealed how very early London hunter gatherer groups were exploiting the rich river floodplain for raw materials and hunting up to 10,000 years ago

Sharing Knowledge

Analysis of the Crossrail archaeological finds is now fully underway and the programme includes the publication of the results in a range of different formats, including in academic journals.

In 2013, the first peer-reviewed scientific paper was published on the Pleistocene mammal finds made at Royal Oak Portal in the Proceedings of the Geologists' Association.

Publications are also in preparation covering: the many historic buildings and diverse range of railway

heritage recorded across the project; the discovery of a Tudor Manor house at Stepney Green; and the archaeology and history of one of London's most important industrial archaeology sites investigated at Canning Town, the Thames Ironworks.

The Crossrail archaeology team has contributed further technical papers and articles to professional conferences and journals:

- In 2013, articles have appeared in the 2013 Proceedings of the International Conference for Cultural Heritage and New Technologies in Vienna, Civil Engineering Surveyor magazine and in PIA, the international peer-reviewed journal of the Institute of Archaeology at UCL London
- High media coverage during the year saw news of archaeological discoveries and events featured in local, national and international media. Media interest ranged from local TV and radio to media outlets across the world, including affording access to archaeological finds to Channel 4, the BBC and the Discovery Channel for several television documentaries focusing on history and construction projects

Local Community Engagement

In 2013, Crossrail held a successful community archaeology dig at the Stepney Green site in association with local volunteers and the Stepney City Farm charity.

More than 3,500 members of the public attended the second archaeology exhibition 'Portals to the Past' and a series of lectures presented to community groups along the Crossrail route throughout the year.

Reusing Historic Assets

Crossrail continues to identify opportunities on site to donate historic materials for positive reuse. Crossrail has donated a dozen 16th century elm wooden piles from Liverpool Street to the Canning Town Caravanserai community up-cycling, cultural and gardening project, for use in public art projects. Discussions are also ongoing with the newly established Thames Ironworks Heritage Trust to ensure that artefacts from excavations at the Ironworks can be permanently displayed locally as part of a future museum installation.

Built Heritage

During the year, Crossrail has made White Hart depot, a grade II listed power station, 'wind and weather tight'. The building is within Crossrail's construction footprint and has been used for material storage. It is located next to the Plumstead portal and is an interesting early

example, dating to 1910, of a power station fuelled by local town rubbish.

Similar weather proofing works are planned for 8-10 Southampton Row in Holborn, a building dating from the 1900s and listed as an early example of steel frame construction. Unfortunately, it was built with 'clinker' concrete. The clinker from power stations or plants making town gas was used as a sustainable lightweight aggregate in concrete. However, when the material gets wet it releases sulphates which

combine with the water to make sulphuric acid and consequently rots the steel frame.

Work has also begun on the reuse of 160 metres of Grade I cast iron railings dating back to original drawings by Brunel in 1854. When removed for refurbishment, it was discovered that the first panel was an aluminium alloy copy and not original. The remainder will be relocated on their previous alignment in Eastbourne Terrace, Paddington.



Places And Spaces: Urban Integration and Development

The arrival of Crossrail in 2018 is generating growing interest from property developers, boosting the supply and demand of new residential and commercial developments as well as influencing the way local authorities plan for their local areas around stations.

Crossrail continues to monitor development trends to see where this is already having an effect. In February 2014, Crossrail published research commissioned from property experts GVA.

It shows that from 2008 to 2013, 41% of planning applications within a kilometre of a Crossrail station cited the new railway as a justification for the development proceeding, equating to around 53 million sq ft of residential, commercial and retail space.

Crossrail's positive influence on development has increased over time, with 15% of planning applications citing it as a factor in 2009, increasing to 48% in the first six months of 2013

Although the findings make clear that Crossrail is not the only factor influencing development, they do evidence the part Crossrail plays in unlocking regeneration in London and helping to alleviate constrained supplies of housing and offices in the capital.

Local authorities are increasingly looking at how they can channel this development pressure to regenerate areas around stations and a report 'Crossrail as a Catalyst' published in April 2014 by the think-tank Future of London included

recommendations to maximise the positive impacts of the new railway. It encourages local authorities to make the most of Crossrail's benefits by building up experienced and skilled teams, acknowledging that the character of some places will change and pump-prime areas with local infrastructure improvements to attract private sector development.

Urban Integration

Crossrail has integrated the designs for its stations, the urban realm outside the stations and its 12 major property developments. Crossrail, with its development partners, is planning over 3 million sq ft of high quality office, retail and residential development above five central stations.

In March 2014, Crossrail proposed initial urban realm designs for 27 stations in London and four stations outside the capital.

In total, design proposals for an area of 190,000 sq m, the equivalent of 16 areas the size of Leicester Square in London, which includes 431 new trees, 1,235 new cycle parking spaces and 20 new pedestrian crossings.

These design proposals are deliberately ambitious and for the complete areas to be funded, finance is required from a number of sources. Crossrail is on the way to reaching its funding target of £90m for urban realm improvements by 2018. As well as its own spending of £30m, an additional £30m has been set aside by Transport for London for the boroughs to spend on schemes outside Crossrail stations. To date £15m has been committed by third parties, including developers, to spend on improvements.



The Culture Line: Crossrail's Art Programme

The Culture Line will be a permanent exhibition of large-scale art works across the central London Crossrail stations, designed in collaboration with London's leading art galleries.

All funding is coming from external partners. Funding partners who have joined The Culture Line in 2013-14 include:

- The City of London Corporation has given a major boost to the Art Programme, agreeing to match-fund the sponsorship raised up to a total of £7m
- Canary Wharf Group plc has agreed to part-fund a new permanent public artwork in the Canary Wharf Crossrail station in partnership with PACE Gallery, a leading contemporary art gallery. The gallery will work with Crossrail's round table panel and Canary Wharf Group to commission a world-class artist for this iconic station
- Almacantar will co-fund a new £1m artwork in Tottenham Court Road Crossrail station. Almacantar, owner of Centre Point and one of the capital's leading property investment and development companies, will join Crossrail's round table panel to appoint an artist with the assistance of Gagosian, a world-renowned art gallery, and Hawkins/Brown, the architects designing the station

Crossrail has now begun the artist selection process for both stations.

A Visual Archive

In January 2014, Crossrail appointed an artist-in-residence to archive Crossrail's activities during construction. Julie Leonard, a London-based painter, printmaker and digital artist uses a smart phone app to create digital and animated drawings. Working in and around the construction sites, she is providing a narrative of the project, incorporating anecdotes from the workforce and communities living and working along the route.



CHAPTER 5

OCCUPATIONAL HEALTH AND WELLBEING

- **Crossrail delivers first NEBOSH certified training in Health and Wellbeing at Work**
- **20 Considerate Contractors Scheme awarded sites – an increase of 16 sites since 2012**

The health and wellbeing of the workforce and stakeholders has been a crucial element in Crossrail's progress during 2013-14. It is estimated that the UK construction industry reported 31,000 new cases of ill-health in 2012.

Health and wellbeing is a key focus for Crossrail and, to raise the bar across the industry, this message has been delivered to its contractor community.

In 2013, Crossrail launched its Health and Wellbeing Strategy to improve its delivery of related activities across the project.

Crossrail aims to prevent work related ill-health and improve individuals' wellbeing through the delivery of the strategy. Health campaigns such as team challenges and key pieces of health research will leave health legacies which will benefit the construction industry as a whole.

Health promotion campaigns delivered in 2013 have included:

- **Healthy Eating**
- **Healthy Heart**
- **Back Care**
- **Hot and Cold Weather Working**
- **Resilience**
- **Sun and Cancer Awareness**

Three successful Crossrail-led Target Zero project-wide health campaigns were delivered:

- **Dust/Respiratory Health: '999 Health Emergency: protect your lungs, they need you'**
- **Musculo-Skeletal Disorders**
- **Healthy Team Challenge: 'fighting fit' which attracted 200 participants**

To ensure appropriate standards in occupational health delivery across the programme are met, Crossrail states that the supply chain can only use occupational health providers that meet the nationally accredited Safe Effective Quality Occupational Health Service (SEQOHS) standard.

Crossrail sets its contractors health-related KPIs which are reported on a monthly basis to ensure health campaigns are being delivered, drug and alcohol tests are undertaken by new starters and compliance with the Constructing Better Health scheme.

Crossrail was instrumental in supporting the Department of Health's Public Health Responsibility Deal (PHRD) Health at Work for Construction and Civil Engineering Industries which was launched in October 2013 and has signed up to the PHRD pledges.

Crossrail has also contributed to the development of health toolkits to enable SMEs to sign up to PHRD pledges.

To ensure managers are equipped with appropriate skills to support their employees' health and wellbeing, in 2013 Crossrail delivered its first National Examination Board in Occupational Safety and Health (NEBOSH) certificated management training in Health and Wellbeing at Work course.

Crossrail continues to endorse the Constructing Better Health scheme which assists in ensuring occupational health standards are met. As a leading client organisation, Crossrail's involvement in this scheme has encouraged others to join.

HEALTH INITIATIVE - CROSSRAIL WALK

A team from Crossrail's East London sites put their best feet forward to walk 4.4 miles of the Crossrail tunnel route from Plumstead to Custom House, taking in the North Woolwich and Connaught Tunnel sites along the way.

More than 40 people took part in the walk from four sites in the East, including Crossrail contractors and head office colleagues keen to join in the fun. As well as taking in some unusual viewpoints of Crossrail worksites, the participants learned about the local area from a tour guide who was specially prepared.

Kenny Dearsley, Health and Safety Advisor said: *"We wanted to mark Crossrail getting to the halfway there stage with a fun, healthy teams challenge"*.



CONSIDERATE CONSTRUCTORS SCHEME 2014 AWARDS

The Considerate Constructors Scheme (CCS) is a national initiative established by the construction industry to improve standards of neighbourliness.

Sites registered with the scheme are independently assessed against a code of considerate practice, designed to encourage higher standards of conduct. All sites on the central section of Crossrail construction are required to register.

Crossrail contractors have broken their record for awards received in the 2014 CCS National Site Awards. These recognise the top 10% of construction sites in the UK for excellent standards of consideration towards their neighbours, workforce and the environment. They are based on assessments made during 2013.

More than 9,000 sites across the UK were assessed for the scheme with just 25 of those awarded runner-up spots and one crowned winner.

No fewer than 20 sites received awards in 2014, compared to 11 in 2013 and 4 in 2012. Crossrail's contractors at Paddington, Connaught Tunnel and Whitechapel won National Most Considerate Site Runner-Up awards. This success was recognised at the CCS National Awards.

The performance of Crossrail sites is recognised by a number of awards presented for the year.

Gold awards:

- BFK JV* Station Tunnels West
- CSJV** Bond Street station
- CSJV Eleanor Street and Mile End Shafts.

Silver awards:

- DSJV*** Tunnel Drive Y
- BBMV**** Station Tunnels East
- Morgan Sindall Pudding Mill Lane
- BAM Nuttal Kier JV Whitechapel station
- Vinci Victoria Dock Portal
- Laing O'Rourke Custom House

Bronze awards:

- Hochtief Murphy JV Plumstead and North Woolwich
- Laing O'Rourke Liverpool Street
- BAM Nuttal Van Oord JV Marine Transportation
- BFK JV Farringdon
- Canary Wharf contractors

*BFK JV – Bam Ferrovial Kier Joint Venture

**CSJV – Costain Skanska Joint Venture

***DSJV – Dragados Sisk Joint Venture

****BBMV JV – Balfour Beatty Alpine BeMo Morgan Sindall Vinci Joint Venture

CHAPTER 6

HEALTH AND SAFETY

- **31% reduction in Lost Time at Work**
- **2.09 health and safety performance (HSPI) score – an improvement on 1.75 in 2012-13**
- **6,700 lorry drivers trained in safer driving; 93% agree they are made a ‘safer driver’**

Health and safety remains the most important value. Crossrail is committed to health and safety across all its sites, its workforce and extends to anyone who lives and works around them.



As in previous years, the number of hours worked on the project has increased, from an initial 1.8m in 2009-10, to 15.4m in 2012-13 and now 18.2m in 2013-14. At year end, there were almost 11,000 employees working on the project

Crossrail continues to monitor its safety record and is striving harder to maintain high standards in health and safety.

Crossrail's three founding principles for health and safety and its Target Zero aspirations are:

- **We all have the right to go home unharmed every day**
- **We believe that all harm is preventable**
- **We must all work together to achieve this**

The majority of activity so far undertaken on the project is complex, heavy construction work. This type of activity has inherent risks. Crossrail's Health and Safety Management System and various proactive initiatives and monitoring activities are targeted at creating an environment where these risks are appropriately identified and effectively managed.

Indicator 09 – Construction Health and Safety

An objective was set at the start of 2013-14 to reduce the Accident Frequency Rate (AFR) – measured per 100,000 hours worked. There was no increase in any of the AFRs in 2014-15. The RIDDOR Major Injury AFR remained at 0.14 while the RIDDOR Rate (including injuries resulting in more than 3 days lost time) reduced by 8% from 0.36 to 0.33. The biggest improvement was the Lost Time Case (LTC – accident resulting in one or more days absence) AFR which reduced by 31% from 0.70 to 0.48.

Despite the improved trend in injury rate, tragically, there was one fatal incident that occurred in March 2014. This event served to reaffirm, at all levels of the organisation, that health and safety must remain the number one priority. Crossrail can never be complacent when it comes to driving for improvement in safety performance and in achieving the three founding principles.

Crossrail has continued to champion its Target Zero – A State of Mind philosophy through several initiatives to help embed the concept in the project.

- Crossrail's 'Have Your Say' survey to assess its health and safety climate had over 5,000 responses
- In 'Stepping Up Week' teams collaborated in a week of planned activities at 33 sites to reinvigorate and refresh the Target Zero message

Both initiatives are set to become a regular occurrence in annual plans. The seven Golden Rules remain and are designed to assist in creating a safe working environment and are targeted at the key risk areas.





◀ GOLDEN RULES ▶

Our Golden Rules are designed to create a safe working environment. Read them, understand them, and put safety at the centre of your day.

Always:

- assess the risks
- produce and comply with a safe system of work
- expect the workplace to change and control new risks as they occur
- communicate the risks and explain the safe system to the frontline workforce
- ensure work is adequately supervised, and carried out by a competent workforce
- maintain a tidy workplace
- use the correct tools, equipment and PPE
- stop work immediately if you think it is unsafe report all incidents, near-misses and unsafe situations, and support those who do

Driving

Never drive or operate vehicles or plant:

- unless you are authorised and medically fit to do so
- unless it is fit for purpose and in a safe state of repair
- above the limits set for speed, weight and overhead restriction
- where the risk of hitting pedestrians or operatives is not controlled

Lifting

Never:

- lift unsecured loads
- exceed the operating limits of any piece of lifting equipment
- use any piece of lifting equipment unless appropriately tested and inspected
- lift unless the ground/foundation has been assessed or designed
- stand or walk under a suspended load

Working at height

Never work at height

- if there are safer alternatives
- unless you are protected by a solid barrier or, where this is not possible, a harness
- unless all materials, tools and equipment are safely secured and prevented from falling

Sprayed concrete works

Never:

- visit a tunnel under construction unless you absolutely have to
- stand under "open ground" as material can fall from the face and bench – not just from overhead
- stand under freshly sprayed (green) shotcrete
- stand or walk in a driver's blind-spot

Electrics

Never work on energy or electrical systems unless an authorised person has:

- isolated, discharged and locked off the system and tested it to prove it is safe
- issued a Permit to Work stating that the work is safe to proceed

Confined spaces

Never enter a confined space:

- if there are safer alternatives
- unless you are medically fit and trained to do so
- unless the air within the space has been tested and declared safe or unless the safe system of work specifically describes measures for maintaining safe breathable air
- unless an emergency plan and system is in place
- without a Permit to Work recording that the work is safe to proceed

Breaking ground

Never undertake digging, excavation or ground breaking activities unless:

- a survey of the area has been completed to identify all risks and structures in the ground
- a Permit to Work is in place recording that the work is safe to proceed
- controls are in place to ensure that the ground will not collapse during the work

Crossrail has worked collaboratively with contractors to produce a number of guidance documents and communications including 29 Good Practice Bulletins and 37 Health and Safety alerts. In addition, Crossrail has produced a Tunnel Safety video, filmed on sites with Crossrail workers, for use as a supplementary enhancement to existing site inductions at tunnelling sites.

Other guidance developed this year includes leading edge Visual Standards and Pressure Systems Guidance, as well as a Construction Railway Operations Best Practice guide which both captured existing best practice and specified suitable standards, where none previously existed, for managing movement and maintenance on construction railways.

Crossrail has developed an approach to undertaking assurance by implementing an inspection programme that is integrated with project plans, ensuring that audits are undertaken on high risk activities when they are actually occurring on site.

Incident response management procedures have been reviewed on all Crossrail sites in consultation with the emergency services and simulation exercises have been held for teams to rehearse incident management. The business continuity management system is now aligned to ISO 22301.

Crossrail's health and safety management system has maintained accreditation to the British Standard for Occupational Health and Safety (OHSAS 18001) which includes requirements for continual improvement, driving us forward to becoming an industry leader in occupational health and safety practices.

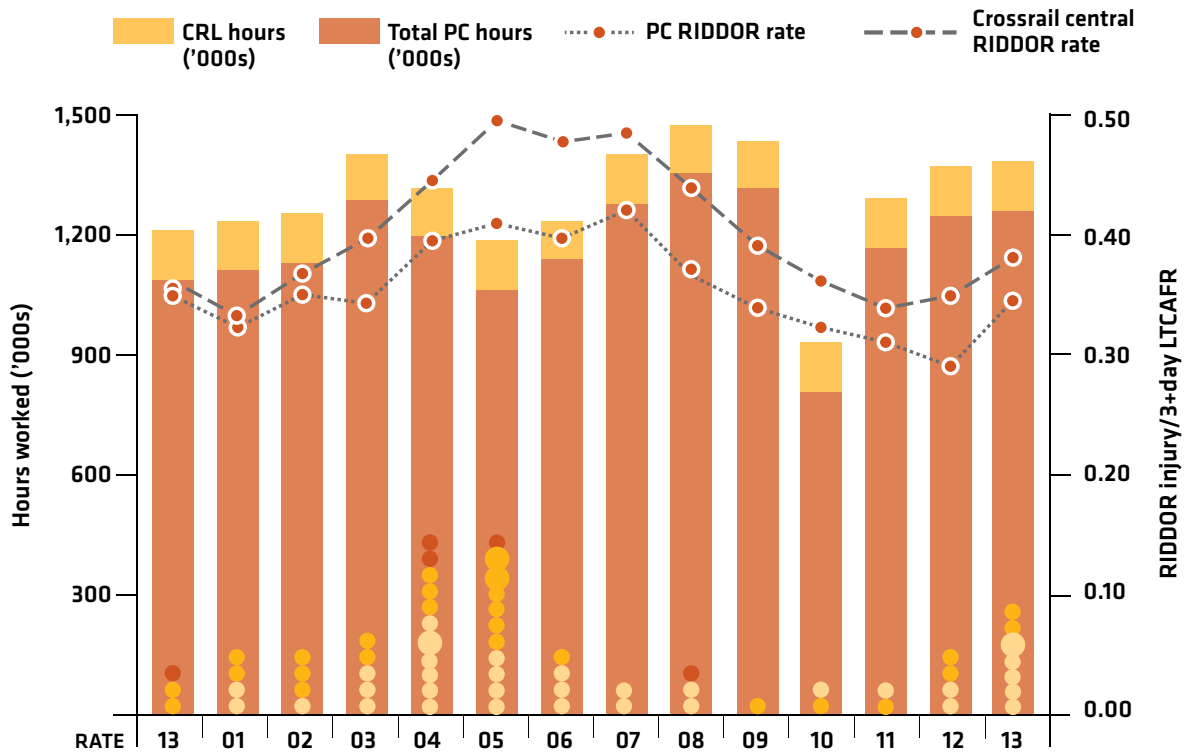
This year there were two safety-related Crossrail corporate goals.

GOAL 1: Strive for Excellence in Industry Health and Safety Performance through Continued Focus on Health and Safety Performance Index (HSPI)

Indicator 10 – HSPI Performance

The HSPI metric is used to provide a leading indicator of contractors' health and safety performance and their commitment to continuous improvement. An HSPI score of one signifies contractual compliance. Above this signifies good practice, of which the maximum score is 3. Crossrail's overall HSPI score was 2.09 at year end, improving from 1.75 in 2012-13.

Crossrail's principal contractors achieved a score of over 2 by April 2014 and exceeded the set target of '85% of contractors above or equal to 2'.



CRL – Crossrail Ltd hours
 Total PC hours – Principal Contractor hours for work undertaken on Crossrail
 RIDDOR – Reporting of Injuries, Diseases and Dangerous Occurrences Regulations

● RIDDOR lost time (>3 days) Includes legal RIDDOR 7+ days and 3+ days lost time
 ● RIDDOR DO – RIDDOR Dangerous Occurrence
 ● RIDDOR Major injury
 LTC – lost time case
 AFR – Accident Frequency Rate (Industry metric of accident frequency per 100,000 hours worked)

GOAL 2: Continue to Drive the Leadership Programme through the Supply Chain

The Crossrail Frontline Leadership Programme is provided for its contractors to help improve the leadership skills of their supervisors. The programme focuses on the competencies required to help them be more effective leaders, ensuring they exhibit the right behaviours.

The Behaviour Influences Behaviour (BiB) initiative is targeted at internal Crossrail leaders and managers to develop the right behaviours and understanding of what influences and motivates both themselves and others to behave in a safe manner.

So far, this initiative has included initial awareness training and drama-based roadshows, delivered by an acting group depicting site-based scenarios and dilemmas.

Crossrail has also continued to assess the effectiveness of contractors' own behavioural programmes through the Gateway Assessment Scheme. This scheme is designed to drive excellence by promoting the raising of standards and sharing of good practice. It is a vehicle for incentivising, measuring, recognising and celebrating identified health and safety excellence on the Crossrail Project and within the construction industry.

Construction Logistics Leadership

Building a new railway across London, on the scale and complexity of Crossrail, poses an enormous construction logistics and road safety challenge.

The Crossrail approach to construction logistics, safer vehicles, cycle safety and lorry driver training is having a tangible impact on the construction industry. It has been instrumental in the creation of a new Work Related Road Risk (WRRR) standard in 2013 facilitated by Transport for London.

The new WRRR standard has been modelled on the world-class initiatives developed and implemented by Crossrail. The standard is being endorsed and implemented by numerous large public and private sector organisations who are all keen to follow Crossrail's lead. This direction is a clear example of a Crossrail legacy being captured and implemented across London and beyond before the railway has been completed.

Crossrail is also passing on the best practice and lessons learned to other large infrastructure projects, including Thames Tideway Tunnels, High Speed 2, Network Rail and the construction of the new Hinkley Point Power Station.

Vehicle Safety

All Crossrail contracts require the transport operators to be a Bronze Member of the Fleet Operator Recognition Scheme, have all frequent HGV drivers trained on the Crossrail one-day driver training course and fit safety equipment to all vehicles delivering to Crossrail worksites.

The Crossrail Logistics team continuously works in collaboration with all Principal Contractors to check that contract requirements are being met, and that plans are developed for all vehicle movements.

During construction Crossrail will transport over 6 million tonnes of excavated materials. The amount of this material transported by road has been kept to a minimum through the use of rail and barge



The modal shift away from road transport has resulted in 85% of excavated materials per tonne per kilometre being transported by rail and barge, significantly reducing the number of tipper lorries on London's roads.

Compliance checks take place at every worksite on every vehicle and those that are not compliant are turned away from site. Crossrail reviews the safety compliance of the entire project at a contract level and produces monthly scorecards for the senior managers.

The current level of vehicle compliance is running at 99% as reported by Crossrail's tier one contractors. This remains a testament to the dedication of the teams in Crossrail and its contractors working together to improve road safety.

During 2013, Crossrail was awarded the 'Brake' Fleet Award for Safer Vehicles.

Lorry Driver Training

Since November 2009, Crossrail's Lorry Driver Training Programme has been in place. The programme was developed with input from stakeholders the London Cycling Campaign and Cycling Touring Club.

By year end, over 6,700 drivers had been trained at 440 training courses

The course is frequently attended by Crossrail stakeholders, the police and senior managers from Crossrail supply chains.

This year, Crossrail's chief executive Andrew Wolstenholme and all Crossrail directors attended the course demonstrating senior commitment to the training.

The main KPIs for the course reflect the success of this training in that 91% of drivers attending agree with the statement: *“This course has significantly raised my awareness of sharing London’s roads.”*

Of drivers attending the course, 93% agreed with the statement: *“This course will definitely make me a safer driver.”* This is an increase of 3% on last year

Cycle Safety Awareness

Crossrail continues to be innovative when working with local communities at, or near, worksites and Crossrail’s partnership with the Metropolitan Police Cycle Task Force continues to gain momentum.

During the period covered by this report, 11 Exchanging Places cycle safety awareness events took place over the following locations: Fisher Street, Burdett Road, Farringdon, Liverpool Street, Westbourne Park, Limmo Peninsula, Bond Street, Canary Wharf and the Connaught Tunnel.

In February 2014, Crossrail and the Metropolitan Police joined forces again for the London Bike Show and using two HGVs ran continuous Exchanging Places events at the show. This initiative proved

very popular, particularly with families attending the show with 852 cyclists visiting the Crossrail stand, many of whom sat in the cab of one of the lorries for a road safety briefing.

Crossrail has also established a Cycle Safety Working Group to provide a regular focus on Communication, Innovation and Education. The monthly meetings attended by Crossrail Directors, staff and contractors are focused on generating new initiatives that could be introduced to further reduce the risks to cyclists in the capital.

Despite the implementation and application of these standards across the project three collisions with HGVs, operated by contractors working on Crossrail, resulted in the tragic death of two cyclists and one pedestrian during the year. The people of Crossrail’s sympathies remain with the families and friends of those affected by these incidents. Crossrail’s efforts to further improve the safety of vulnerable road users and to influence the wider industry will continue.

Exchanging Places cycle safety event at Canary Wharf



CHAPTER 7

SOCIAL IMPACT

- **Nearly 2,800 jobs created for people from London's boroughs and/or previously unemployed**
- **283 apprentices working across the Crossrail project**
- **2,766 people trained at TUCA bringing total numbers of trainees to 7,000 since the academy opened in 2012**
- **171 Young Crossrail ambassadors – an increase of 91 since 2012-13**

Crossrail is committed to equality of opportunity and social inclusion. Our principal contractors work to create and support a diverse workforce and supply chain. Crossrail's contractors must use the CompeteFor website portal to advertise contract opportunities and help maximise the number and diversity of businesses contributing to Crossrail's success. Every contractor must also conform to the London Living Wage, the basic hourly salary rate set by the Greater London Authority.

Crossrail is committed to delivering an accessible railway that supports people's mobility and right to travel on public services.

Each new station will have marked routes, accessible information and signage to ensure that, as far as possible, passengers can move independently through the station. All designs comply with the relevant disability legislation, incorporating step-free access to new stations including all eight new underground stations in central London where step-free access will be from street to platform level in both directions.

Transport for London and the Department for Transport, the joint sponsors of the Crossrail project, aim to make the whole Crossrail route accessible. There is already provision for 33 of the 40 stations to have step-free access and the two sponsors have published options to make the remaining seven stations step-free.

Ethical Sourcing

Crossrail manages a collaborative contractor working group called Ethical Supply Chains In Construction (ESCIC). It was formed in response to the huge challenge posed by the complexity of procurement that often makes it difficult to determine the origin and provenance of parts and products used in the industry. The group works

with supply chains and trade associations to get a better understanding of the issues and seeks to implement measures that can improve ethical sourcing. It has developed a best practice method for purchasing commodities not covered by existing certification schemes, which has been taken to its supply chains by tier one contractors.

During the year, the ESCIC group provided a combined response to the consultation on BES 6001, Responsible Sourcing of Construction Products. The standard describes a framework for the organisational governance, supply chain management and environmental and social aspects that must be addressed in order to ensure the responsible sourcing of construction products. Many of Crossrail's concerns and comments have been incorporated into the revised version three of the standard, including the mandatory requirement for participating organisations to have an employee training programme and community engagement plan. These are significant changes to the framework standard that, while helping to improve performance, does so in a stepwise manner that can be absorbed by the industry.

Resources developed by the group have been shared with the UK Contractors Group and Crossrail has engaged in discussion with the Supply Chain Sustainability School and the APRES (Action Programme for Responsible Sourcing), an Engineering and Physical Sciences Research Council funded programme led by Loughborough University to share best practice.

Engagement with trade associations and certification organisations has also borne fruit with the British Approvals Service for Cables (BASEC) incorporating Crossrail's ethical trading principles into their broader registration requirements.



Indicator 11 – Diversity in Crossrail’s Workforce

Crossrail and its contractors are committed to promoting diversity, valuing talent, and respecting each other and the communities we serve.

The graph shows the diversity of both the client organisation and our contractors’ workforces, measured against UK Construction Group (UKCG) industry data.

An encouraging picture of diversity is seen in specific work-related programmes, for example higher levels of black, Asian and minority ethnic (BAME) and female representation in work experience, apprenticeships and work placements.

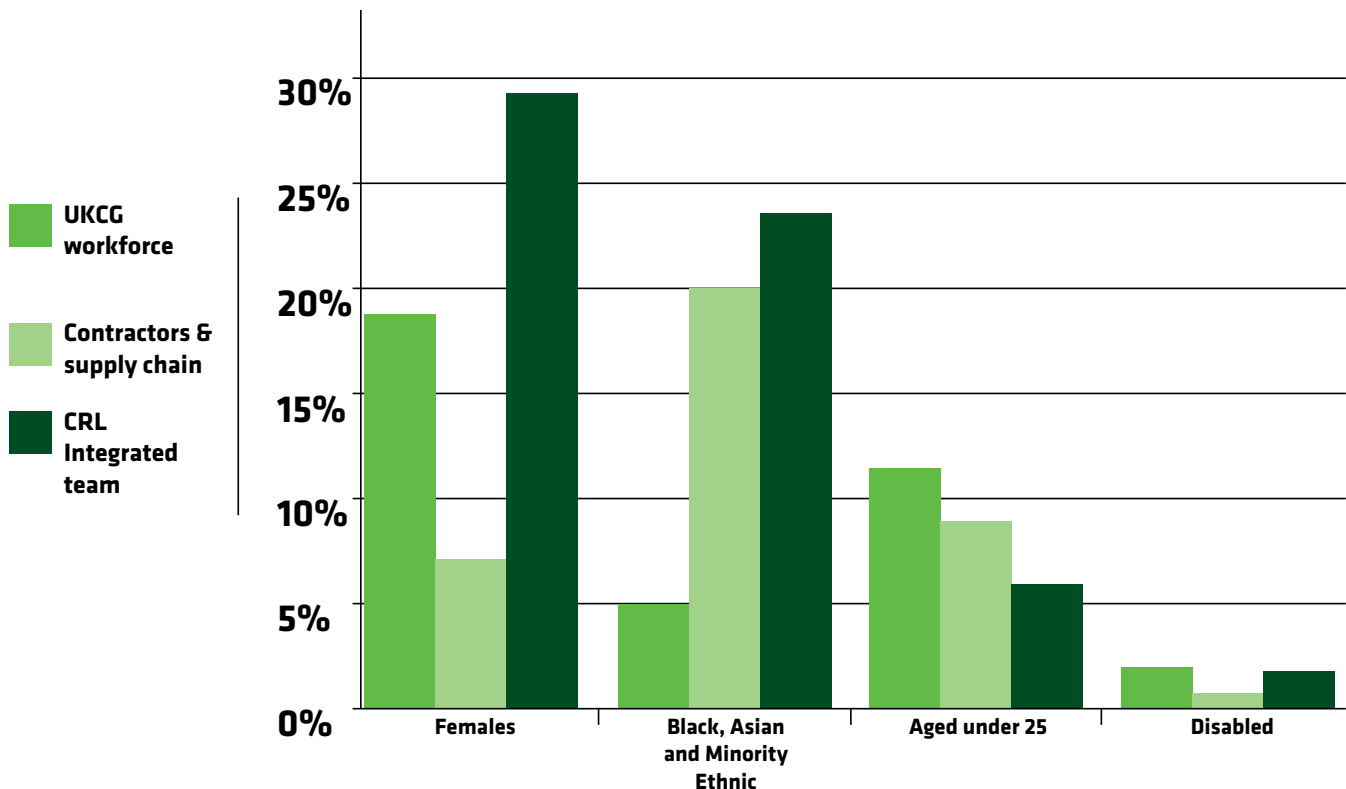
The percentage of women in the client workforce (29%) and the percentage of people from BAME groups (24%) remains the same. The proportion of people who identify as having a disability remained broadly the same at around 1%.

Equality and Talent Strategy

In November 2013, Crossrail launched its new Equality and Talent Strategy. To oversee the delivery of this strategy, a Diversity and Inclusion Group (DIG) has been set up. DIG will work to promote greater awareness of diversity and respect at Crossrail. Strategic objectives and actions for the project are set out under eight themes:

- **Creating opportunities for all**
- **Empowering change**
- **Transparency and openness**
- **Embedding equality**
- **Leadership and governance**
- **Supporting local action**
- **Celebrating diversity**
- **Legacy**

DIVERSITY IN CROSSRAIL’S WORKFORCE



Indicator 12 – London Living Wage

Crossrail contractors and their sub-contractors are required to pay their employees and their London-based suppliers the London Living Wage. This is the hourly rate of pay set by the Greater London Authority based on the cost of living in London.

Crossrail continues to work with its contractors to provide assurance that they and their supply chains are compliant with this commitment. The depth of the supply chain is such that Crossrail does not have the necessary visibility of this across all contracts, but will be supporting its contractors in adopting more rigorous measures to increase this visibility, expose and rectify any non-compliance that is uncovered.

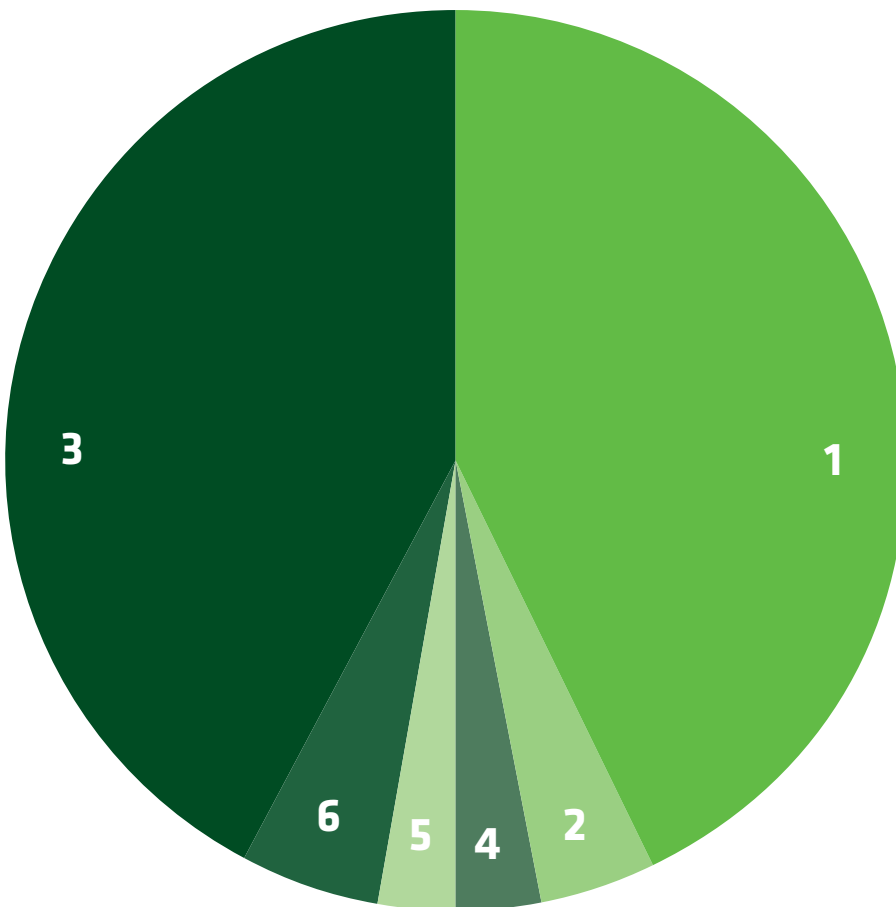
Strategic Labour Needs and Training

Through Strategic Labour Needs and Training (SLNT) commitments, Crossrail's contractors develop their workforce skills and offer opportunities for local people to work on the project and improve their employability.

Indicator 13 – SLNT Compliance

Crossrail reviews the SLNT progress of its contractors every quarter and provides support to optimise the opportunities provided. When last assessed, 100% of tier one contractors were on track to meet or exceed the commitments set out in their SLNT plans.

11 out of 16 contractors were ahead of schedule in delivery of apprenticeship targets, and all but one contractor were exceeding other SLNT targets, including work experience opportunities, work placements and graduate opportunities.



% BREAKDOWN OF SLNT BENEFICIARIES BY TYPE

- 1. Workforce skills 53%
- 2. Apprenticeships 4%
- 3. Job starts 42%
- 4. Graduate training 3%
- 5. Work placements 3%
- 6. Work experience 5%

Indicator 14 – Apprentices

The year end target for apprentices was 260, against the actual recruitment of 283 – an increase of 128 new apprentices. Crossrail remains on track to achieve the overall target of 400 apprenticeship opportunities over the lifetime of the project.

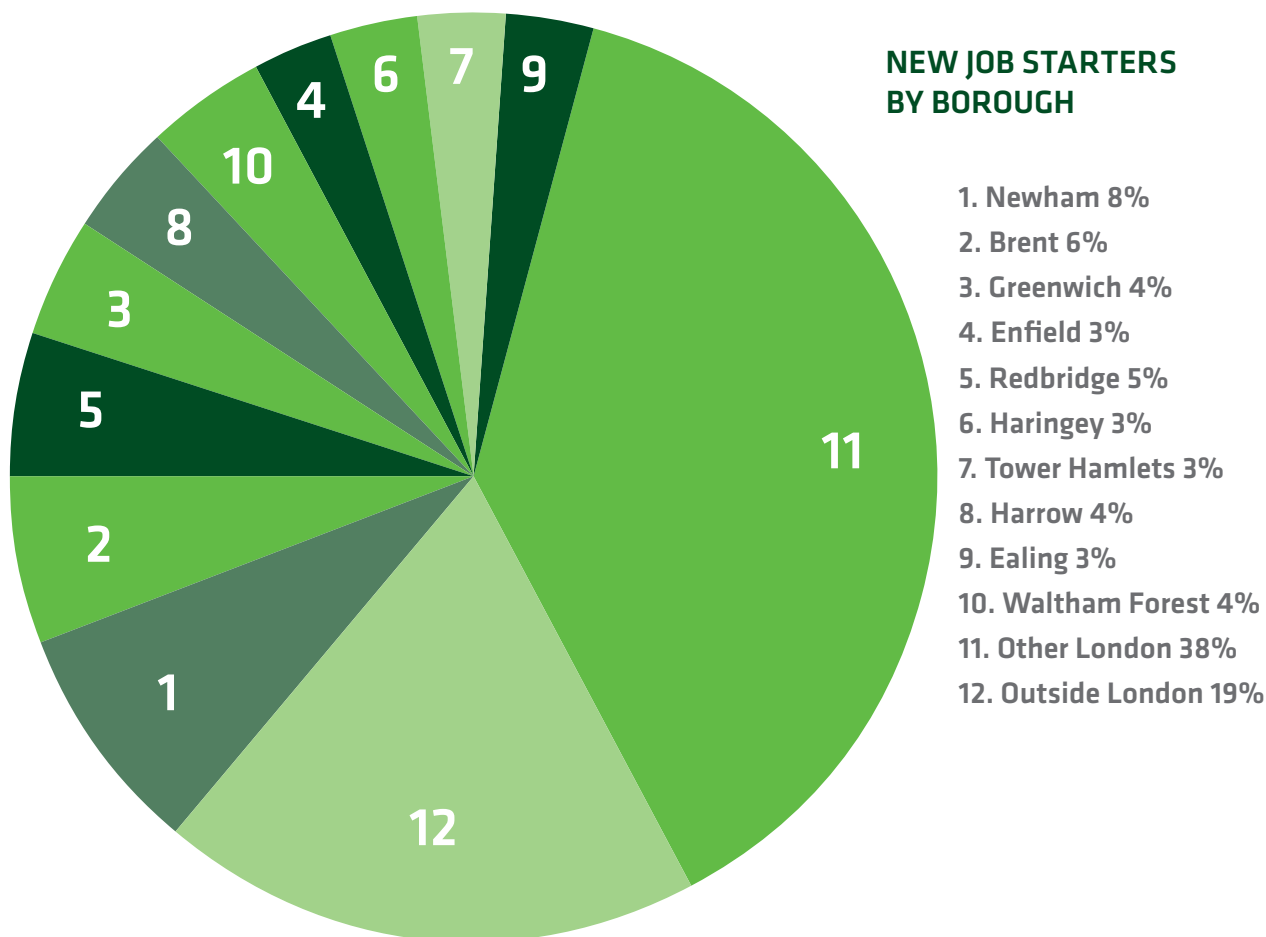
As well as exceeding the target quantity for this stage of the programme, Crossrail is committed to improving the quality of the apprenticeship programme. To this end, one priority for Crossrail and its contractors over the next year is to explore the scope for developing new apprenticeship frameworks to benefit both the project and the wider industry. This will be a continuation of work carried out in previous years, resulting in the development of new concrete technician and chain person frameworks. Both TUCA's Industry Advisory Panel and Crossrail's contractor Human Resources Forum provide opportunities for employer involvement in identifying promising areas for development and defining appropriate content.

Indicator 15 – Jobs Brokerage Service and Local Employment

Crossrail has a dedicated jobs brokerage service which is delivered in partnership with JobCentre Plus. The service works closely with the Tunnelling and Underground Construction Academy (TUCA), stakeholder boroughs, further education colleges and a wide range of other referral organisations across London. This helps to ensure that details of jobs and apprenticeship opportunities on Crossrail reach the widest possible audience. Potential applicants are provided with effective information, advice and guidance and contractors are supported in their commitment to recruiting local people.

Crossrail contractors advertise their vacancies through the brokerage service in order to give local unemployed people an opportunity to be considered for these roles. Vacancies are promoted through a dedicated jobs portal on the Crossrail website and Twitter feeds, which currently have 2,740 followers.

By the end of 2013-14, nearly 2,800 jobs had been created for people from London's boroughs and/ or the previously unemployed. The chart shows the breakdown of job starts by the top 12 boroughs.



CASE STUDY



DIVERSITY AND INCLUSION

In November 2013, the Crossrail Diversity and Inclusion Group held a Gender Diversity Breakfast, attended by 150 people from across the project. Fiona Woolf CBE, Lord Mayor of the City of London, gave the keynote address, stressing the importance for the UK to address gender diversity in all industries to remain competitive in the global marketplace. An action planning session followed, contributing ideas which have since been used to support the implementation of the Equality Strategy.

In February 2014, Crossrail carried out diversity analysis of the Big Dig Employee Engagement Survey which saw an overall engagement level of 78%.

Similar levels of engagement were recorded for men and women and across ethnic groups. Levels of engagement tended to increase with age: 84% of employees aged over 55 were engaged compared with 72% of those under 25. Disabled employees appeared less engaged (65%) than employees without disabilities (79%).

The survey findings are informing the diversity programme for the next year, which will be used to engage with the workforce to promote disability awareness and equality.

Other Work Opportunities

Crossrail wants to equip its workforce with key competencies and workforce skills remain a very important priority to Crossrail. TUCA offers specialised courses for the tunnelling and underground construction sector and other crucial training.

By January 2014, 356 young people had taken part in work experience on the Crossrail project, both onsite and at head office. Longer work placements of between 11 and 100 days enable people to learn, develop or improve their knowledge and skills. There have been 214 such placements on the project.

In 2013-14, contractors took on an additional 68 graduates on a training scheme, which brings the total graduate intake on the programme to 241. The positions offered cover many disciplines and each graduate spends a minimum of six months working either directly with tier one contractors or a member of the supply chain.

Tunnelling and Underground Construction Academy (TUCA)

Crossrail's training centre, TUCA, meets the skills need of Crossrail, its partners and other underground construction employers. It will continue to meet the underground construction skill requirements of the industry in the future.

In 2013-14, TUCA trained 2,766 people across the three programme areas of workforce development (2,373), pre-employment (348) and apprenticeships (45). This brought the total number trained at the Academy to over 7,000 and represented a 40% increase in total numbers during the year.

There was a marked uplift in the number of employers utilising the Academy for their training, with many new courses being developed during the period in response to employers' needs on tunnelling and underground construction sites.

Examples include the:

- Frontline Leadership Programme (FLP) launched in March 2013 and had 140 attendees in its first year
- City and Guilds Tunnel Entry and Emergency Procedures course that launched late in 2012 and had over 200 people attend
- Pressurised systems course launched in February 2014 and has over 100 on the waiting list
- Course on sprayed waterproof membranes which had 69 attendees

TUCA has also been successful in securing external funding. In January 2014, delivery commenced of the Skills Funding Agency-funded pre-employment project. Over £4m was provided to train 3,000 learners and get 900 people into work. By March, the programme had trained 99 learners. In March 2014, £1.1m of UK Commission for Employment and Skills (UKCES) Employer Ownership of Skills funding was provided to support the skills development of those working in the industry, with a focus on those working for SMEs. The aim of both of these schemes is to provide a pipeline of talent not only for Crossrail, but for future tunnelling and underground construction projects.

Young Crossrail

The Young Crossrail programme works with schools and young people, particularly those close to the route. Through the activities in schools, work place visits and other events, volunteer Young Crossrail Ambassadors aim to change perceptions of engineering and engineers and encourage more young people, particularly girls, to consider engineering and construction-related careers.

It is a key part of Crossrail's wider social sustainability agenda, allied to other work carried out to help young people into work and apprenticeships and part of a broader legacy to develop a pipeline of engineering and construction workers beyond the lifetime of the project.



NATIONAL SCIENCE AND ENGINEERING WEEK

To celebrate National Science and Engineering Week, Young Crossrail ran a range of inspiring, hands-on, activities to encourage the next generation with a particular focus on girls. The team delivered an interactive engineering activity at the London Metropolitan Archives as part of its 'Engineering in the Archives' event. 60 students had to plan a new railway route, design a train and create a new brand. The feedback from the students was fantastic with all of them rating it as 'good' or 'excellent', saying that they would recommend it to their friends.

Young Crossrail also led sessions at two partner schools, Elizabeth Garrett Anderson (EGA) in Islington and Swanlea School in Tower Hamlets. Linda Miller, Project Manager on

the Connaught Tunnel visited Swanlea School as part of their 'Aspirations Day' for girls, which aimed to raise the aspirations of Year 9 girls within the school. Linda took part in a speed networking session about her career journey and highlights as well as advising on the routes into a career in Engineering.

Heather McPherson, Project Manager (London Underground interface) and Lani Tan, Business Manager (Construction Delivery) visited EGA to deliver an engineering careers master class to year 8 and 9 students. Paul McIntyre, Assistant Head, expressed his thanks saying how important it is for: *"Crossrail to promote their industry and show young women where their education and skills could take them."*

Indicator 16 – Volunteering

During 2013-14, the number of Young Crossrail Ambassadors grew from 80 to 171. This number includes 60 Young Crossrail STEM (science, technology, engineering and maths) Ambassadors who are allied to the STEMNET programme. Ambassadors played a key role in the delivery of a wide range of activities from careers talks and hosting work experience for secondary students, to cycle safety roadshows and hands-on activities with primary pupils. In total, volunteers logged over 1,100 volunteer hours over the year.

Indicator 17 – Work Experience

In 2013-14, Crossrail provided 95 work experience placements at head or site offices, including 23 placements as part of a new corporate work experience programme. Feedback from the new programme was extremely positive with students rating the experience as 4.4 out of 5, on average. Hosts rated their students as averaging 4.7 out of 5 and stated that they were very happy with the information, programme and support from Young Crossrail.



Indicator 18 – Young Crossrail Audience Reach

During 2013-14, Young Crossrail engaged over 10,000 students and teachers across the range of the programme's activities. Much of the programme's work is focused on working in depth with students from its six partner schools: Royal Greenwich UTC, Greenwich; Rokey School, Newham; Swanlea School, Tower Hamlets; Elizabeth Garratt Anderson School, Islington; Maria Fidelis School, Camden; and Westminster Academy, Westminster. Activities with these schools have included supporting teams for the Go4Set Environment Project and the FIRST LEGO League robotics competition as well as through engineering masterclasses, careers talks and hands-on activities. In total, Young Crossrail worked with over 100 schools.

Community Investment

Crossrail is committed to investing in the local communities that are affected by the project's construction activity. The programme obliges Crossrail's contractors to donate skills, time, money and expertise to bringing lasting benefits to the local communities in which they are working.

Crossrail and its contractors are, and will be, working in the heart of these communities for many years and are committed to making an important contribution to them.

Across the project Crossrail supports a diverse portfolio of initiatives, each in consultation with the local community to ensure that it is relevant to their particular needs. In 2013, Crossrail Ltd launched its Community Investment Programme, focusing on employment with primary school pupils and their parents in the London Borough of Newham.



WESTBOURNE PARK: TRELICK TOWER

Based at the iconic Trellick Tower in Golborne Road, the Goldfinger Factory is an innovative charity that offers workshops in crafts and furniture making to participants from local disadvantaged groups, enabling them to access future job opportunities in the industry. The project creates value in London's rapidly growing reuse sector by recycling old furniture and preventing it from ending up as landfill.

The project is a fantastic way of contributing to the future long-term welfare of the Westbourne Park area through training and apprenticeship programmes.

The Goldfinger Factory has been developed and run by local experienced designers, artists and craftsmen. Oliver Waddington-Ball, who grew up nearby Westbourne Park said: *"We are delighted to have BFK's support. This contribution will allow us to get much needed tools for our workshop area, so we can accommodate bigger numbers of apprentices."*

CASE STUDY

BUDDING BRUNELS – CONSTRUCTION YOUTH TRUST

Network Rail partnered with Construction Youth Trust to deliver the 'Budding Brunels' training programme to encourage young people along the Crossrail route to consider a career in construction and engineering.

The programme is designed to engage with 1,000 young people over the course of the year and the Trust will be delivering six intensive courses with a focus on Crossrail in West London to inspire the next generation of Crossrail users. Each three-day project will provide a minimum of five work experience placements.

Tushant, a Budding Brunels student commented on the day: *"Today was an excellent experience, the site visit and activities. You felt like an actual worker on the site. You don't comprehend it when you're sitting in a school or college and trying to study, you comprehend it when you see it in front of your eyes."*

Budding Brunels is an Open College Network accredited schools engagement programme run by Construction Youth Trust. It is designed to inform and inspire students about higher education and career options within the built environment and aiming to broaden diversity within the sector



innovate18: Crossrail Innovation Programme

In its mission to deliver a world-class railway, Crossrail launched its Innovation Programme in early 2013. Crossrail's innovation programme invests in ideas to provide benefit both during delivery and the operation of the railway. It supports ideas that have the potential to raise the capability and standards of UK construction.

The programme aims to raise the bar for other construction projects by making those innovative ideas, technologies and practices available to the industry as a whole. It is hoped that this will provide confidence to future major programmes to develop and implement an innovation strategy as standard practice. In this way, Crossrail will create a legacy for the construction industry in the future.

Since its launch, Crossrail has received over 400 ideas, published over 180 innovations from across the programme and invested £336,910 in 23 ideas. There are even 17 examples where innovative solutions, developed on Crossrail, have been developed across organisational boundaries

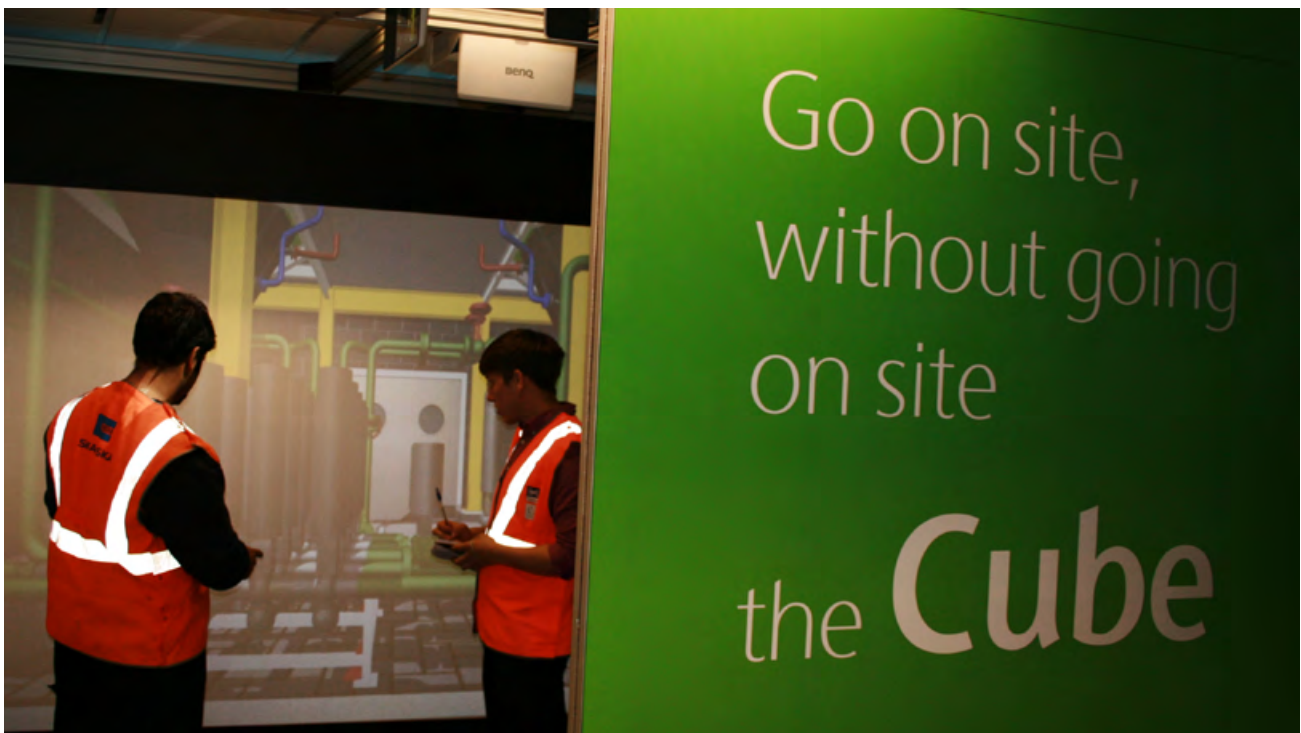


The Innovation Programme provides an environment where people can exchange ideas across organisational boundaries, collectively build innovative solutions, gain the required support to develop the idea and receive recognition when they are successful.

Crossrail has formed an innovation club with the following contractors making contributions to jointly invest in innovation at Crossrail. Club members are Bam Nuttall, Costain, Dragados, Ferrovial Agroman, Hochtief, Kier, Laing O'Rourke, Morgan Sindall, Murphy, Skanska and Vinci.

Crossrail has partnered with Imperial College London to support research of innovation within temporary project-based organisations (like Crossrail), comparing how infrastructure providers are managing innovation against Crossrail's approach and how innovation is brokered. In return, Crossrail has access to expert advice into the innovation management processes and connecting Crossrail to thought leaders on innovation to inform their strategic approach and key decisions.

Imperial College London believe this to be arguably the world's first innovation programme within a temporary project-based organisation.



LOOK FORWARD: 2014-15

- **Health and Safety Performance** – aim to exceed Crossrail’s Health and Safety Performance Index (HSPI) set target of ‘85% of contractors above or equal to 2’ and further develop HSPI to ensure it remains challenging and inspires contractors to continue to improve.
- **Apprentices** – remain on track to achieve the overall target of 400 apprenticeship opportunities over the lifetime of the project and work with the contractors to achieve continuity of employment where possible.
- **Supply Chain Opportunities** – continue to monitor and promote opportunities for UK-based businesses, as the procurement turns to fit out and mechanical and electrical equipment.
- **Living Wage** – increase support to contractors in adopting measures to increase the visibility of compliance with the London Living Wage and address any non-compliances identified.
- **Community Investment** – launched in November 2013, Crossrail has partnered with Clifford Chance and Tate & Lyle on an employability focused programme for primary school pupils from nursery to year 6 and parents in Newham. The target is to engage with 1,600 pupils and 32 parents in the first year. The project will see a mixture of Crossrail volunteers and the production of support material for community and school groups.
- **Art Programme** – the Culture Line, combined with improvements to the local urban realm, will contribute to the wellbeing and passenger experience. Crossrail will be commissioning artists for Tottenham Court Road and Canary Wharf stations and aims to secure funding for the Art Programme’s remaining stations.
- **Energy Efficiency** – continue to work with contractor design teams and rolling stock providers to reduce energy use in mechanical and electrical equipment and trains. Crossrail will continue to work with Constructing Excellence to provide construction energy consumption data to help establish industry benchmarks for civil engineering works.
- **Air Quality** – continue to work with contractors as new construction equipment is utilised on worksites to fit emissions control where this is practical, to continue to reduce the impact on air quality during construction.
- **Innovation** – continue to evaluate, support and, where appropriate, invest in innovation for the benefit of Crossrail and the wider industry.
- **Environmental Behaviours** – continue to move the remaining contractors over to compliance with the Green Line Recognition Scheme for environmental performance and implement a new commendation status for those who rise to the challenge.
- **Reward Performance** – continue to recognise and reward the performance of the supply chain with the annual Sustainability Awards. In response to feedback from contractors, Crossrail has included a new category of Sustainability Champion providing an opportunity for individual peer recognition.



PUBLIC INFORMATION

CONSTRUCTION ACTIVITIES

Crossrail is committed to providing information about construction works taking place throughout the route to ensure local communities are aware of construction works that may affect them and the measures being taken to lessen impacts. Crossrail also works to keep stakeholders informed about the benefits that the Crossrail service will deliver, current progress and milestones achieved.

Crossrail Ltd is an organisation established solely to build the new railway linking Reading and Heathrow, to the west of London, with Shenfield and Abbey Wood, to the east, including a new central underground section that will link east to west through London.

Crossrail Ltd acts as a client and project management organisation, with the construction work delivered through a number of contractors and their supply chains. Crossrail Ltd imposes a number of requirements on its contractors in order to ensure that the works are undertaken in accordance with the Crossrail Act 2008 and its associated performance requirements.

Through the Crossrail website (www.crossrail.co.uk), we have developed the 'Near You' mapping tool to explain local works in each area. It is also possible to track the location of Crossrail's Tunnel Boring Machines on the website.

To receive email notifications about planned works, sign up to our mailing lists online or by contacting our helpdesk team. Additionally, specific works are notified to residents and the wider stakeholder community through information leaflets that are distributed in the local area. Communications material can also be translated into other languages upon request.

CROSSRAIL HELPDESK

The Crossrail Public Helpdesk is available to answer any questions about the project and help with any problems which may arise from construction of the railway. The helpdesk operates 24 hours a day, seven days a week. The team is contactable by email helpdesk@crossrail.co.uk or telephone 0345 602 3813. Details are advertised on the Crossrail website, on all our communications material and at construction site locations throughout London.

Crossrail aims to close all complaints within 10 working days, with an initial response made within 24 hours. The passing complaints to contractors is immediate and the response rate is generally much faster than this.

The Secretary of State for Transport has appointed an independent Crossrail Complaints Commissioner. Any member of the public who feels that they have not received information from Crossrail, and has been unable to resolve an issue in communication with Crossrail, may ask the Complaints Commissioner to adjudicate. The application must be submitted in writing and the Complaints Commissioner must respond within 28 days, unless a further time limit is agreed.

The Crossrail Complaints Commissioner will:

- Act as a mediator in unresolved disputes between the project and members of the public.
- Make recommendations to the Nominated Undertaker (Crossrail or London Underground) where action might be taken to satisfactorily address complaints, resolve disputes, or mitigate against the future occurrence of complaints or disputes.
- Act as Registrar of the Small Claims Scheme – if a claim for loss or damages has been turned down by the Administrator of the Small Claims Scheme, the applicant can request the Complaints Commissioner to adjudicate. The Complaints Commissioner will be able to make financial recommendations if the applicant has suffered a loss or damages of up to £5,000.
- Advise members of the public who are unhappy with any aspect of Crossrail's construction on how to lodge a complaint.

The Complaints Commissioner will not act before Crossrail, London Underground or its contractor have attempted to address a case, and will not get involved in issues such as property, matters already considered by Parliament in approving the Crossrail Act, or issues which are not part of the Crossrail project.

Our contractors work in accordance with their contractual requirements which have been developed from Parliamentary commitments. They all have dedicated community relations representatives whose role it is to work with communities and address issues of concern. If breaches of agreed work parameters occur, the methods of working are re-evaluated and communication of agreements re-assessed to prevent recurrence.

STAKEHOLDERS

The Crossrail project conforms to a series of undertakings and assurances agreed with various parties under the Crossrail Act 2008.

Continued community liaison forms a central part of Crossrail's duties, especially in ensuring construction work causes the least disturbance possible. Crossrail works within the constraints imposed to minimise noise and vibration, dust and road traffic. Crossrail works with contractors to make sure all community concerns are addressed.

Crossrail's stakeholders also include its contractors and we work with them as both client and project manager. They are crucial to Crossrail's success. Contractors provide and develop many of the innovative solutions required to complete safely a project as complex as Crossrail, with least disruption.

Contractors communicate with Crossrail senior management through many routes, notably the safety health and environment leadership team and a regular forum for project directors. This allows for open discussion on performance, identifying what Crossrail needs to do to improve its leadership and identifying areas where our contractors can achieve more.

Engagement with the workforce has improved significantly through the commitment to Investors in People. Its recognised framework provides the means for employees to express their concerns in a structured way and helps us address issues and make workplace improvements.

Above all Crossrail Ltd is responsible to the public and to private sector partners for project funding. There is a strict financial governance process to which Crossrail must adhere, with full accountability to the two project sponsors, Transport for London (TfL) and the Department for Transport (DfT).

REPORTING REQUIREMENTS

This report covers our sustainability performance for the financial year 2013-14.

As part of governance and accountability, Crossrail is already subject to a rigorous reporting regime as defined by our sponsors: TfL and DfT. Reports are required to cover health and safety, security, environment and cost performance. Additional reports cover management and assurance, consents, compliance and change control.

This annual sustainability report is a voluntary publication. By producing it Crossrail aims to provide a single source of sustainability performance information, which may otherwise prove difficult to gain and involve extracting details from several different sources.

ORGANISATION PROFILE

Crossrail Limited is registered in England and Wales No. 4212657. Registered Office: 25 Canada Square, Canary Wharf, London, E14 5LQ.

The purpose of the Crossrail project is to build a new railway under central London, linking Reading and Heathrow in the west with Shenfield and Abbey Wood in the east.

Crossrail Ltd was established in 2001 to promote and develop the project. In 2008, the project gained Parliamentary approval when the Crossrail Act received Royal Assent.

Crossrail is jointly sponsored by Transport for London (TfL) and the Department for Transport (DfT). Crossrail Ltd is a wholly owned subsidiary of TfL and is a company controlled by a local authority within the meaning of Part V of the Local Government and Housing Act 1989. The controlling authority is TfL.

The Crossrail organisation comprises employees from several companies, and at March 2014 had 1,240 full-time equivalent staff. Of these, 799 are direct Crossrail employees; the rest are drawn from various partner organisations with consultancy and project management expertise.

Operational structure and governance of Crossrail 2013-14

The Crossrail Board comprises:

Terry Morgan CBE, Chairman

Andrew Wolstenholme OBE, CEO

Michael Cassidy CBE, Non-Executive Director

Heather Rabbatts CBE, Non-Executive Director

Robert Jennings CBE, Non-Executive Director

Ian Brown CBE, Non-Executive Director

Phil Gaffney, Non-Executive Director

Terry Hill CBE, Non-Executive Director

Daniel Moylan, Non-Executive Director

David Allen, Finance Director

Andy Mitchell, Programme Director

Below the main Board is the Executive Committee, comprising the following:

Andrew Wolstenholme OBE, CEO

Andy Mitchell, Programme Director

Chris Sexton, Technical Director

David Allen, Finance Director

Valerie Todd, Talent and Resources Director

Will Parkes, External Affairs Director

Mark Fell, Legal Services Director

Martin Buck, Commercial Director

Steve Hails, Health and Safety Director

Howard Smith, Operations Director

Crossrail has a sustainability committee. This committee is responsible for setting strategy and providing organisational oversight. It is chaired by Chief Executive Officer (CEO), Andrew Wolstenholme.

Members of the sustainability committee are:

Andrew Wolstenholme, CEO

Ian Brown, Non-Executive Director

Andy Mitchell, Programme Director

Ailie MacAdam, Central Section Delivery Director*

Chris Sexton, Technical Director

Valerie Todd, Talent and Resources Director

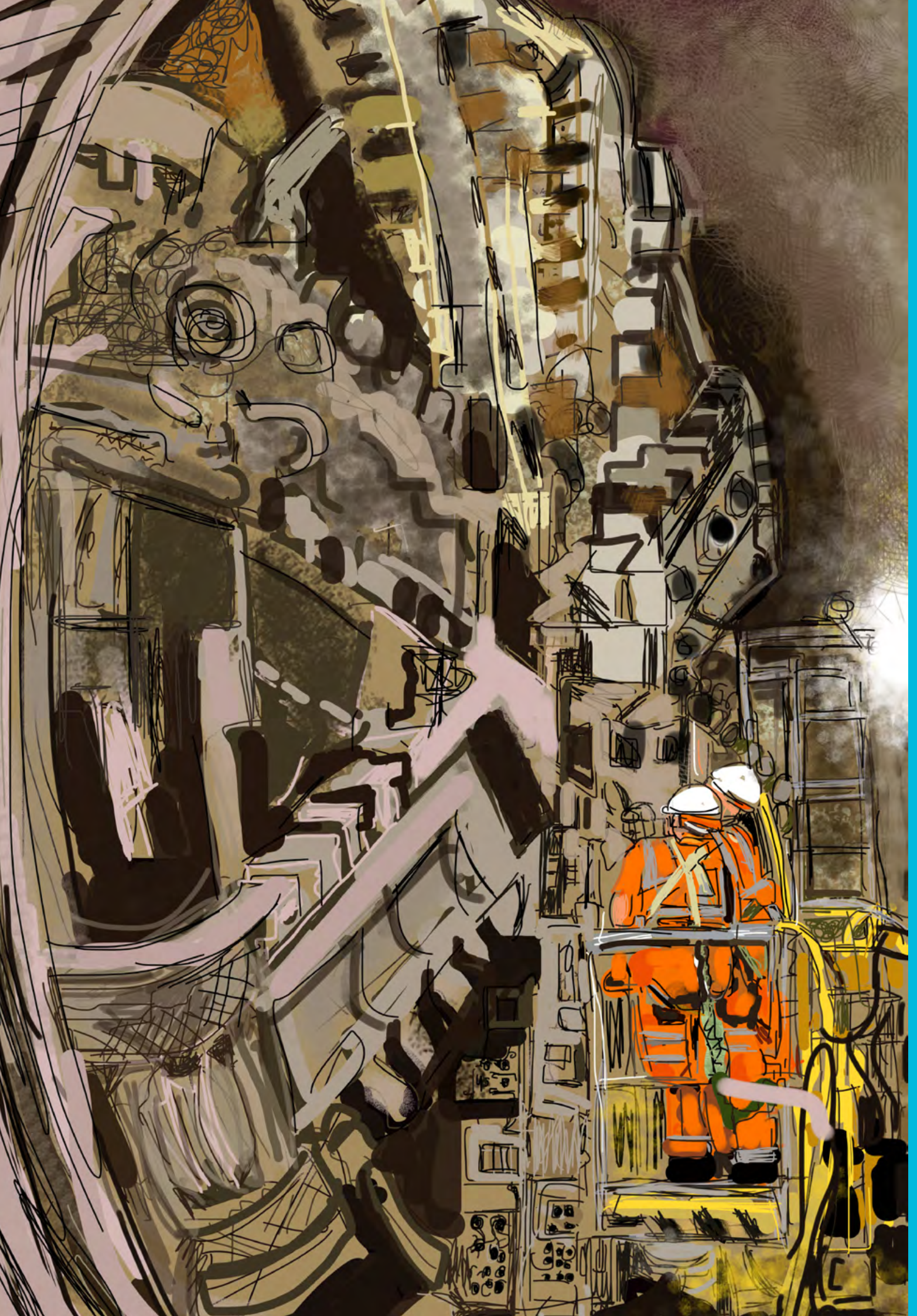
Martin Rowark, Procurement Director*

Will Parkes, External Affairs Director

David Allen, Finance Director

*Current for the reporting period but no longer with Crossrail

If you have any questions relating to this report contact our Public Helpdesk 24 hours a day, 365 days per year on 0345 602 3813 or visit the Crossrail website: www.crossrail.co.uk





MOVING LONDON FORWARD

www.crossrail.co.uk

