



◀ SUSTAINABILITY REPORT ▶

2012



MOVING LONDON FORWARD



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WHAT IS CROSSRAIL? ▶

Crossrail is the largest infrastructure project in Europe and forms a major part of the Mayor of London's Transport Strategy. Crossrail will connect 37 stations, including Heathrow airport and Maidenhead in the west with Canary Wharf, Abbey Wood and Shenfield in the east.

Using the Crossrail service will make travelling in the region easier and quicker, and help to reduce crowding on London's transport network.

New stations

A total of 28 existing Network Rail stations will connect to nine new stations to be built at Paddington, Bond Street, Tottenham Court Road, Farringdon, Liverpool Street, Whitechapel, Canary Wharf, Custom House and Woolwich.

The new sub-surface stations will be on a scale larger than that of the Jubilee Line Extension opened in 1999.

New tunnels

New twin-bore tunnels measuring 21km in length will be built under London.

The first two tunnel boring machines (TBMs) were delivered at the start of 2012 and tunnelling under London has begun.

The TBMs will weave their way between existing underground lines, sewers, utilities and building foundations at depths of up to 40 metres to create the tunnels.

New train services

Crossrail will deliver reduced journey times with up to 24 trains per hour between Paddington and Whitechapel during peak times.

Each Crossrail train will be around 200 metres long and be able to accommodate up to 1,500 passengers.

Around 200 million passengers will travel on Crossrail each year.

Economic benefits

Crossrail will deliver substantial economic benefits to London and across the UK.

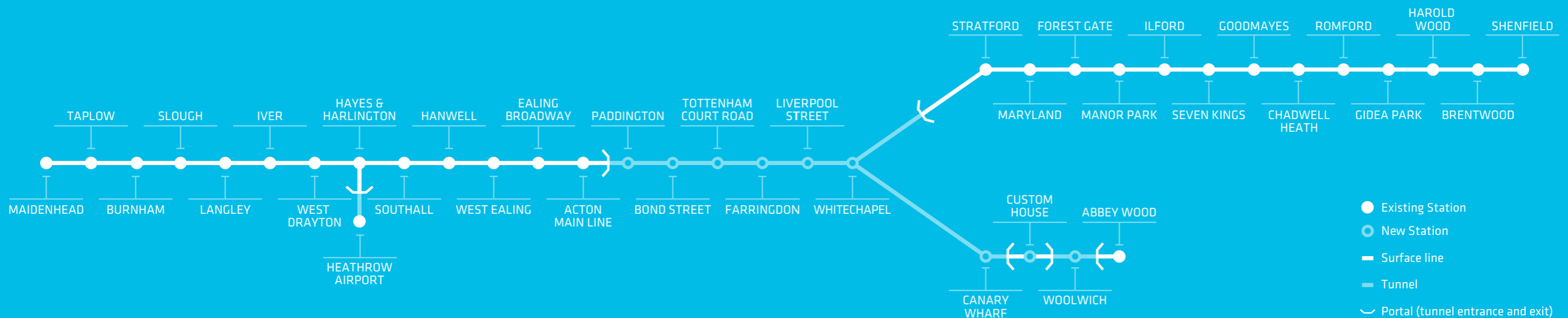
Crossrail has let some of the largest value contracts in recent UK construction history - providing a much needed boost to UK industry and creating major employment opportunities.

During the construction phase alone, Crossrail will generate thousands of

jobs, it will also require the services of regionally-based manufacturers and other suppliers.

The estimated benefit of Crossrail to the UK economy is at least £42 billion over a 60 year period.

21km of twin-bore tunnels will be built under London



OUR VISION & VALUES ▶



London's transport system is the life blood of the city. It keeps London moving and drives growth and development. Crossrail's aim is to provide a significant contribution to the future prosperity of this global city and therefore our vision statement is 'Moving London Forward.'

We will achieve this by delivering a world-class railway that fast-tracks the progress of London. Our internal targets have been developed in order to help us meet this top level objective.

We have also developed some core values to explain how we are going to achieve this and importantly, how we are going to behave.

Crossrail's sustainability vision is that Crossrail will be designed, constructed and operated in accordance with the Government's strategy for sustainable development.

Our approach seeks to meet the expectations of our key stakeholders, demonstrate continuous improvement and deliver Crossrail on time and on budget.

Crossrail values

Safety

We put safety first

Inspiration

We believe it's in our power to change things for the better

Collaboration

We're stronger together

Integrity

We keep our promises

Respect

We treat people as we'd like to be treated

EXECUTIVE SUMMARY ▶



Crossrail is vital to London's sustainability, a principal part of the justification for its construction is that it will ensure London's competitiveness as a world city. In order for London to function effectively it needs to provide an efficient and reliable transport system, to keep people moving.

Crossrail will reduce congestion on London Underground and existing east to west commuter networks by increasing rail capacity by 10% and contributing to a reduction of 500 million kilometres of car journeys annually. This will provide economic growth and access to trade with less environmental impacts.

Improving journey quality, reliability and safety for millions of daily commuters is also a vital component of ensuring that London's workforce can travel in less stressful conditions and arrive at work in a more productive state of mind. The experience will provide a comfortable transition between home and the workplace.

We are committed to ensuring that we provide a transport infrastructure system that is fit for the future in terms of operational efficiency, maintainability & quality of architecture.

The construction of the project must also seek to provide opportunities for people in terms of employment, learning new skills and being part of the supply chain. The environmental impact of our construction materials is also a focus area and this is being evaluated through the design and procurement process.

More than a railway

Crossrail will provide a new way to connect people to London, forging links between communities to the east and west, and enabling this great world city to grow.

It is also a vehicle for shaping the construction industry in order to set new standards.

Much work has been done to set us on the way to delivering more than just a railway, such as the establishment of the Tunnelling and Underground Construction Academy - a highlight of the past year. The first of its kind for soft ground tunnelling, the introduction of this facility provides the foundation for the UK to become a centre of excellence for tunnelling. Fittingly, we have also been able to house the academy in a BREEAM Excellent building. This is a visible demonstration of environmental performance using well-established industry measurements.

We are committed to a programme that will:

Enhance skills and provide employment opportunities

Create a healthier, safer workforce

Enhance the reputation of public infrastructure projects through community investment and best practice

Improve supply chain sustainability in order to meet Crossrail and future client needs

Through prudent financial management, give confidence in the ability to deliver future major infrastructure projects

Crossrail has signed up to the Constructing Better Health (CBH) programme. CBH is responsible for delivering the national scheme for the management of occupational health in the construction industry. Membership of this scheme will help deliver better occupational health and safety standards for our workforce.

Building Crossrail is hugely challenging, not just in engineering terms, but because of its proximity to the many individuals who live and work around our construction sites. We continually strive to reduce the impacts of our work and maintain a comprehensive programme of engagement with local authorities, community groups and individuals to keep them informed of our works and respond to their concerns. Although disruption is inevitable when building such a large project in a densely populated city, we are making considerable efforts to keep that disruption to a minimum. Through our Community Investment Programme, we are also ensuring that our contractors make a lasting contribution to the communities that they are working in, by delivering initiatives that have been identified as community priorities.

We have also mandated independent monitoring of our contractors' performance in being good neighbours. The Considerate Constructors Scheme (CCS) is a national initiative set up by the construction industry to improve its image. Sites and companies that register with the scheme are monitored against a Code of Considerate Practice, designed to encourage best practice beyond statutory requirements.

Four Crossrail worksites have won Considerate Constructors Scheme National Awards in 2011. Winners are selected from the top 7.5% of sites registered and the selection is based on their annual average score.

Crossrail sites have scored well above the national average of 31 points out of 40. The average score (as of April 2012) across all of our sites is 35.5.

Setting new standards

The construction industry can learn from other industries with regards to ethical sourcing and responsible procurement.

We have brought together our main contractors in an ethical sourcing forum to foster collaborative working. They are encouraged to reach down into the supply chain to identify key risk areas and mitigate them. This work is at an early stage but discussions with respected responsible procurement organisations such as the Ethical Trading Initiative, Achilles and SEDEX have indicated that this work is helping to set a new standard in our industry that is class leading. We will leave a legacy from this work that can be used as a future industry guide.

A challenge in designing our underground stations was how to compare environmental performance with existing stations. We consulted the Building Research Establishment (BRE) who confirmed that they were not familiar with any similar evaluations. This presented us with an opportunity to develop a set of criteria using the BRE's Environmental Assessment Methodology (BREEAM) for underground stations. In this way we aim to not only objectively assess our environmental performance but leave a benchmark for future projects.

We are also using this methodology to drive decision making on energy performance, use of lower environmental impact materials and water efficiency. A particular success has been the provision of a green roof for Whitechapel station. This will provide a dramatic looking structure as well as one that will help to establish greater ecological biodiversity. We are exploring opportunities to encourage greater biodiversity at several other locations along the Crossrail route.

Crossrail is a signatory on the Government's 'halving waste to landfill' commitment. Between January 2009 and March 2012, a total of 1,134,000 tonnes of material was generated as a result of excavating our underground

stations. 99% is being beneficially reused. The bulk of excavated material is being directed to Wallasea Island, a new nature reserve in Essex. Once Wallasea Island is complete, the new habitat will support a stunning array of important bird populations, as well as a host of other wildlife.

Spending on public infrastructure has been identified by the Government as a priority area and we will continue to deliver Crossrail in accordance with strict governance and financial controls. As a publicly funded scheme, it is essential that we exercise financial prudence in our decision making to drive value for money.

Through its sheer size, Crossrail can help support many suppliers, but it is important to monitor activity in critical suppliers and ensure their capacity to provide a reliable, high quality service to both Crossrail and other customers. One of the ways that we do this is by ensuring that our main contractors are supported by a diverse supply chain for similar goods and services.

This not only ensures that any risk of a cut or delay in services to Crossrail is reduced, but also that these businesses are supported through the current economic times and have a future beyond Crossrail.

The future experience

We believe that the architecture, look and feel of our stations will be something to be celebrated. Constructing something new provides us with an opportunity to "get it right", and in so doing address some of the issues of urban regeneration and integration that are typical of an organically growing city. To achieve this we are working with our developer partners to ensure that where we have had to remove buildings, new high quality developments will replace them.

At the same time as we deliver our stations, there is also an opportunity to create an attractive urban realm outside. We are working with our local authority partners, Transport for London,

and other key stakeholders to provide master plans that will provide a sense of connection and transition between the station and its local environment.

Internally, using good design and a selection of materials with reduced environmental impact, we have created spaces that we hope will make the journey more pleasant. Each station will have individuality but will also be instantly recognisable as part of Crossrail through the use of common design elements and colour palette.

Rail operations themselves account for a significant impact, particularly in energy consumption. We have therefore developed a reference design for our first generation of Crossrail rolling stock that places them among the most efficient of their kind.

Our destination will be reached in 2018, when we will not only hand over to the rail operator, but also reach a point from which we can look back and point to:

a 10% increase in the rail capacity of London, the single biggest increase by any one project

a better journey experience

an increased construction skills base

a series of community projects kick-started by Crossrail

a newly inspired generation of school leavers seeking employment in the engineering and construction industry

We have begun the journey, and over the next few years we will continue to provide updates on how we are progressing. This first report articulates our key themes and initiatives and begins the development of the metrics that we will use to measure success.

The bulk of excavated material is being shipped to Wallasea Island in Essex, to create a stunning new nature reserve

REPORT STRUCTURE

Crossrail's first annual sustainability report focuses on the central section of the project (from Royal Oak to Pudding Mill Lane and Plumstead) where most of the activity has been undertaken so far.

This report looks back at performance during the financial year April 2011-12.

Future reports will include the surface sections extending to Maidenhead, Abbey Wood and Shenfield, where significant upgrade work will be carried out in the years ahead.

Although most of the major contracts have been let, we are still in the early phase of project delivery and are at the

beginning of our reporting journey. As such, our key performance indicators are under development and in other cases data collection is at an early stage.

This report therefore provides a flavour of the issues that are material to the successful delivery of Crossrail and points to what we will need to monitor and measure as we move ahead over the following years.

Sustainability for Crossrail is defined by seven themes based on Transport for London's sustainability framework. The themes are shown in the diagram below and form the basis of this report.

The principle of 'good governance' is to be applied across all seven themes. The principle of 'using sound science' underpins all aspects of the design and construction.

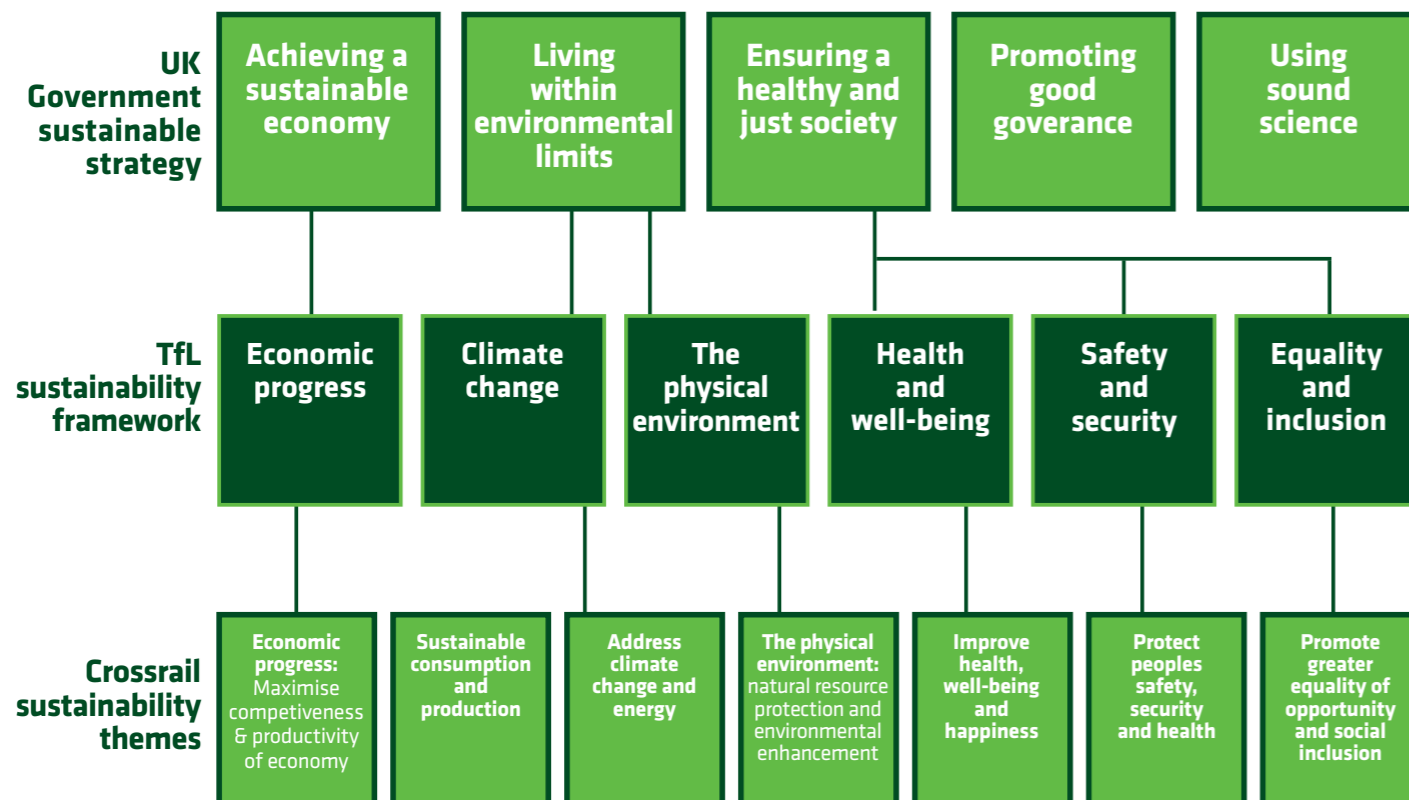
Six of the Crossrail sustainability themes align precisely with those of TfL.

The seventh, sustainable consumption and production, has been specifically drawn up for Crossrail. Crossrail is a massive infrastructure project and the use and final disposal of materials is particularly important.

Within the seven themes, a number of Key Sustainability Initiatives (KSIs) were defined by the project in 2009:

- ▶ Whole life costs
- ▶ Capital spend
- ▶ High performance railway, delivered on time
- ▶ Energy consumption
- ▶ Resource use and materials in construction
- ▶ Impact of site logistics supply chain
- ▶ Environmental impacts during construction
- ▶ Excavated material disposal (including maximum reuse)
- ▶ Construction health and safety
- ▶ Operational health and safety
- ▶ Workforce (local) employment
- ▶ Workforce skills

CROSSRAIL SUSTAINABILITY THEMES AND LINKAGE WITH TFL/UK GOVT.



Our performance against these initiatives is measured by sixteen key performance indicators which are reported on in this document.



ECONOMIC PROGRESS ▶

As part of the Government Spending review in 2010/11 the project team conducted a significant value engineering exercise which realised savings of £1bn. It was clear that a project of the scale and importance of Crossrail would have to demonstrate that in times of austerity it could continue to deliver much needed UK infrastructure as well as additional sustainable benefits.

The past year on Crossrail has seen the award of all major tunnelling contracts and all underground station foundation works. Main station and fit out contracts have been awarded for Paddington, Tottenham Court Road, Farringdon, Liverpool Street, Whitechapel and Custom House.

Our industry partners have been continuing apace on their respective stations with Canary Wharf Group handing the station box over to Crossrail in order to prepare for the arrival of the eastern tunnel boring machines. Berkeley Homes are also building Woolwich Station box.

A key milestone was the passing of Review Point 4. This is the culmination of a series of review points through which the programme has had to progress in order to assure Government that appropriate financial controls and risk management processes are in place. The programme is now allowed to progress with freedom to procure the remaining construction packages, depot and rolling stock contracts.

Early completion of Royal Oak portal and handover to the main tunnelling contractor for the western tunnels was another significant milestone for the project. The handover of the portal was

key to maintaining the construction programme for Crossrail. Our first tunnel boring machine (TBM) to launch was named after Phyllis Pearsall who created the famous 'A to Z' maps of London by traversing more than 3,000 miles of roads throughout the city. Phyllis is partnered by Ada, named after Ada Lovelace, known for her association with the development of Charles Babbage's analytical engine, the forerunner to the modern computer - two very prominent women in the history of London. There will be six further TBMs launched to complete our tunnelling works.

Crossrail has formed an integrated team comprising Crossrail Ltd and its main delivery and programme partners. This has led to a more efficient organisation and realised better value for money to the taxpayer.

Indicator 1 - delivery of whole life value

The July 2011 assessment of Crossrail cost benefits indicated a continuing strong business case. This is reflected in the increase in the Benefit Cost Ratio (BCR) of the project from 1.80 to 2.20.

The Mayor of London has endorsed an initiative by the Prime Minister and the Secretary of State for Communities and Local Government to promote transparency in the public sector by publishing all expenditure over £500. As such, all financial information pertaining to Crossrail is freely available via the Company Information Section of the Crossrail website. The annual accounts are independently audited.

London is forecast to continue to grow, in terms of both population and employment. The latest draft London Plan, published in March 2010, expects that by 2031 nearly 1.3 million additional people and 750,000 new jobs will be in the capital. The projected 35% growth in public transport trips will put inevitable additional pressures on the transport network.

Crossrail will make a significant impact towards relieving this growing pattern of congestion and crowding. It will increase the capacity of London's rail transport system by over 10 per cent which represents the largest single increase in London's transport capacity since before World War II.

Over 35% of the future employment growth in London is expected to be located in areas well served by Crossrail – the West End, the City and Canary Wharf.

The history of Canary Wharf over the past twenty years provides an example of the role of investment in public transport supporting and sustaining growth. Overall, Crossrail will bring 1.5 million more people within a 45 minute commute of these existing major employment centres.

As Crossrail will support growth in London and the south east, it will thereby have a positive impact on the UK economy as a whole.

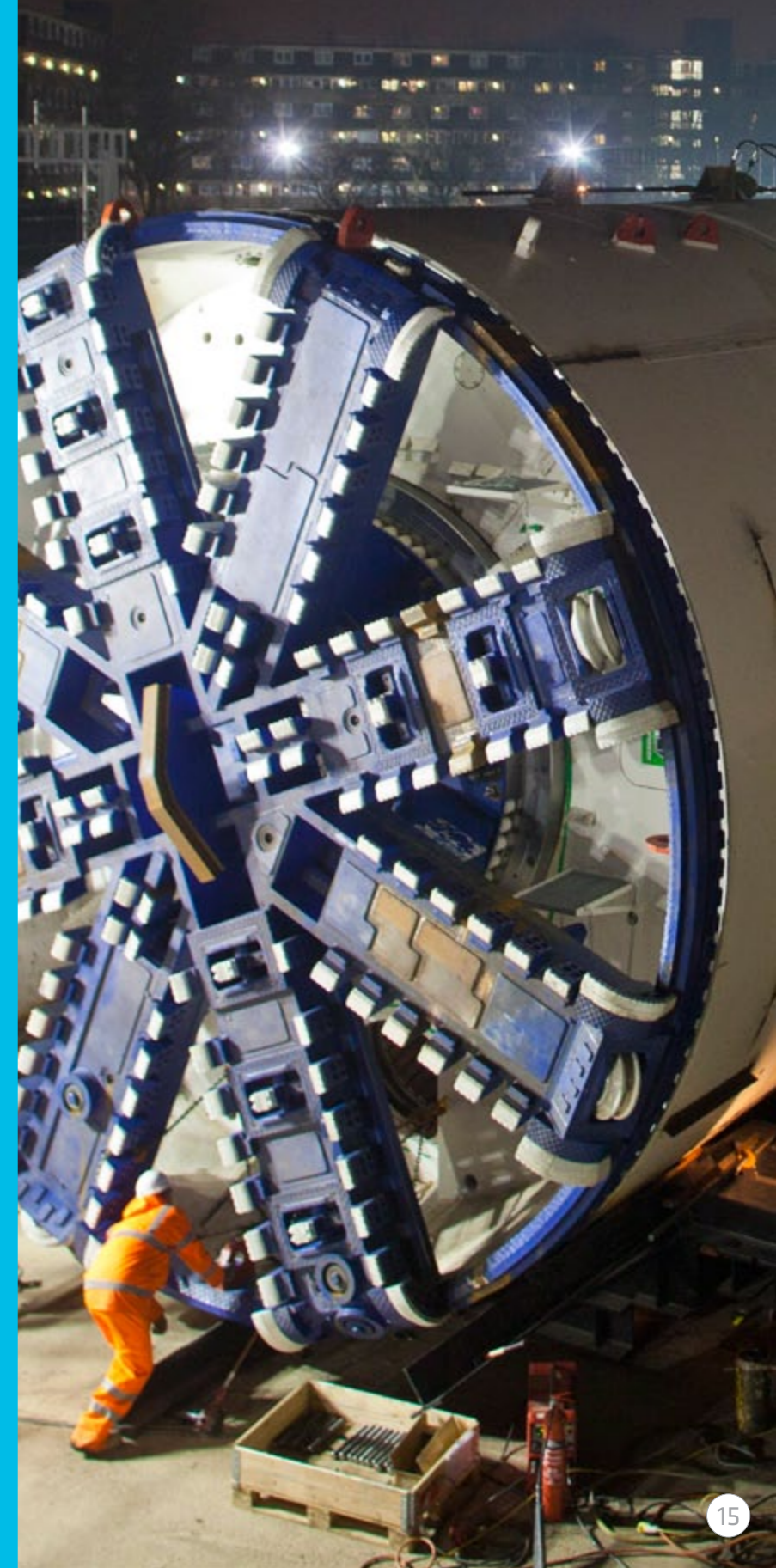
INNOVATION

Building Information Management (BIM)

For Crossrail, Building Information Modelling (BIM) is the process of generating, building and managing data through the life of the project by using model-based technologies linked to a database of project information.

A key focus for us is the long-term cost savings that can be realised through our BIM model, by providing accurate information that can be handed over to the operators of the railway for managing Crossrail's assets post-completion.

TBM PHYLLIS PRIOR TO LAUNCH AT WESTBOURNE PARK



**By 2031
nearly 1.3
million
additional
people and
750,000 new
jobs will be in
the capital**

SUSTAINABLE CONSUMPTION & PRODUCTION ►

Sustainable consumption and production is about achieving more with less. This means not only looking at how goods and services are produced, but also the impacts of products and materials across their whole lifecycle. An important part of this work is building on people's awareness of social and environmental concerns to ensure that they approach consumption and production responsibly.

Ethical sourcing

A major success for the project has been the establishment of the Ethical Supply Chains in Construction (ESCIC) working group. This is a Crossrail facilitated group that brings together our tier 1 contractors to address responsible procurement issues. The group was established in 2011 and smaller, inter-contractor working groups were also formed in order to work on high risk areas. Dialogue with a number of industry trade bodies was also established in order to develop

best practice. Next year's report will provide data on the results of this effort, so that knowledge about the careful procurement of high risk raw materials and products can be shared.

All of our contractors are required to undertake a risk analysis of their supply chain to identify any areas where unethical labour practices may occur. Where risks are identified the contractor is required to register with Supplier Ethical Data Exchange (SEDEX) and facilitate social audits of production sites.

Indicator 2 - BREEAM and CEEQUAL¹ ratings

Crossrail has adopted two established environmental assessment methodologies in order to evaluate performance. These take a whole life view of the Crossrail programme with criteria that cover both construction and operational activities.

All tunnels, portals (transition structures between surface and tunnel) & shafts (vertical structures linking the tunnel to the surface) are being assessed using the Civil Engineering Environmental Quality (CEEQUAL) methodology and have achieved 'Excellent' ratings at Client & Interim Design stage. Our aim is to achieve the 'Excellent' rating when the project is assessed as a whole upon completion

Further information on CEEQUAL can be found at www.ceequal.com

The Building Research Establishment Environmental Assessment Methodology (BREEAM) has been adopted

for all central section stations. This assessment methodology has never been used on an underground station previously and required Crossrail to work with the BRE and consultants to develop specific criteria. Although this does not provide us with the ability to compare our stations to counterparts outside the project, this will help to provide an assessment tool that can be used for future underground station projects. For the period covered by this annual report, all stations are at pre-assessment stage and indications are that a rating of 'Very Good' is attainable.

A design stage assessment is being completed for the stations and will be submitted to the BRE on completion of all design work. A further post-construction validation and final certificate will follow upon completion of the project.

Further information on BREEAM can be found at www.breeam.org

Completion of Crossrail also requires the delivery of improvements to the existing rail network to accommodate Crossrail services. For these we have committed to using CEEQUAL for railway associated works and BREEAM for the new station at Abbey Wood.

In 2011 we opened the Tunnelling & Underground Construction Academy in Ilford which has been designated a BREEAM 'Excellent' facility. The academy was built as a centre of excellence for soft ground tunnelling techniques. As such, it is only fitting that the students who are learning skills for the future, do so in a building that reflects their endeavours.

As the project progresses, we will work to identify opportunities to further improve performance and obtain additional credits within the assessment process. The overall ratings achieved are an important aspect of the legacy that we leave behind. They are indicators of the

long term performance and durability of the infrastructure.

Indicator 3 - recycled content by value

Crossrail has set a target of 15% recycled content by value across the programme, with a stretch target of 20%. This target is currently being exceeded by the station foundation works contracts and Royal Oak portal construction. Constraints imposed by the concrete mixes necessary for tunnel lining segments and sprayed concrete lining work will lower the percentage, but opportunities still remain within the main station works, and we are confident that targets will be met.

Indicator 4 - recycling and reuse of waste material

The construction of Crossrail will generate a significant amount of waste material. This includes waste generated from the demolition of buildings and the material from the excavation of the stations and tunnels.

Crossrail Ltd, is a signatory to the Government's 'halving waste to landfill' commitment and under the Crossrail Act, we are required to reduce, reuse and recycle waste.

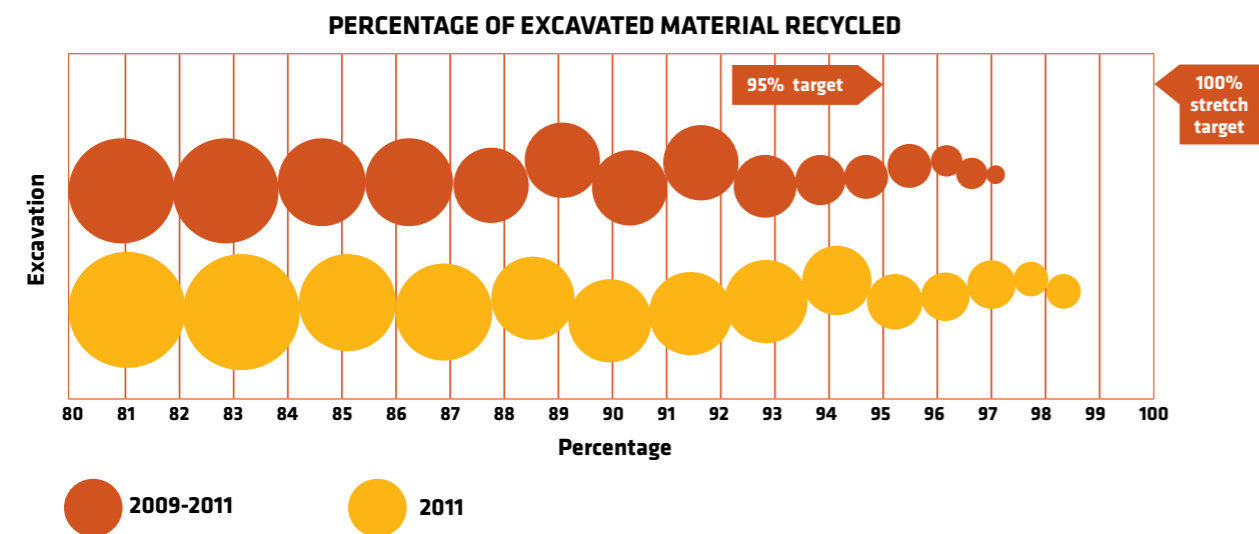
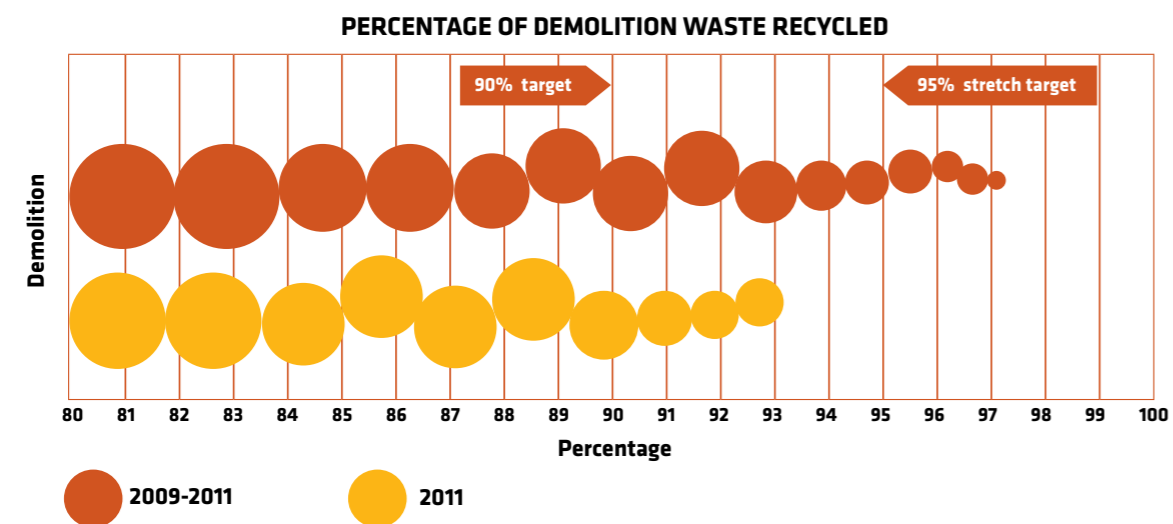
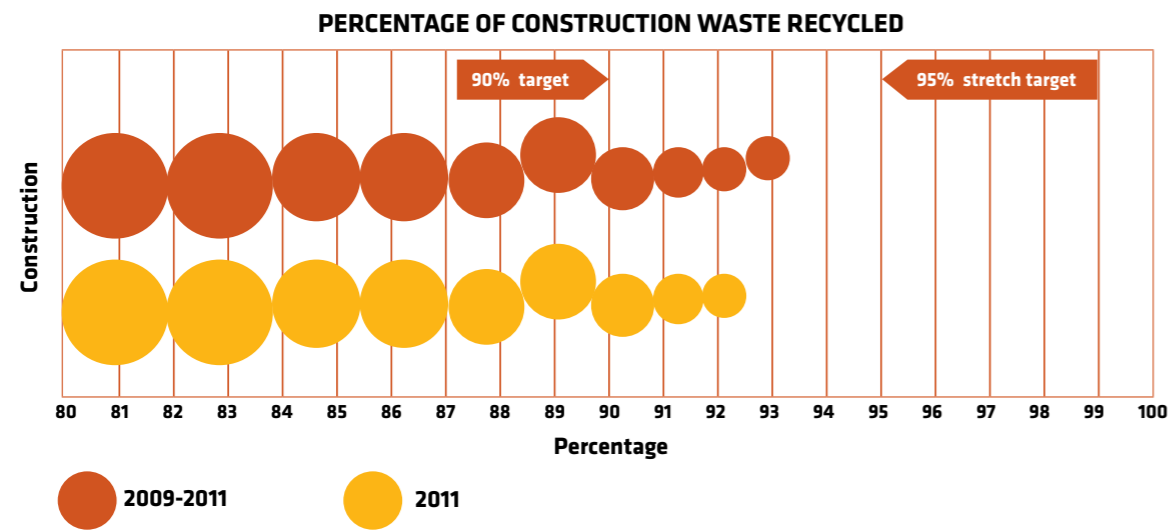
During the design phase, we worked with our design teams to minimise waste produced. We have set ourselves challenging targets for reuse and recycling that are best practice for the construction industry.

Crossrail commenced enabling works during 2009. Between January 2009 and March 2012, a total of 68,000 tonnes of waste was generated as a result of construction works and a total of 125,800 tonnes was generated from the demolition of buildings. 95% of the construction material generated and 97% of the demolition material generated was reused or recycled helping us to exceed our stretch target.

¹ BREEAM is the world's foremost environmental assessment method and rating system for buildings, with 200,000 buildings with certified BREEAM assessment ratings and over a million registered for assessment since it was first launched in 1990.

CEEQUAL is the assessment and awards scheme for improving sustainability in civil engineering, infrastructure, landscaping and public realm projects, based in the United Kingdom. It is promoted by the Institution of Civil Engineers and a group of civil engineering organisations including CIRIA, CECA and ACE. Its objective is to encourage the attainment of environmental excellence in civil engineering, and thus to deliver improved environmental and social performance in project specification, design and construction.





95% of construction material generated and 97% of demolition material was reused or recycled

Since January 2009 we have generated 1,134,000 tonnes of material as a result of excavating our underground stations. Reuse and recycling has remained high throughout the reporting period, with 99%

being beneficially reused. The bulk of excavated material is being directed to the Wallasea Island nature reserve, and we remain confident that we can continue to meet our targets.



◀ CASE STUDY – LIMMO PENINSULA

At our tunnelling site on Limmo Peninsula in east London, the contractor Dragados Sisk encountered waste on the site that included timber sleepers, concrete and old tyres in addition to contaminated soils. Working closely with Crossrail

Ltd, the contractors found sustainable waste solutions so that 98% of the 120,000 tonnes of waste material was reused or recycled. The waste was used in various ways – concrete was crushed to use as fill material, timber was shredded to use as

chipboard, tyres were shredded to use in equestrian gallops and scrap metal was recycled. Any contaminated soils were cleaned, mixed with growing agent and used to remediate a landfill site.

CLIMATE CHANGE & ENERGY ▶



This theme seeks to secure a change in the way we generate and use energy in construction, and reduce the release of greenhouse gases. As a long term infrastructure asset, Crossrail must also address the likely impacts of climate change over the lifetime of the railway, and ensure future flexibility is considered at the design stage.

Indicator 5 – construction carbon emissions

We are currently working with Constructing Excellence to establish reliable benchmark data against which energy performance can be measured during construction.

Approaches to predicting carbon emissions are in development with the aim of establishing carbon budgets against which reduction targets can be set. Engagement with our contractors has indicated that this is an area which has been little developed in the industry but we are confident that the collaborative approach that we are fostering to share knowledge will result in an increased understanding of energy use and carbon emissions.

In parallel, we are developing a carbon footprint model that will capture energy and carbon data for construction related energy (plant, equipment & facilities), embodied energy within material, and transport related energy.

This will allow us to obtain a better understanding of our energy use and carbon emissions and quantify the improvements made.

Future rail operations

Once construction work on Crossrail has been completed, it will be important for the operating railway to continue to support sustainability targets.

TfL will be responsible for overseeing operational services. Crossrail Ltd has the responsibility to procure rolling stock for the first 35 years of operations and has ensured that sustainability requirements are included in the terms of that contract. The Rolling Stock procurement process was officially launched in February 2012 with contract award planned for 2014.

The principal maintenance and servicing depot, located at Old Oak Common, is also part of the rolling stock contract. The specification requires that it must achieve a BREEAM rating of 'Very Good'. The successful tenderer is being encouraged to identify areas in which the rating can be improved whilst still delivering overall value for money to the operator.

Crossrail must address the likely impacts of climate change over the lifetime of the railway

The rolling stock provider will be required to develop and submit an annual health and safety report and improvement plan which will include data on targets and reports carried out during the year. The provider will also be required to set up an environmental management system which will detail their processes to control environmental impact.

This system must manage the following:

CO₂ emissions

NOx and PM10 particulate emissions (e.g. from generators or from road/rail vehicles predominantly used to carry out maintenance work)

Waste (including consumable train and depot spares, general office and depot waste, and waste removed from trains as part of the maintenance work)

Energy consumption (depots)

General consumables (e.g. office supplies)

Water consumption (including train washing equipment and in buildings)

Noise from fixed sources

Noise and vibration from train movement in the depot

It is also built into the contract that the provider must encourage a diverse base of suppliers, ensure the London Living Wage is offered, meet strategic labour needs, provide training opportunities and ensure ethical trading practices, all in accordance with the Mayor's responsible procurement policy.

Metrics for measuring the performance of the operational railway are yet to be developed, but are likely to include:

Street to street journey times

Punctuality

Environment and ambience

Passenger comfort

Service cancellations

INNOVATION

Tunnel cooling

Crossrail tunnel lining design has been completed and our main tunnel construction contractors procured. As part of our innovation agenda we have been investigating the incorporation of 'tunnel energy segments' for removing waste heat from the tunnels, a challenging problem in metro style underground rail services. We will be looking for an opportunity as the works progress to incorporate a demonstration section of tunnel so that it can be monitored to quantify the benefits. Part of our learning legacy will be the provision of confidence in the wide-scale adoption of this technology in future urban tunnel construction. Benefits are cooler tunnels with less energy used for fan-cooling, and the potential to utilise the heat within buildings above ground.



The rolling stock is specified to include the following features:

- ▶ Lightweight construction with the total mass of train limited to a maximum of 350 tonnes. Crossrail seeks to reverse the trend of other recent UK rolling stock builds which equate to nearly 400 tonnes for a 200 metre long train.
- ▶ Energy consumption targets benchmarked against 'best in class' UK and European performance.
- ▶ Regenerative braking - the ability to use motors in reverse as an electric brake which returns energy to the electrical grid.
- ▶ Smart control of lighting, heating and air conditioning systems.
- ▶ Driver advisory systems which guide the driver to use optimal energy efficient driving techniques.

THE PHYSICAL ENVIRONMENT & NATURAL RESOURCE PROTECTION ▶



Environmental management

During 2010 Crossrail Ltd was certified to ISO1400, Environmental Management Systems, by an UKAS² accredited provider. The scope of the certification is for programme management, design, development and planning of a cross London passenger railway. Crossrail is also certified to BS OHSAS18001 and ISO9001, all three constituting the Crossrail management system.

The requirement for certified management systems is cascaded down to our tier 1 construction contractors and forms part of the criteria for their selection. Our contractors are also required to demonstrate how their requirements are cascaded down their supply chain.

Environmental Minimum Requirements

The Environmental Minimum Requirements (EMR) provide rules by which those building the railway must work. It was developed with local authorities and statutory agencies.

In the context of this report, a key part of the EMR is performance against the Construction Code. The code is a comprehensive document that details how the impacts of construction will be mitigated. Full details can be found on the Crossrail website. To implement the code, Crossrail has incorporated requirements into contract documentation, under which each contractor is bound to comply. Compliance is regularly monitored through inspections and audits and any non-conformances are reported.

In accordance with the EMR, Crossrail is committed to use diesel particulate filters where reasonably practicable

on construction machinery to reduce the emission of soot particles. We are working with one of our tier 1 contractors to implement this requirement on a demonstration basis. It is hoped that this will provide data to the industry to overcome concerns relating to equipment reliability, maintainability and adverse fuel consumption.

We are also working with contractors to undertake trials of a dust suppressant which sticks together tiny soot particles so that they don't become airborne. We have also started to introduce living walls on site hoardings consisting of plants such as ivy. The vegetation works to capture the particulate matter and provide a more pleasant screen for passers by. Contractors are also being encouraged to participate in a 'no-idling' campaign which aims to stop site vehicles congregating unnecessarily outside the construction sites.

Resource efficiency

The Crossrail programme has made an excellent start in being able to maintain performance in the area of resource efficiency. However, it is clear that we need to work more closely with our contractors to establish performance in the area of recycled material selection and energy efficiency in construction.

We are achieving our targets for reduction of construction related waste, and minimising the disposal of materials to landfill. The establishment of the Docklands Transfer Site and a similar site at Northfleet³ provides us with the infrastructure to ensure that the majority of clean excavated material is sent to the RSPB Wallasea Island project.

The Crossrail programme is committed to calculating and reducing its carbon footprint. We have worked with our

The Construction Code details how the impact of construction will be mitigated

²UKAS – United Kingdom Accreditation Service

³The Docklands Transfer Station, Essex and Northfleet, Kent sites will be used for shipment of excavated material to Wallasea Island for construction of a nature reserve.

design teams to minimise the operational energy use in our stations and are currently reviewing rolling stock specifications so that we can work with bidders to reduce this further. This is an important element of the whole life carbon and energy story of Crossrail as it accounts for by far the greatest component of energy usage based on the current electricity grid mix. Further work needs to be undertaken to reduce construction related energy use by choosing the right material and efficient plant.

The Crossrail programme has provided the framework for reducing energy in material choice (embodied energy), design (operational energy) and construction by bringing together our contractor community to agree an overall approach. We are now in a period of

data gathering and target setting. Energy reductions of 5% are expected based on initial estimates. The project is also working with Constructing Excellence, an organisation which drives improvement in the construction industry. This is to ensure that targeted reductions are based on a reliable benchmark for heavy civil construction works.

The focus on water resources at the beginning of 2012 was very much on protection of surface and ground water from pollution. Whilst this remains a key priority, a greater emphasis has been placed on the minimisation of water use brought upon by two years of below average rainfall that led to drought prevention measures being implemented in the UK. Despite this being followed by the wettest

April since records began some 100 years ago, we will continue to focus on efficient use of water in the construction process.

We have engaged with the Waste Resources Action Programme (WRAP) and the Water Resource Centre (WRC) to identify best practice measures that can be employed by our contractors.

We have worked with our design teams to minimise the operational energy use in our stations



WALLASEA ISLAND WILD COAST PROJECT, ESSEX

◀ CASE STUDY – WALLASEA ISLAND PROCUREMENT AND PREPARATION

Crossrail and the Royal Society for the Protection of Birds (RSPB) have signed an agreement for excavated material to be used to build the Wallasea Wild Coast Project, a new tidal nature reserve on the Essex coast near Burnham on Crouch.

Procurement of a marine transport contractor was carried out at the end of 2011 and shipments began in mid 2012.

Two wharves have been acquired - one connected by rail to Westbourne Park to receive excavated material from the

western tunnels. 75% of this excavated material will be transferred to Wallasea. Once Wallasea Island is complete, the new habitat will support a stunning array of important bird populations, as well as a host of other wildlife.

ARCHAEOLOGY

The construction of Crossrail through the heart of London is resulting in one of the most extensive archaeological programmes ever undertaken in the UK. Crossrail will manage over 40 worksites throughout the central section and archaeological investigations will be carried out at each site ahead of main construction works to build the central stations.

The project gives archaeologists an exceptional opportunity to reveal the layer cake of history that is hidden below the city's streets. We are now half-way through our planned archaeological programme which has the potential to uncover many finds. We have found

prehistoric animal bones, Roman remains, human remains from the infamous 'Bedlam' psychiatric hospital and remnants of Britain's industrial past. An extremely rare piece of UK amber, estimated to be 55 million years old, has also been discovered in London's Docklands.

Specialist archaeology contractors have been employed from Museum of London Archaeology and Oxford Archaeology/Ramboll to carry out site investigations. The construction teams give the archaeologists access to the sites in advance of the main construction works getting underway.

DISCOVERIES

Stepney Excavations at Stepney Green shaft site uncovered the remains of Worcester House, built c1450-1550. The Marquis of Worcester bought the house in 1597. Tudor artefacts such as 16th Century glassware, a bowling ball and shoes similar to those seen in paintings of Henry VIII and his family were discovered.

Limmo Peninsula Archaeologists uncovered the remains of the Thames Ironworks and Ship Building Company. Finds included the remains of a large piece of clinker boat, believed to be up to 800 years old.

Farringdon Excavations have confirmed that medieval leather working took place next to an ancient river channel. Future investigations hope to determine whether the finds were associated with Charterhouse Carthusian Priory.

Moorgate Remains were uncovered from the Roman City of Londinium, including household items, shoes and pottery. Ice skates were found that date to a time between the 8th and 16th Century when the marshland area, known as Moorfields, froze over in winter.

Liverpool St The Bethlehem 'Bedlam' Hospital burial ground was carefully uncovered and the human remains collected for study into diet, lifestyle, status and beliefs. We expect up to 4,000 skeletons will be found. The remains will be reburied after consulting with the Ministry of Justice.

An extremely rare piece of UK amber, estimated to be 55 million years old, has been discovered



HEALTH, WELLBEING & HAPPINESS ▶



Once Crossrail is operational, it will improve the quality of the travelling experience by reducing congestion, minimising the need for interchanges, shortening journey times and increasing London's accessibility through stronger links to international transport hubs. This will have a positive effect on the quality of people's lives.

As well as future benefits, an important part of Crossrail's sustainability agenda is to ensure that we behave as good neighbours in the communities around our construction sites, and support local initiatives in need of investment.

Community Investment Programme

We require our contractors to donate their skills, time, money and expertise to bring lasting benefit to the communities in which they are working.

The Crossrail led approach helps to deliver consistent and meaningful benefits alongside construction and beyond the life of the project.

The first community investment initiatives have begun and plenty more are set to follow. This section summarises just some of the activity being carried out by Crossrail and contractors in the community.



◀ CASE STUDY – SENRAB FC

Bam Nuttall Kier, contractors at Whitechapel station donated £4,000 to purchase new kit for struggling local football club Senrab FC.

The Tower Hamlets youth football club that has produced some of the Premier League's greats including John Terry and Jermaine Defoe, also

competed for the first time in its 40 year history at the World Youth Cup in Sweden thanks to another Crossrail contractor - BBMV who covered the transport costs. This support has generated further interest in the football club and will hopefully allow it to continue and prosper as a community asset in London's East End.

CASE STUDY – WORD 2012 ▶

Farringdon contractors, Laing O'Rourke Strabag joint venture, donated £10,000 to kick-start Word 2012, aimed at improving literacy and employability in south Islington.

Word 2012 is a three month programme of engagement to encourage and support local residents to rediscover the joy of reading and writing, and find new, creative ways of expressing themselves.

The programme culminated in a three week festival which the organisers now hope to run as an annual event.



◀ CASE STUDY – REGENERATING THE RIVER LEA

Morgan Sindall, who are constructing a tunnel portal at Pudding Mill Lane, carried out a regeneration project to create a wildlife habitat and encourage biodiversity on the banks of the River Lea, close to their work site.

The team worked with British Waterways (now Canal & River Trust) to clear a section of the river bank of invasive weeds,

landscape, plant reeds and shrubs, and erect a barrier to protect the plants while they establish themselves. The changes will encourage wildlife including coots, moorhens and kingfishers. It will also make the canal look more attractive for people using the waterway.

Annie Myers of British Waterways explains the

significance of the project: "There are very few natural banks left on the 2,500 miles of canals and rivers on England's waterways. Help like this from Crossrail and Morgan Sindall allows us to prevent further erosion of those that remain and helps us tackle many more projects than we could ever do alone."



COMBINING ARTS WITH ARCHITECTURE

ART PROGRAMME

Crossrail is still very early in the construction programme, but incorporating artwork in the central stations forms an important part of our vision. Identifying suitable artists, works and sponsors is a lengthy process, so we are already starting to give this consideration. Crossrail aims to emphasise the need to combine the arts with architecture as a necessity for shaping the future of London's cultural landscape.

Through our art programme, we will bring business-world sponsors, art world creativity and local identity together within one ambitious project. This in turn will provide a catalyst for both economic and physical regeneration.

Over the past year, the Crossrail Art Programme has shown great progress. The commissioning strategy has been refined and developed into a more coherent scheme, one that we believe will be very attractive to sponsors. Sponsors for line-wide projects are yet to be approached, but initial funding has been secured to launch the proposal phase for Paddington station.

Hoarding design projects

As part of the art programme, we have delivered design projects in partnership with third parties in order to mitigate the visual impact of site hoarding.

Living walls

At several sites across London, we have installed over 1000 metres of living walls to improve

the appearance of the hoarding. This will also benefit biodiversity (providing new habitats for wildlife) and help improve air quality by reducing airborne dust, pollen and CO₂ levels. The Mayor of London has launched a Campaign for Clean Air which aims to reduce PM10 (diesel particulates) pollution by a third by 2015 and has funded these installations.

One example is at Finsbury Circus, near Liverpool Street. Two types of living wall have been installed. On the north-eastern curve, ivy has been trained to frames fixed to the hoardings. On the western edge of the hoarding a variety of pre-grown plants have been installed. Both are sustained with built-in drip irrigation, which is low consumption.



LIVING WALLS AT FINSBURY CIRCUS

← CASE STUDY – BARBICAN PROJECT

To help celebrate The Barbican's 30th anniversary, Crossrail exhibited newly commissioned architectural images taken in and around the Barbican Centre.

The images improve the appearance of work sites in Moorgate and Farringdon, both located close to The Barbican. The initiative reduces the environmental impact of work sites while simultaneously helping to promote local culture and heritage.



COMPLAINTS

Indicator 6 - environmental complaints

Crossrail is being built within urban areas and has an impact on those who live and work near the sites. Construction works have been planned to minimise impacts on the local community and on the environment. The project's environmental impacts were assessed in an Environmental Impact Assessment (EIA). An environmental statement was published and submitted to Parliament to accompany the Hybrid Bill in 2005.

All of our contractors are required to use industry best practice in order to minimise community impact and we have an Environmental Management System that is certified to the international standard ISO14001. We have set up a 24 hour helpline so that people affected by the works can seek advice or register a complaint.

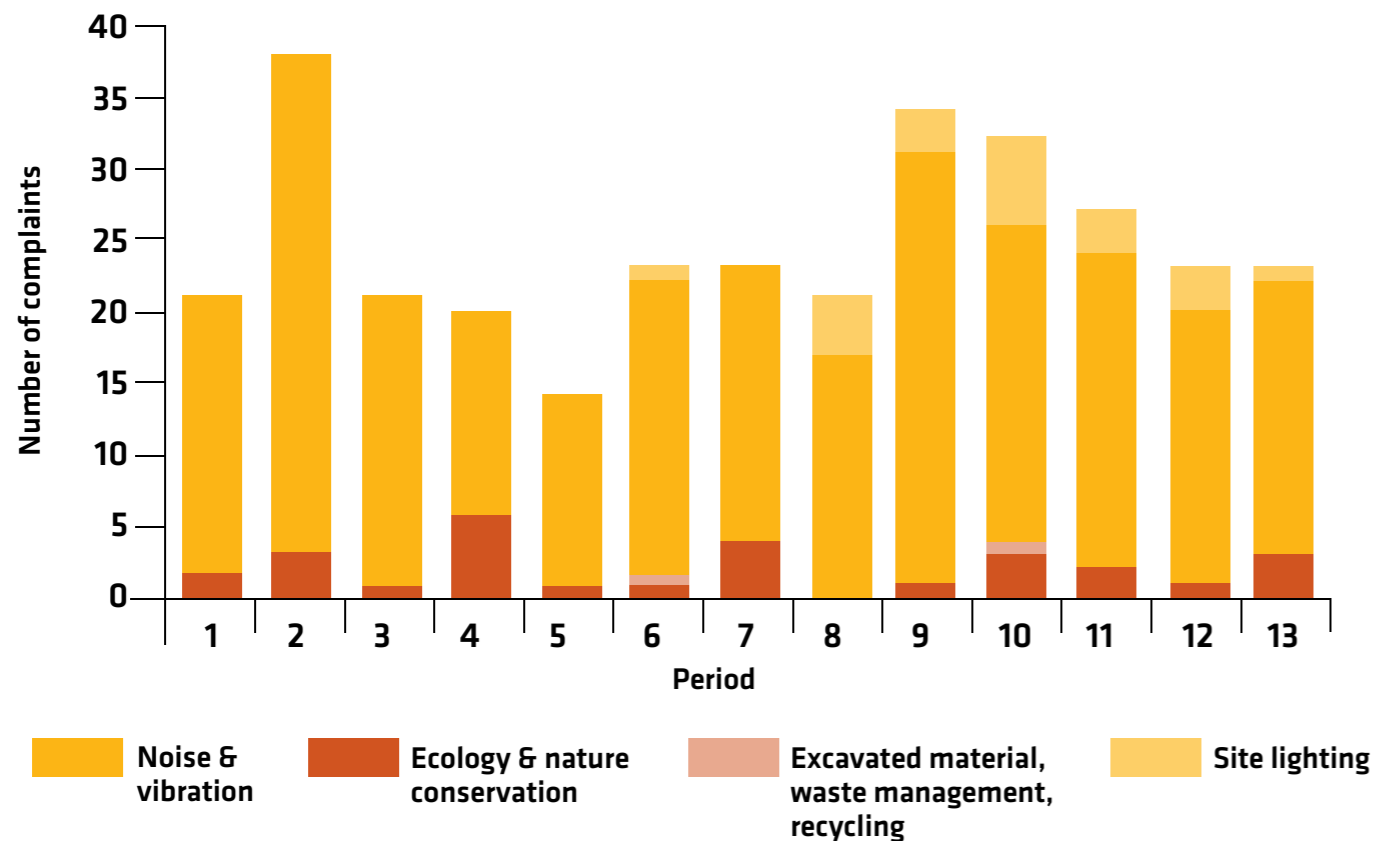
Complaints are continually reviewed and we have procedures for investigating each complaint, and where necessary changing our working practices to

reduce the impact on the surrounding area.

Of the environmental complaints received by the helpdesk during the reporting period, most related to noise and vibration generated by the works. Of the remainder, most of the complaints related to dust or lighting from the sites. During the year, we have been working with all of our contractors to ensure that the best practicable means are being used to minimise the impact of the works, particularly in relation to noise and vibration.

We have set up a 24 hour helpline so that people affected by the works can seek advice or register a complaint

TOTAL NUMBER OF ENVIRONMENTAL COMPLAINTS (BREAKDOWN BY CATEGORY) FOR 2011/12



← CASE STUDY – USING NON-PERCUSSIVE TECHNIQUES FOR DEMOLITION

When Bond Street demolition contractors McGee discovered building foundations on the Davies Street ticket hall site were much bigger than expected, it was feared that nearby residents would be seriously disturbed by the noise and vibration created by their removal.

With concrete blocks of some three cubic metres in size, the demolition methods available were severely limited.

After testing several machines, the contractor settled on an innovative technique known as 'bursting'. This involves

injecting chemicals into the concrete, which expand slowly and burst the blocks into smaller pieces.

CASE STUDY – SWITCHING TO WHITE NOISE ALARMS AT PADDINGTON ▶

In June 2011, a number of complaints were received from residents at Paddington regarding noise from vehicle reversing alarms.

On reviewing the complaint with Paddington contractors, reversing alarms using 'white noise' rather than beeps were assessed for safety effectiveness

and subsequently used. The situation has been monitored, and there have been no further complaints.



CONSIDERATE CONSTRUCTORS SCHEME

“Having a client who encourages us to implement, innovate and realise best practice on site, whilst providing active support for us to do it makes the Considerate Constructors Scheme standards much more attainable”

Rich Wall-Morris, Vinci Connaught Tunnel Project Manager

The Considerate Constructors Scheme (CCS) is a national initiative set up by the construction industry to improve its image. Sites and companies that register with the scheme are monitored against a Code of Considerate Practice, designed to encourage best practice beyond statutory requirements. The main areas of concern fall into three categories: the general public, the workforce and the environment.

All Crossrail contractors must register with the CCS or a similar scheme run by the worksite's borough council.

Four Crossrail worksites have won Considerate Constructors Scheme National Awards in 2011. Winners are selected from the top 7.5% of sites registered and the selection is based on their annual average score.

The VINCI Construction UK team at Connaught Tunnel and the Canary Wharf Contractors at Canary Wharf received silver awards. Morgan Sindall

at Westbourne Park and Costain Skanska Joint Venture at Royal Oak portal won bronze awards.

The teams won awards based on the following annual average site assessment scores:

Canary Wharf – 36.75

Connaught Tunnel – 36.5

Westbourne Park – 36.25

Royal Oak portal – 36

The scores for each site as of 1 April 2012 can be seen below and are regularly updated on the website. www.crossrail.co.uk/ccs.

PUBLIC INFORMATION

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

The 'Near You' page on the Crossrail website www.crossrail.co.uk explains local works in each area. Dedicated pages on the website outline planned works at each of the new stations and will soon be extended to cover planned upgrade works at each of the existing stations on the Crossrail route. It is now also possible to track the location of Crossrail's tunnel boring machines on the website.

To receive email notifications about planned works it is possible to sign up to our mailing lists via our website 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 each local area.

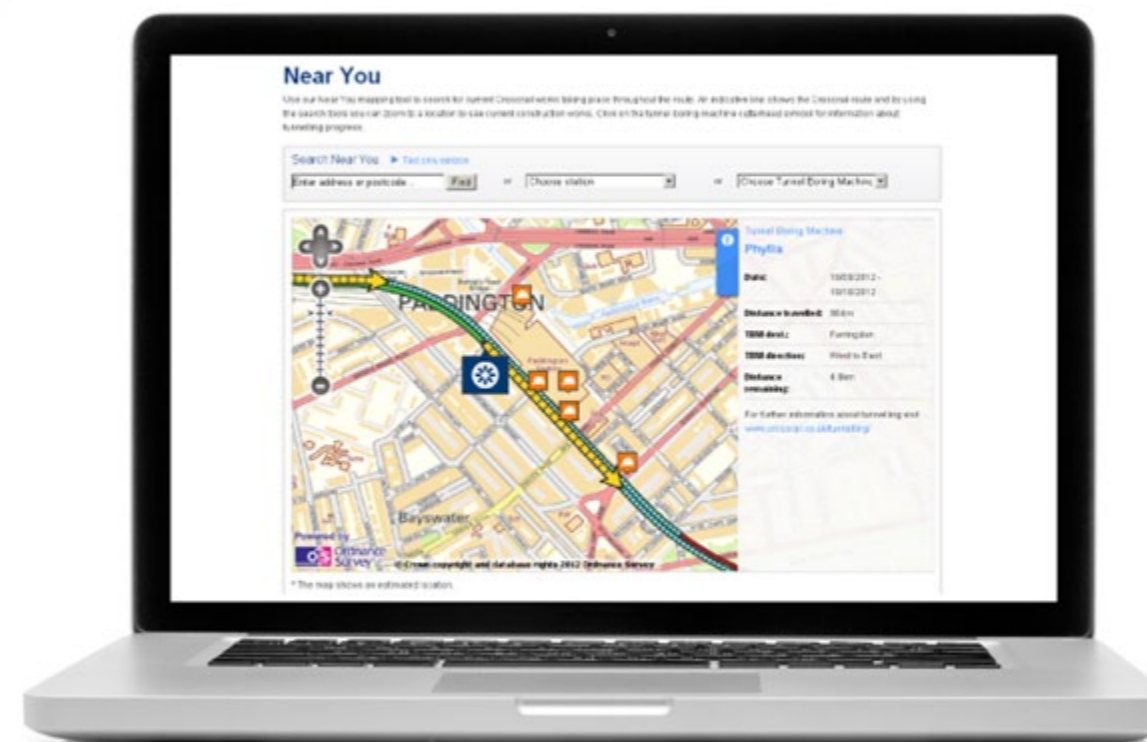
We have two Visitor Information Centres to enable people to get further information about the project, and have their queries answered in person by Crossrail staff. They are located at Tottenham Court Road, 16-18 St Giles High Street, WC2H 8LN and at Whitechapel, in The Idea Store, 321 Whitechapel Road, London, E1 1BU.

Crossrail is committed to promoting local job opportunities, up-skilling and utilising local services. This is achieved in a number of ways:

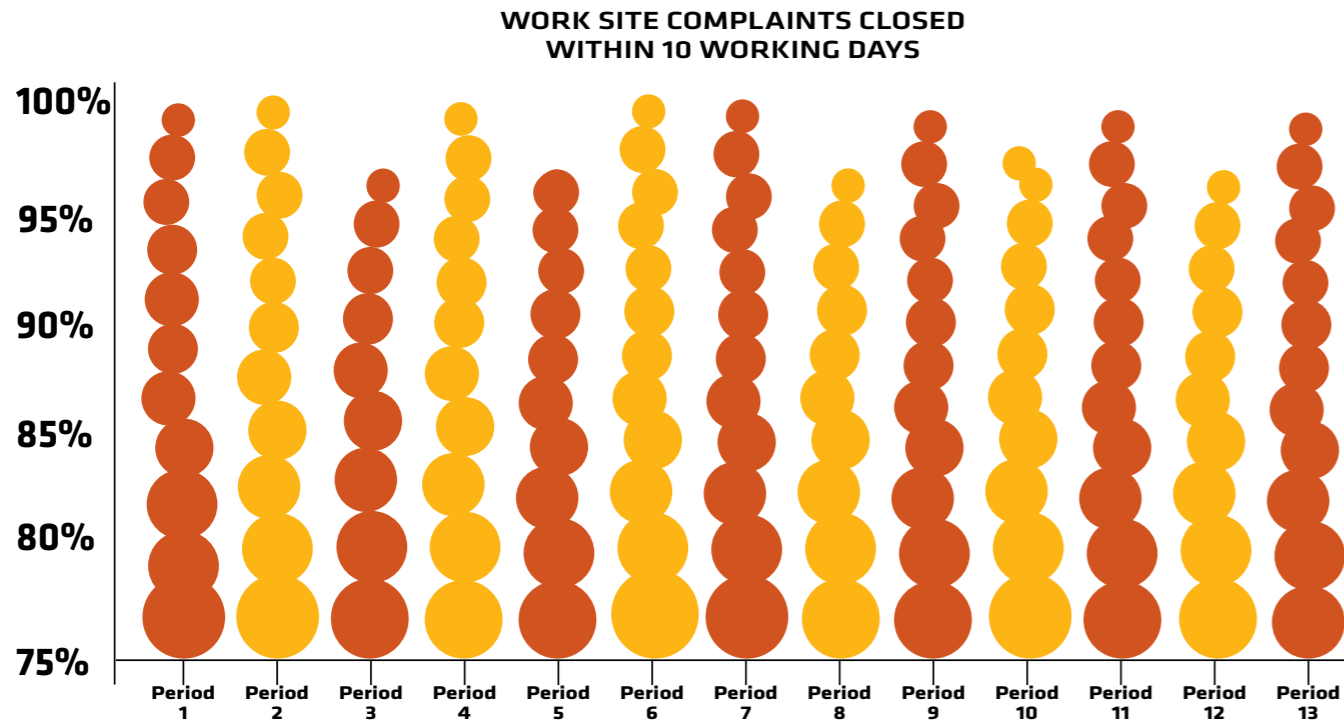
We use our website www.crossrail.co.uk/business, there are dedicated staff at the Visitor Information Centres and we also use CompeteFor, a web portal for advertising contract opportunities. CompeteFor acts as a brokerage service, matching buyers with potential suppliers.

We have two Visitor Information Centres and the helpdesk operates 24 hours a day, seven days a week

SITE	CONTRACTOR	SCORE
Paddington New Yard	BFK	38
Connaught Tunnel	VINCI	36.5
Westbourne Park advanced civils	Morgan Sindall	36.5
Liverpool St (Finsbury Circus)	BBMV	36.5
Pudding Mill Lane	Morgan Sindall	36.5
Canary Wharf	Canary Wharf Contractors	36.5
Bond Street	Costain Skanska JV	36
Whitechapel (advance works)	Kier BAM	36
Farringdon (advance works)	Laing O'Rourke Strabag JV	35.5
Western running tunnels	BFK	35
Liverpool Street (advance works)	VINCI	35
North Woolwich/Victoria Dock portals	J Murphy	34.5
Stepney Green (eastern running tunnels)	Dragados Sisk JV	34.5
Limmo (eastern running tunnels)	Dragados Sisk JV	34.5



SAFETY, SECURITY & HEALTH ▶



The Secretary of State has appointed an independent Crossrail Complaints Commissioner

Employment opportunities are advertised through Job Centre Plus 48 hours before other resource avenues are investigated. Crossrail also hosts 'meet the contractor' events to allow SMEs to meet with tier 1 contractors.

Crossrail helpdesk

The Crossrail Public Helpdesk is available to answer 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 via telephone - 0345 602 3813, and email - helpdesk@crossrail.co.uk. Details are advertised on the Crossrail website, on all our communications material and at our construction sites.

Crossrail aims to close all complaints within

10 working days, with an initial response made within 24 hours. In practice, passing complaints to contractors is immediate and the response rate is generally much faster than this.

The Secretary of State has appointed an independent Crossrail Complaints Commissioner. Any member of the public who feels they have 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 Commissioner must respond within 28 days, unless a further time limit is agreed.

The chart above shows the percentage of complaints closed within 10 working days for this reporting period.

Our contractors each work in accordance with 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 complaints and concerns.



The health and safety of our workforce and the local community during the construction of Crossrail is our highest priority. There are a number of policies, contract requirements and campaigns which all serve to promote our philosophy of zero accidents.

Site contractors must ensure that all individuals required to work on the site are in possession of a valid Construction Skills Certification Scheme (CSCS) card or equivalent.

Crossrail is a member of Constructing Better Health (CBH), the not-for-profit organisation committed to improving the health of the construction, building services and facilities management sector workforces.

The main challenge for Crossrail in the year ahead will be to maintain its overall programme but to do so safely and with due regard to our impacts on our local communities.

Our focus on health and safety is underpinned by our Target Zero philosophy.

It is important to influence behaviour in order for the principles to be achievable. We run many internal campaigns to encourage the workforce to think carefully about high risk areas, but the following key behaviours can be applied to all aspects of Crossrail work:

- Take time to consider your work and the impact on yourself and others should something go wrong
- Plan your work so that it can be carried out without harm to yourself or others
- Always report near misses, incidents and unsafe conditions
- Do not compromise - only work when it is safe for you and others
- Expect to be supported by your colleagues and leaders in working without harm

Given the nature of the Crossrail project and significant underground construction activity, our contractors are also required to ensure that all individuals who enter underground sites are in possession of a valid Tunnel Safety Card, accredited by the Construction Industry Training Board and the Construction Awards Alliance. So far, over 1000 people have received a tunnel safety card on the project.

INNOVATION Signalling

Communications-based train control (CBTC) is a railway signalling system that makes use of the telecommunications between the train and track equipment. The system allows for the exact position of a train to be known more accurately than with traditional signalling systems. This results in a more efficient and safer way to manage railway traffic.

Crossrail is looking ahead and has committed to planning the future migration of the CBTC system to the European Train Control System (ETCS) Level 3. This is a signalling, control and train protection system designed to replace the many incompatible safety systems currently used by European railways, especially on high-speed lines.

With Level 3, ETCS goes beyond just train protection functionality and uses instead a full radio-based train spacing capability. Trains are able to locate themselves by means of positioning beacons and via sensors. Level 3 is currently under development and Crossrail is ideally positioned to assist with future developments.

Driver safety

In recognition of the adverse impacts resulting from large vehicles on London's roads, our contractors are all required to register for the Freight Operators Recognition Scheme (FORS).

FORS is a membership scheme that aims to improve freight delivery in London. It provides a quality and performance benchmark and is part of the wider London Freight Plan, helping companies to become safer, greener and more efficient.

With thousands of lorry drivers to be employed on Crossrail over the next few years, specific training on how to drive safely near cyclists is a key part of this initiative. We have developed the scheme in consultation with cycling and road safety campaign groups, and it has also been backed by the haulage industry.

Companies in the Crossrail supply chain are required to meet the vehicle safety kit requirements set out in our contract documentation. As a result of these

efforts, Crossrail suppliers are probably the safest operating in London and are demonstrating industry best practice. The response of Crossrail stakeholders, trade associations, road safety charities and numerous other organisations has been very positive.

Fitting additional safety technology to any large goods vehicle (LGV) and ensuring drivers benefit from this investment can make a big difference to road safety. The margin between a near miss and a collision can be miniscule so a visual or audible alert seconds beforehand can make all the difference between life and death. Equipment includes sensors, cameras and external warning devices.

Indicator 7 - construction health and safety

Crossrail is achieving better than average industry standards, but there is room for improvement. As we increase the size of the workforce and therefore the collective hours worked the risk of accidents increases. We have been introducing new



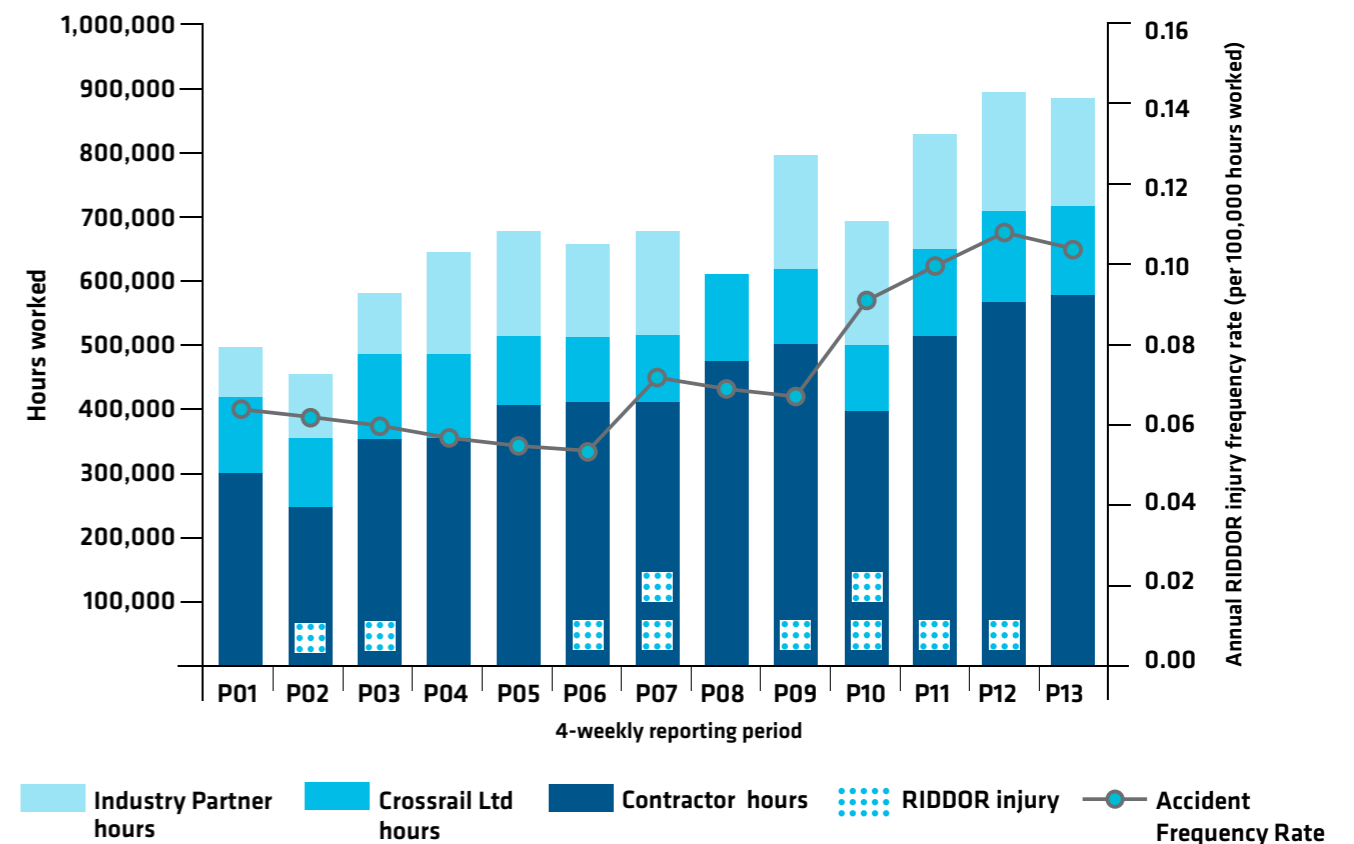
We have three Target Zero principles:

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

Health and safety performance



initiatives to mitigate this risk. These initiatives include implementation of a bi-weekly incident review conference call to share lessons learned between sites, the development of a leadership programme for frontline supervisors and detailed analysis into poor performing areas.

Indicator 8 - senior management leadership tours

Crossrail has set an objective for senior management to tour each site on a regular basis to identify areas that may need more focus.

Indicator 9 - reporting unsafe activities

Prevention of accidents on site is very much about identifying situations that could lead to them happening.

It is important to create a culture within the organisation that recognises that a situation that could have led to an accident must be reported. This way, common trends can be analysed, and areas for improvement can be identified. Crossrail contractors are encouraged to report 'near misses' and sensible targets have been set against this. Since targets were set at the beginning of 2011/12 we have consistently exceeded our sliding target, which has enabled us to identify trends and target problem areas to prevent accidents.



◀ **CASE STUDY – VEHICLE MOVEMENTS**

As part of our environmental performance, Crossrail has implemented a number of activities to reduce the impact of vehicle movements on other road users.

These measures run through the different phases of a contract, and they require the contractors to consider the impact of their proposed vehicle movements on their own operations and third parties.

The main activities implemented by Crossrail are as follows:

Logistics plans

All contracts must produce a logistics plan.

Traffic co-ordination centre

Contractors are required to submit long-range, weekly and daily vehicle movement plans.

Lorry routes and lorry holding areas (LHAs)

Vehicles must follow approved routes (which are sign posted) and contractors must implement LHAs where required.

Lorry driver induction training

All frequent drivers must attend Crossrail's one day course.

Driver information packs

Infrequent drivers are given Crossrail's driver information pack which is now available in thirteen languages.

Vehicle safety equipment

Crossrail requires vehicles entering site to fit specific safety devices which will reduce the risk of a serious collision with a vulnerable road user.

Trixi mirrors

The project has had 49 trixi mirrors installed at various locations on the lorry routes.

Vehicle and driver safety working group

A working group attended by the main contractors and their supply chain is arranged and chaired by Crossrail.

Freight Operators Recognition Scheme (FORS)

Contractors are required to become registered members of FORS within three months of contract award.

Corporate manslaughter seminars

Crossrail held six seminars in 2011 which focussed on the management of transport operations and the role of police and the Health and Safety Executive following a fatal road traffic collision.

Cycle safety events

In conjunction with the Metropolitan Police Service and the City of London Police, Crossrail is organising 'Exchanging Places' events. These are events where cyclists and pedestrians sit in HGV cabs allowing them to experience the view of a HGV driver.

EQUALITY, OPPORTUNITY & SOCIAL INCLUSION ▶



Our stakeholders

A significant interest in Crossrail is held by our sponsors, the Department for Transport and Transport for London. As a public sector project we are strictly bound to public sector procurement rules and financial controls and have a responsibility to our wider stakeholders, the tax paying public. Through a long period of consultation dating back to 2002, we have engaged with stakeholders on an individual basis and also via community and special interest groups. These groups can be found at the following link on our website. www.crossrail.co.uk/consultation

Accessibility to information has been important to our relationships with stakeholders, therefore project information is available in multiple languages. We can also provide Braille, large print and audio versions.

Our supply chain

Crossrail has a large and complex supply chain, particularly in respect to its construction activity and for rolling stock, depot operations and maintenance.

Procurement of principal contractors has been a fully transparent process that has followed the Public Contracts Regulations, 2009. Those unsuccessful at pre-qualification or bidder stage have the right to obtain feedback on their submissions and the right to appeal. Crossrail procured £4.25bn of construction work during the reporting period and has not been subject to any appeal process.

During the procurement process a thorough evaluation is undertaken of bidding companies and alliances, their track record and their ability to deliver through their proposed supply chains. Crossrail itself maintains a supply chain map⁴ that is used to ascertain the overall distribution of work across the programme, track risk exposure and capacity issues. This follows from best practice experience gained from the Olympic Delivery Authority.

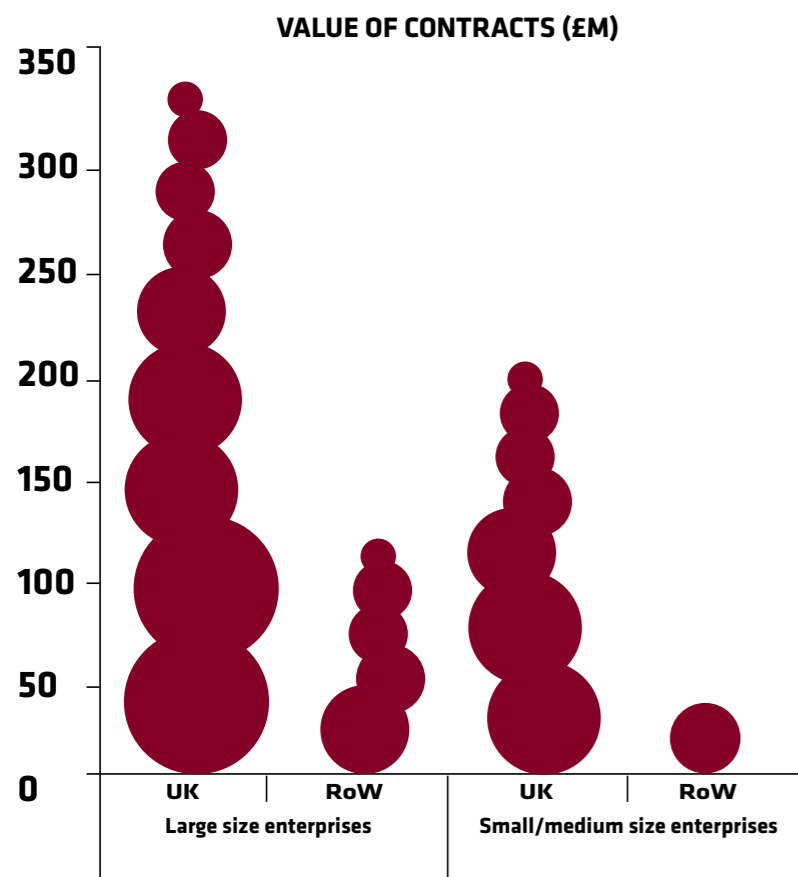
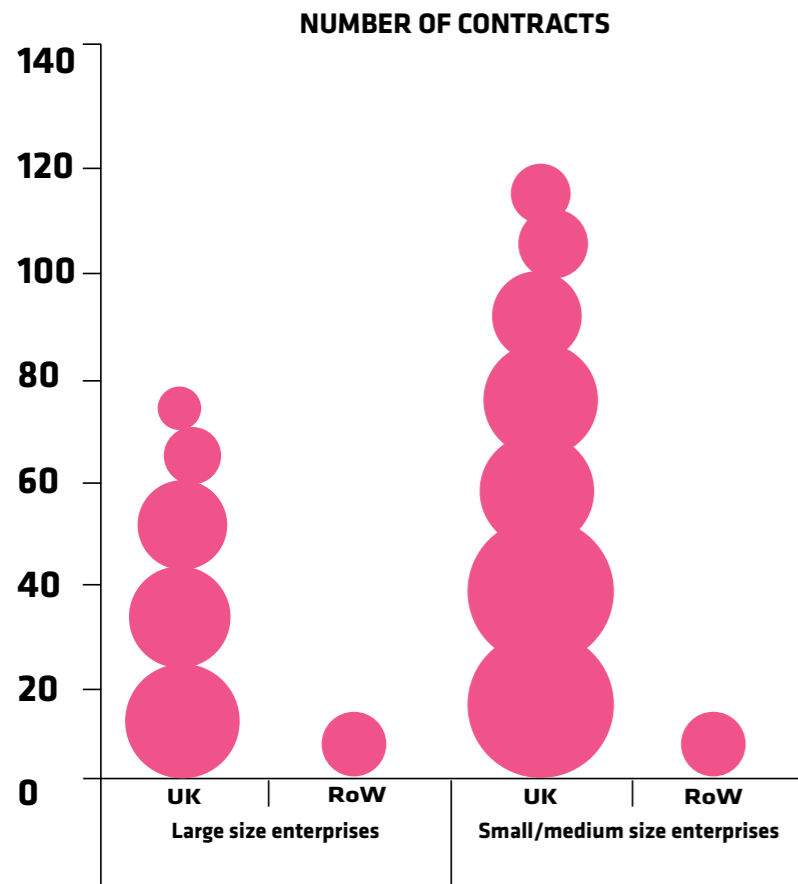
Crossrail employs a fair payment charter for suppliers. All our tier 1 contractors are required to use Project Bank Accounts (PBAs). This protects the sums owed to a subcontractor or supplier in the event of a main contractor going into insolvency. Crossrail was recently commended by the National Specialist Contractors Council for its fair payment mechanisms.

All Crossrail's tier 1 contractors are required to comply with the Ethical Trading Initiative (ETI), the principles of which are:

- ▶ **Employment is freely chosen**
- ▶ **Freedom of association and the right to collective bargaining are respected**
- ▶ **Working conditions are safe and hygienic**
- ▶ **Child labour shall not be used**
- ▶ **Living wages are paid**
- ▶ **Working hours are not excessive**
- ▶ **No discrimination is practised**
- ▶ **Regular employment is provided**
- ▶ **No harsh or inhumane treatment is allowed**

Crossrail employs a fair payment charter for suppliers

⁴The supply chain map allows us to manage risk to the procurement of Crossrail by mapping out all our contractors supply chains and ensuring that they have the capacity to fulfil Crossrail contracts



Indicator 10 - regional distribution of contract spend

By mapping the geographic distribution of contracts we can demonstrate the economic impact that the Crossrail programme is likely to have on UK business. We are also investigating how Crossrail spend filters through the supply chain.

Tier 1 contractors are predominantly located in the south east and east of England. This is to be expected as many of the tier 1 organisations are national and international organisations that are most likely to work out of the closest regional office to the project.

There are a smaller number of tier 1 contracts let to organisations based in the west Midlands and north west of England.

There are also a number of tier 1 contracts that have been awarded to organisations that are based on mainland Europe. All but one of these organisations are part of Joint Ventures with UK based businesses.

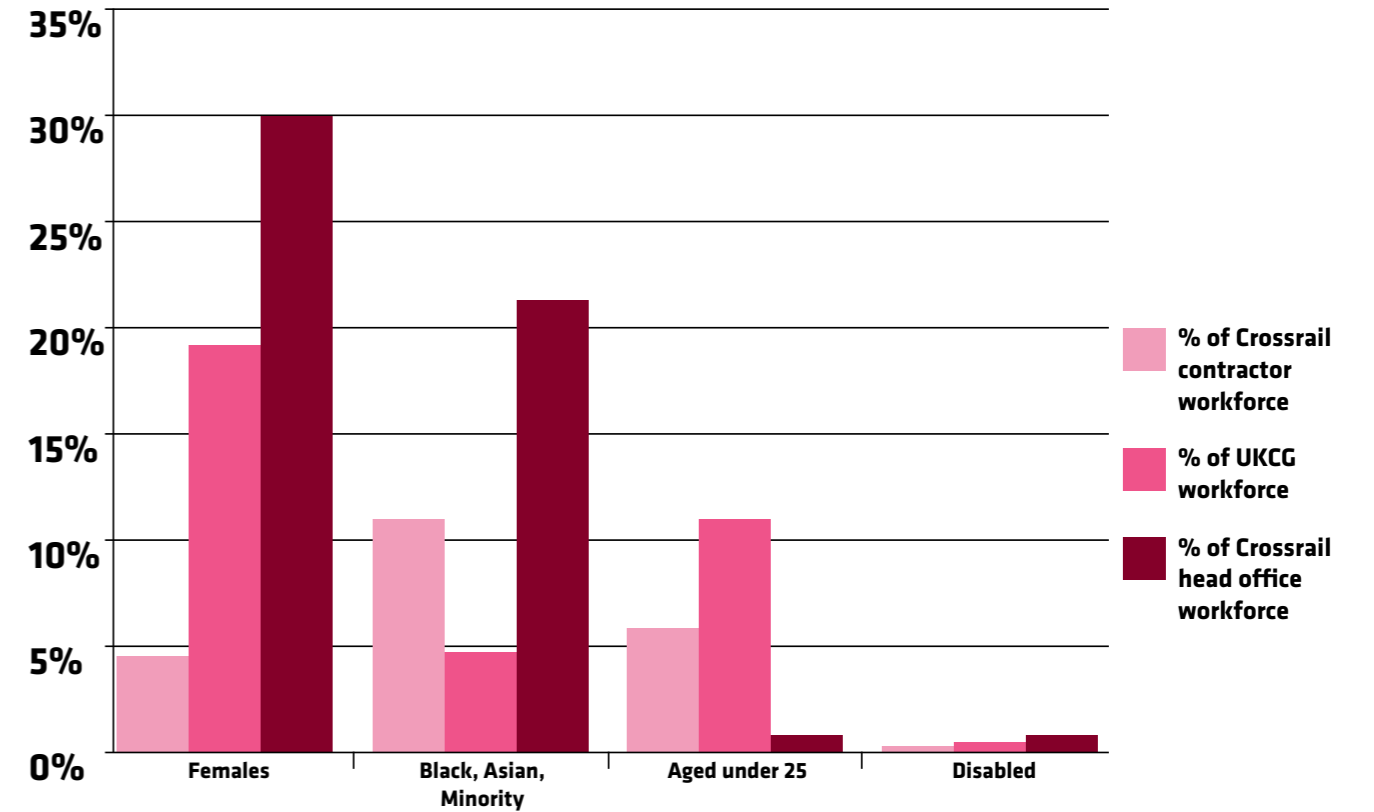
Crossrail has also been 'on the road' to promote opportunities for suppliers across the country.

Indicator 11 - tier 2 and 3 contractor distribution

Tier 2 and tier 3 contractors provide site level resources, either through provision of labour or materials. As such, they provide the bulk of the workforce and understanding their employment figures is important in evaluating the benefits that Crossrail can bring to the wider UK economy.

The distribution of tier 2 contracts shows that most of these organisations are based in the south east and east of England, but also highlights a good representation of suppliers from the north west of England. This is due to the current demand for steel on our projects and a concentration of this type of industry in that region.

DIVERSITY IN WORKFORCE



Tier 3 contracts are not featuring strongly in the data due to the current level of visibility we have of these suppliers. Current focus at this level has been where they are either higher value contracts, critical to the current programme, provide specialist skills or supply long lead items.

86% of subcontracts (by value) have been awarded to small and medium sized enterprises (SMEs) based in the UK. As we gain greater visibility of tier 2 and 3 suppliers we expect this percentage distribution to increase.

Indicator 12 - diversity spread in Crossrail's workforce

Crossrail's tier 1 contractors must ensure that their workforce is increasingly reflective of gender, ethnic, age and disability diversity. They are required to monitor their workforce composition and provide plans to optimise supplier diversity.

The graph (on page 45) outlines the mix of groups within the contractors' teams and their tier 2 supply chain. Crossrail data has been compared to data provided by the United Kingdom

Contractors Group (UKCC) in February 2011.

Thirteen leading construction contractors took part in the UKCC survey.

Crossrail's data comprises tier 1 contractors and their direct sub-contractors. As a separate comparator, the equality and diversity statistics from Crossrail's Head Office have been collated. This demonstrates that improvement is required from the tier 1 contractors in order to be more closely comparative with the rest of the construction industry.

Equality and diversity data is provided by the contractors on a quarterly basis. The majority of contractors have put in place measures to capture data during the induction process. Action plans will be developed with those contractors who are either not providing adequate data or are below the industry average.

Indicator 13 - London Living Wage audits

A total of 31 audits undertaken by tier 1 contractors and Crossrail Ltd in the last quarter of the 2011/12 financial year established whether each employee was receiving the London Living Wage. In one case where this was not happening with a cleaning company, it was identified and rectified. Tier 1 contractors are to audit labour only contractors, security, cleaning and catering companies as a matter of priority.

Contractors across the Crossrail programme ensure that all individuals working on site are aware of the London Living Wage requirement by stating the current rate as part of the induction process.

Indicator 14 - strategic labour needs and training (SLNT) activity

The apprenticeship target for 2011/2012 has been exceeded by 21% with 64 apprentices completing over 16 weeks on the programme. The target for 2012/13 is to recruit a further 200 apprentices through Crossrail's tier 1 supply chain.

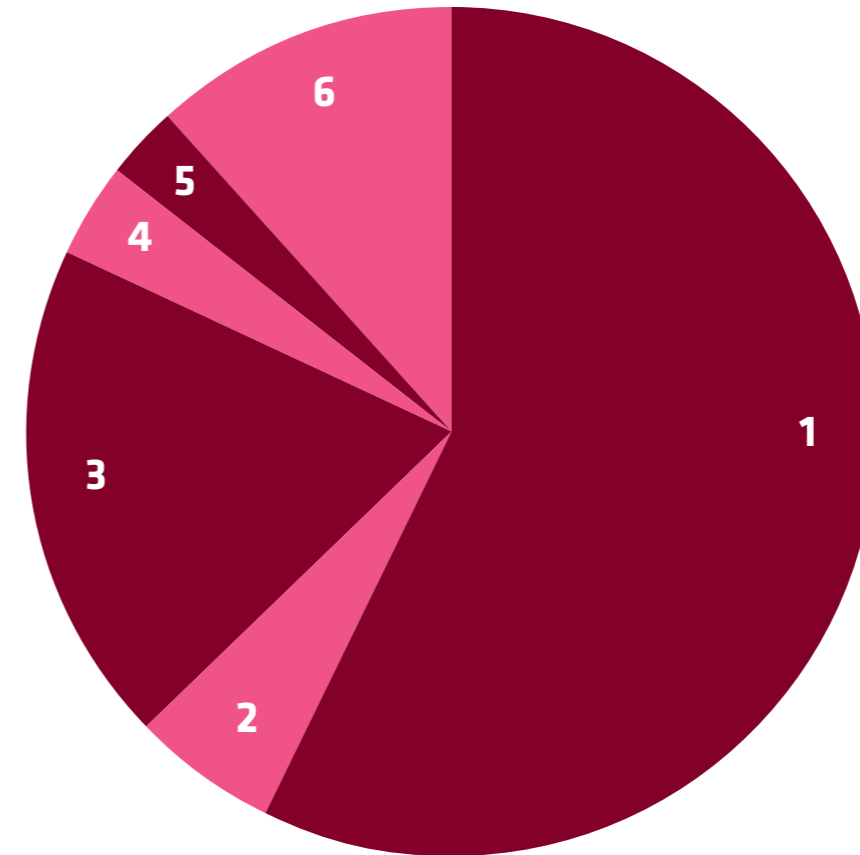
Indicator 15 - jobs brokerage service and local employment

Crossrail contractors are required to advertise jobs through Job Centre Plus 48 hours prior to sourcing applicants via other means. Contractors must provide evidence that the requirement has been cascaded through the supply chain and explain what checks are in place to ensure compliance.

A total of 250 jobs were advertised via the jobs brokerage this year, with over 50% of positions being successfully filled at a local level.

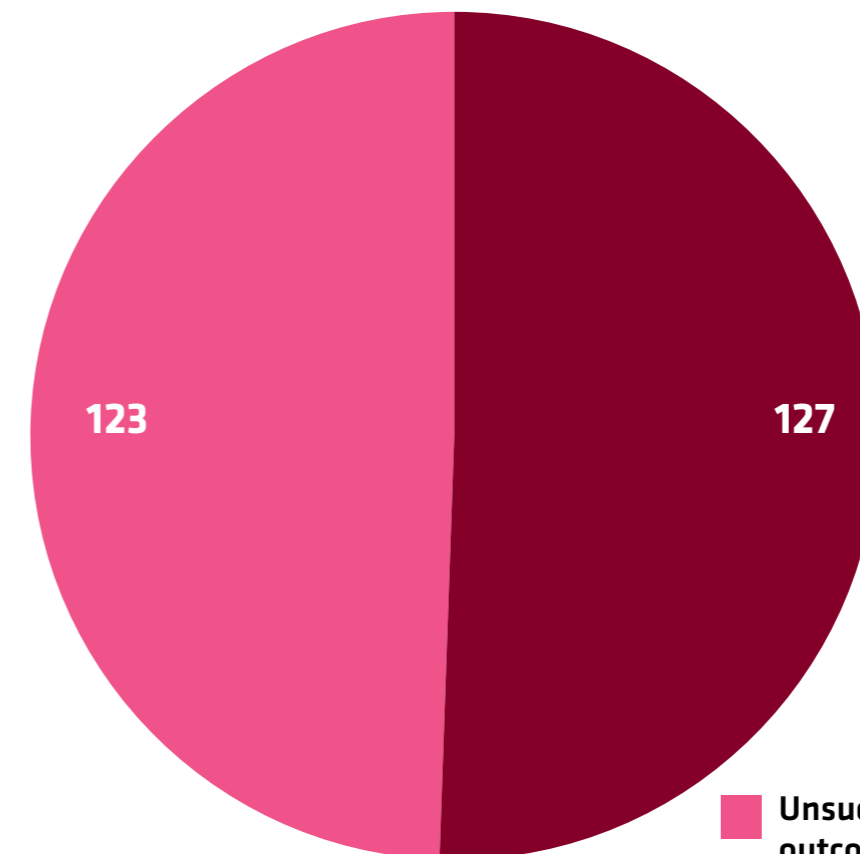
Crossrail's skills and employment team are continuing to work with tier 1 contractors and audits will be taking place throughout the year to ensure compliance.

STRATEGIC LABOUR NEEDS AND TRAINING ACTIVITY



- 1. Workforce skills-890
- 2. Apprenticeships-86
- 3. Job starts-295
- 4. Graduate training-56
- 5. Work placements-44
- 6. Work experience-180

JOBS VIA THE JOBS BROKERAGE



- Unsuccessful job outcomes
- Successful job outcomes



INCLUSIVITY

All newly built Crossrail stations will have marked routes, step-free access and simple information signage

Crossrail's inclusivity policy states the need for an inclusive approach to the planning, design, construction and operation of Crossrail.

During the construction phase our contractor's are required to produce a supplier diversity plan, diversity training plan, equality and diversity strategic plan, strategic labour needs and training plan and labour and skills gap plan.

These plans help to set out the requirements for establishing a diverse supplier base. In order to maximise the number and diversity of businesses contributing to the Crossrail project, our contractors are required to use the CompeteFor web-sourcing portal to advertise all appropriate opportunities.

Our contractors are committed to paying their employees the London Living Wage (the basic hourly wage determined by the Greater London Authority London Living Wage Unit).

Contractors are required to sign and comply with the Crossrail skills pledge and in doing so must demonstrate their commitment to the development of the skills and qualifications of their workforce, supply chain and the local community.

Crossrail Ltd's diversity figures indicate higher representation in number of females, Black, Asian, and Minority Ethnic (BAME) and disabled people employed when compared with construction industry figures. Data from further down the supply chain is often difficult

to obtain, but successful collation of this data is being constantly investigated and methods improved where possible.

When operational, all newly built Crossrail stations will have marked routes, step-free access and simple information signage to ensure that the majority of passengers can move independently through stations.

There will be level access from platform to Crossrail trains in all central London stations and at Heathrow. Including the existing stations that Crossrail will serve, there will be step-free access from street level to Crossrail platforms in both directions at 29 out of 37 stations.



TUNNELLING AND UNDERGROUND CONSTRUCTION ACADEMY

An important part of Crossrail's legacy has been the delivery of the Tunnelling and Underground Construction Academy (TUCA). The Academy has been offering training courses including NVQ 2 Tunnel Operations and NVQ 3 Supervisory / Management to Crossrail construction workers since September 2011.

TUCA is located at Aldersbrook Sidings, Ilford on the border of Newham and Redbridge.

The training centre will offer courses to at least 3,500 people in underground construction over the lifetime of the project and will be the only soft-ground tunnelling training facility in Europe.

Training will be provided in the specialist skills needed for Crossrail, as well as other tunnelling and infrastructure

projects. As an independent, not-for-profit organisation, the intention is for the facility to become a long-term provider of skills to the construction industry.

The volume of tunnelling and underground construction work taking place in the capital over the next decade is unprecedented, with the Thames tideway tunnel, National Grid and EDF electricity cable tunnels all requiring significant numbers of skilled people. Longer term, tunnelling skills will potentially be required for the proposed Crossrail 2 and High Speed 2 projects.

Training will be provided in the specialist skills needed for Crossrail



YOUNG CROSSRAIL



The Young Crossrail programme works with all primary and secondary schools within a one-mile radius of the Crossrail route. The programme aims to provide work & training opportunities for young people and promote careers in construction, engineering and railway infrastructure.

The Young Crossrail web pages contain downloadable curriculum-led resources for teachers, a range of interactive games and a careers section.

Young Crossrail STEM Ambassadors are employees of the Crossrail supply chain who volunteer their time to inspire young people in Science, Technology, Engineering and Mathematics (STEM) subjects.

In partnership with STEMNET (Science, Technology, Engineering and Mathematics Network), ambassadors have

attended talks and events at schools close to the Crossrail route, as well as further education colleges across London and the south east.

To date, Young Crossrail STEM Ambassadors have volunteered for all kinds of youth engagement activities including:

Mentoring sessions

Careers fairs

Talks

Networking events

Competition judging

Schools archaeology days

RECENT HIGHLIGHTS

► February 2012

A competition was launched for school students to propose names for the tunnel boring machines. The theme was London and the chosen names were unveiled at Crossrail's tunnelling launch event in March.

► March 2012

As part of National Science and Engineering Week 2012, Young Crossrail supported organising a presentation to students at Etchingam Church of England Primary School, on the range of careers in engineering.

► April 2012

Young Crossrail in conjunction with contractor Bam Ferrovial Kier, held a Crossrail Day at Westminster Academy for 90 students. The students learnt about various roles in engineering and took part in a range of interactive activities.



SWANLEA SCHOOL ART COMPETITION

REPORTING REQUIREMENTS ►

Crossrail construction works have been progressing since 2009. That year saw the start of demolitions to facilitate construction works at the major central station locations and construction of the station box at Canary Wharf moved ahead in earnest.

For this report, the previous financial year (2011/12) has been used to provide the basis of the quantified data for the project. However, some commentary covers the 2009/10 and 2010/11 period as this was instrumental in setting the scene of what has followed, particularly in respect to procurement of delivery partners, design and construction services, Crossrail objectives and targets.

As part of the governance and accountability to its sponsors Crossrail is already subject to a rigorous reporting regime as defined by its sponsors, Transport for London and the Department for Transport.

Our reports are required to cover, health and safety, security, environment and cost performance. Additionally the technical reports cover management and assurance, consents, compliance and change control.

This annual sustainability report is a voluntary publication that provides a single source of Crossrail's sustainability performance that may otherwise be difficult to ascertain through other reporting processes.

It is vital that we capture and evaluate the vast knowledge of those involved in delivering Crossrail, and make it available to the industry. As we continue with construction over the next few years, we will be driving contractors to meet the objectives set, so that we can deliver a sustainably and responsibly constructed transport system of which we can be proud.



ORGANISATIONAL PROFILE

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

Crossrail Ltd is a company controlled by a local authority within the meaning of Part V Local Government and Housing Act 1989. The controlling authority is Transport for London.

Nature of ownership and legal form:

Crossrail Ltd (CRL) is a company which was established in 2001. It was a 50/50 joint venture company between Transport for London (TfL) and the Department for Transport (DfT) until 5 December 2008 when it became a fully owned subsidiary of TfL.

Crossrail Ltd has been set up to deliver a new railway under central London linking Maidenhead in the west with Shenfield, Essex and Abbey Wood in the east. The delivery of Crossrail was facilitated through the passage of a Hybrid Bill, The Crossrail Act, 2008 and to safeguard future extensions and Crossrail 2.

The Crossrail organisation is made up of employees from a number of companies; totalling 1040 Full Time Equivalents (FTE's) as of March 2012. Of these 387 are direct Crossrail Ltd employees, the remainder being made up of various delivery partners consisting of consultant and project management expertise.

Crossrail maintains its head office at 25 Canada Square. It maintains two Information Centres and two site offices and occupies warehouse space for the storage of materials from geo-environmental investigations. Other site based offices are run and maintained by Crossrail's tier 1 construction contractors within which desk space is provided for Crossrail employees undertaking field based construction project management roles.

OPERATIONAL STRUCTURE AND GOVERNANCE OF CROSSRAIL

The Crossrail Board comprises:

Terry Morgan CBE, Chairman

Andrew Wolstenholme OBE, CEO

Terry Hill CBE (Non-Executive Director)

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)

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

David Allen, Finance Director

Martin Buck, Commercial Director

Valerie Todd, Talent and Resources Director

Louise Brooker-Carey, External Affairs Director

Chris Sexton, Technical Director

Mark Fell, Legal Services Director

Steve Hails, Health and Safety Director

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

Members of the sustainability committee are: Chief Executive (Andrew Wolstenholme), Non-Executive Director (Ian Brown), Programme Director (Andy Mitchell) Central Section Delivery Director (Ailie MacAdam), Technical Director (Chris Sexton), Talent and Resources Director (Valerie Todd), Procurement Director (Martin Rowark), External Affairs Director (Louise Brooker-Carey).

TOGETHER WE'RE MOVING LONDON FORWARD ▶



Christina Andersen
Art Programme Officer

Linda Miller
Project Manager
Connaught Tunnel



Calvin Mills
Apprentice Engineer

Mindra Ramkali
Team Admin
Bond Street

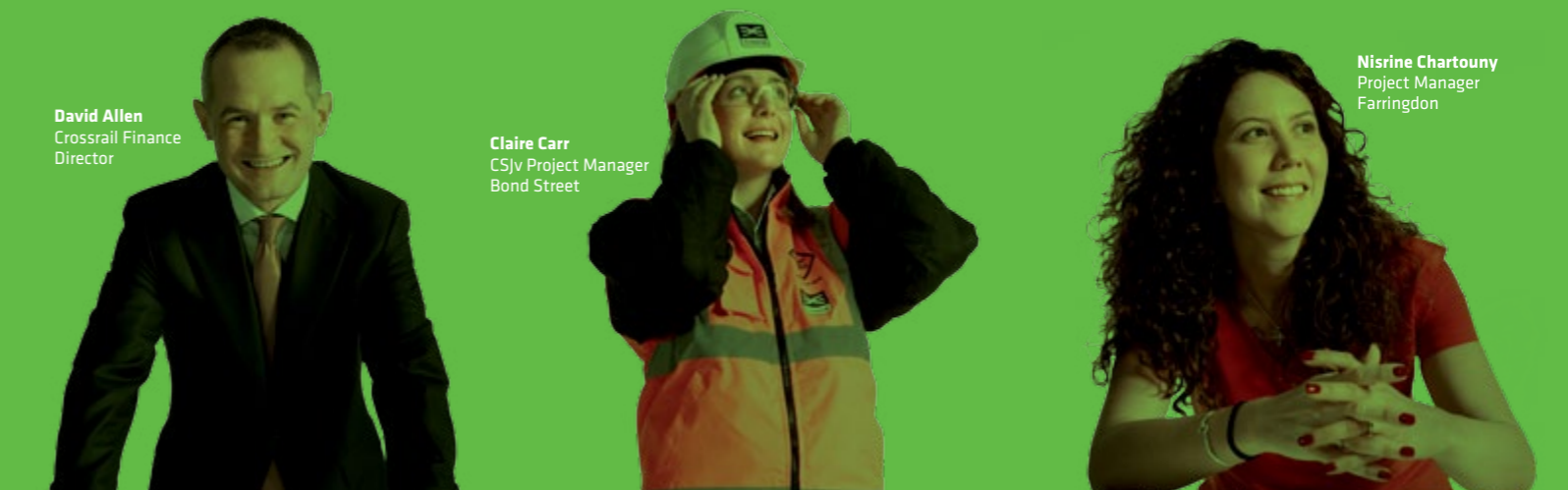
John Mead
Principal Programme
Supply Chain Manager



Jack Day
Community Investment
Co-ordinator

Mary Afonja
Community Liaison
Panel Organiser

Ray Kruhul
Tunnel Boring Machine
Mechanical Foreman



David Allen
Crossrail Finance
Director

Claire Carr
CSJv Project Manager
Bond Street

Nisrine Chartouny
Project Manager
Farringdon



www.crossrail.co.uk
MOVING LONDON FORWARD

