

TRANSPORT FOR LONDON

SAFETY, HEALTH AND ENVIRONMENT ASSURANCE COMMITTEE

SUBJECT: MANAGEMENT OF HEALTH AND SAFETY WITHIN CROSSRAIL

DATE: 17 NOVEMBER 2009

---

**1 PURPOSE AND DECISION REQUIRED**

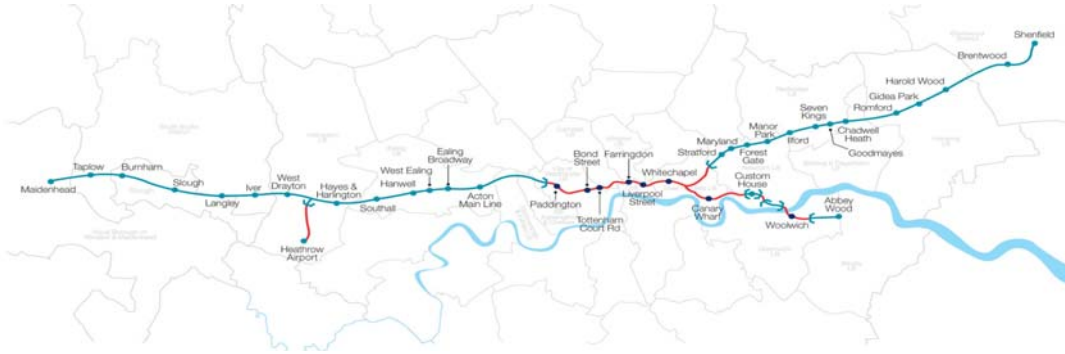
- 1.1 This Report provides an overview of the health and safety risks, opportunities and associated arrangements in place to support the Crossrail project.
- 1.2 The Committee is asked to note the report.

**2 BACKGROUND TO CROSSRAIL PROJECT**

- 2.1 The vision for Crossrail is:

*“Delivering a world-class affordable railway safely through effective partnerships”*

- 2.2 Crossrail has responsibility for the end to end delivery of the Crossrail Project and is supported by a) the Programme Partner for the overall delivery of the Project and b) the Project Delivery Partner responsible for the delivery of the Central Core Area of the Project.
- 2.3 Crossrail additionally has six Industry Partners: London Underground, Network Rail, Rail for London, Canary Wharf Group, Docklands Light Railway and Berkeley Homes. These Industry Partners have varying responsibilities, including delivery of specific sections of the Crossrail Project, the management of system and project interfaces during construction and the management, operation and maintenance of the railway, when complete.
- 2.4 From 2017 Crossrail will run 118 km from Maidenhead and Heathrow in the west, through new twin-bore 21 km tunnels under Central London out to Shenfield and Abbey Wood in the east, joining the Great Western and Great Eastern railway networks.
- 2.5 Two main techniques will be used for the tunnel construction:
  - (a) tunnel boring machines will be used to build 6m diameter tunnels for the trains to travel between stations, and
  - (b) sprayed concrete lining will be used to build the larger platform tunnels and the shorter passenger circulation tunnels at stations.



2.6 Currently, framework designers (upward of 1,500 personnel) are in the process of detailed design. A range of enabling works (averaging some 100 personnel) is also underway, ahead of main construction beginning in 2010. It is envisaged that the works at their peak will involve a weekly average of 15,000 operatives.

### 3 MAJOR HEALTH AND SAFETY RISKS AND OPPORTUNITIES

3.1 The major health and safety risks associated with the Project will change as each stage of the work migrates through design, construction, commissioning and operational phases. This report focuses predominantly on the design and construction phases of the Project, these being the areas of current focus for the Crossrail management team.

3.2 The construction works represent an area of significant safety challenge, in part because of the sheer scale and complexity of works to be undertaken and the associated operative work exposure hours. If the UK construction industry historic fatality rate is applied to the estimated work exposure hours then this would result in some seven or eight worker fatalities during the construction phase. This statistic underscores the importance of delivering a step change improvement in work practices and cultures that apply across the construction industry. These aspects are discussed in section 4 of this paper.

3.3 The top health and safety risks for Crossrail employees and stakeholders will change as the Project changes and progresses. Examples include:

- (a) on and around demolition and construction activity;
- (b) on and around the operational railway or Underground;
- (c) general hazards associated with logistics and transport;
- (d) interface with the public and residents adjacent to CRL properties and worksites, and
- (e) worksites and general office environment.

## **4 HEALTH AND SAFETY PHILOSOPHY AND APPROACH**

### **Approach**

- 4.1 Crossrail aspires to build a railway achieving zero accidents across the Project. The core drivers of this philosophy are that CRL employees and contractors from all organisations working directly for us or under the control of the Project Delivery Partner shall:
- (a) give training that allows those in positions of leadership to positively reinforce safe behaviours that prevent injuries and to coach and discuss with a view to eliminating behaviours that might contribute to injuries or incidents;
  - (b) have training programmes in place to ensure that employees are competent to understand the risk controls and behaviours needed to undertake the tasks they are doing safely, and
  - (c) commit sufficient resources to fully support the requirements of Crossrail's zero accident culture.

### **Deploying Health and Safety Best Practice**

- 4.2 In line with the company's vision of delivering a world-class affordable railway safely through effective partnerships Crossrail will continue to ensure competence from both the railway and construction industries.
- 4.3 To help inform our approach, the Health and Safety Director has visited many major UK construction sites and held talks with the Olympic Park Team, Terminal 5, CTRL and leaders in zero accident culture / behavioural work including Bovis and Balfour Beatty. Crossrail has engaged consultants ERM Risk to help install and maintain this zero accident culture.
- 4.4 Also of note, as a part of the Crossrail Annual Health and Safety Improvement Plan 2009/10, is a commitment to achieve BS OHSAS 18001 (British Standard Occupational Health and Safety Assessment Series) by March 2010. BS OHSAS 18001 is the internationally recognised assessment specification for occupational health and safety management. In addition, Principal Contractors upon appointment will be required to either hold BS OHSAS 18001 or have systems equivalent to this standard.

### **Zero Accident Culture**

- 4.5 Health and safety leadership within CRL has been identified as key to the success of the Project. Having a strong health and safety culture is recognised as a vital ingredient to achieving excellent performance and requires action by all involved. We shall be seeking appropriate measures including encouragement of near miss reporting, the use by Contractors of CRL sponsored safety climate tools and other employee satisfaction measures. These will include behavioural safety, benchmarking, recognition and other mechanisms to create, embed and sustain an effective zero based health and safety culture. All personnel engaged by CRL,

regardless of affiliation, will be responsible for ensuring they follow the principles of the CRL zero accident philosophy in all their work activities.

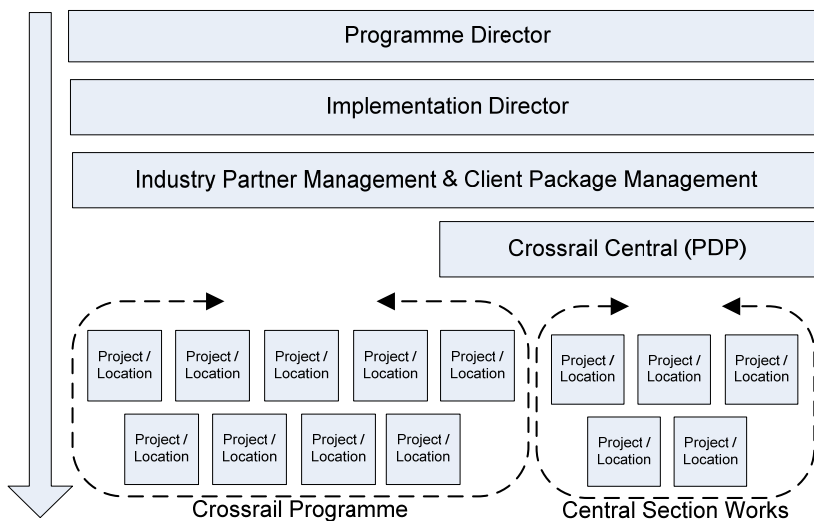
### Crossrail Health Safety and Environmental Policy

- 4.6 Crossrail's health, safety and environmental Policy builds from that of TfL and is attached at Appendix 1 and makes the following additional health and safety commitments:
- (a) aspire to achieve zero accidents, incidents and near misses across the Project;
  - (b) aim for health, safety and environmental excellence in own activities and promote exemplary health safety and environmental performance from consultants and contractors;
  - (c) provide effective health, safety and environmental leadership to the Project to promote a positive culture and engage management and workforces in continuous improvement;
  - (d) provide proactive management and assurance of health, safety and environment in design and construction;
  - (e) set standards for occupational health performance that reduce health risks and promote a healthy working environment, and
  - (f) promote a culture in which all Crossrail personnel work in accordance with these commitments.

### Health, Safety and Environmental Governance Arrangements

- 4.7 CRL's governance structure is shown in the following diagram and has been designed to meet the governance needs of the Project, going forward.

### CRL Delivery Structure



## **Procurement and Working with Industry Partners**

- 4.8 As Principal Contractors and their contractors are brought on board as the site work gathers momentum they will be required to meet the letter and spirit of our health safety and environmental Policy Statement in so far as its requirements are within their accountability and influence.
- 4.9 Crossrail has developed a Standard for use as a reference by Industry Partners and other Stakeholders (such as Utility companies) in helping set benchmarks for health and safety activity. To formalise the respective health and safety contribution of each Industry Partner and Stakeholder, a Crossrail Health Safety and Environment Agreement has been developed and agreed. The Agreement sets out a number of key health safety and environmental leadership behaviours and values that underpin our shared determination to deliver health safety and environmental excellence across the Project.
- 4.10 The intent is that the Agreement be signed by each key party (including Principal Contractors) as they become involved. The Agreement has already been signed by all parties involved in the Crossrail Project. The Agreement is supported by a monitoring regime that helps to ensure that it is embedded within organisational cultures. The Agreement is attached and reproduced in Appendix 2.

## **Health and Management System to BS OHSAS 18001**

- 4.11 The management of our health and safety risks and opportunities are documented via our health and safety management system which was developed in the period April to October 2009. This is a suite of documents on a range of topics that in combination support legislative compliance and commonality of approach to activities that present the main Project health and safety risks. In addition to developing CRL specific procedures, CRL have also adopted a number of TfL procedures and Project Delivery Partner standards to ensure consistency of approach.

## **Occupational Health**

- 4.12 CRL believes that an exemplary standard of occupational health across the Project is essential in delivering CRL's zero accident objectives and can have a positive effect on workforce health where actively managed. Our objective is to embed the concept of "fit for life, fit for work and fit for tomorrow".
- 4.13 This will be achieved by influencing every part of the works programme, so that it may be carried out as planned, whilst minimising health risks to, and enhancing the wellbeing of, people who construct, commission, use, adapt and maintain the railway. Tailored to the needs of the CRL construction programme, overall objectives are:
- (a) to ensure that the health of all CRL operatives (regardless of affiliation) are protected through sound design, planning and construction management, aiming for good health outcomes for those working on the project;

- (b) to provide a high quality business case justified, occupational health service to support the efforts of designers, contractors, project managers, and others;
- (c) to minimise ill health and enhance productivity;
- (d) to promote the well-being of all operatives and staff, and
- (e) to establish mechanisms for sharing best occupational health practice in construction to improve standards of occupational health provision to all those involved in construction activities.

### **Training of Operatives**

- 4.14 Specific health and safety training for employees will be given commensurate with the risks identified with each job role and in accordance with the training and development plans to be agreed with line managers. CRL will provide sufficient information, instruction and training so as to ensure that all CRL employees are competent in their health and safety duties and able to contribute positively to the safety of themselves and others. Line managers whose duties involve direction and supervision of employees or consultants and contractors will be given training on their health and safety responsibilities and how to discharge them. In addition, employees designated as being in key health and safety roles will be provided with training designed to ensure that they are equipped to fully undertake their roles. This training will include modules on safety leadership behavior and safety management.

### **Annual Improvement Plan**

- 4.15 The Crossrail Health and Safety Improvement Plan 2009/10 builds upon the progress made in the previous years Improvement Plan. To support the delivery of the project, a Programme Partner, Transcend, has been appointed to provide strategic programme management. Transcend will help Crossrail to deliver safely the overall programme on time, to the desired standard and within budget. Crossrail Central has been appointed as Project Delivery Partner. They will be responsible for overseeing delivery of the core central tunnelled section of the Crossrail route and will also manage the design process.
- 4.16 The Plan has been endorsed by the CRL Board in full recognition of the CRL Executive Team's responsibility to demonstrate Crossrail's commitment to a strong safety culture. The Plan will be implemented in partnership with our Programme and Delivery Partners.
- 4.17 Annual Plans for the years 2010/11 and onward will be in two parts. Part one will look back on health and safety related progress during the year concluded. Part two of each Plan will build from this base and set out the strategic/ tactical level health and safety commitments and actions for the year ahead.

## 5 **MANAGING THE DESIGN PROCESS**

### **Background**

- 5.1 Designers, from concept to detail design, are required via the Construction (Design and Management) Regulations (CDM) to identify and reduce hazards which may create significant risks for contractors, users and maintenance personnel. Framework design teams are being made aware that CRL is determined that they design for health and safety at each stage of the works and that processes and intermediate outcomes as well as final designs are optimised.

### **Construction Safety Management**

- 5.2 The appointed CDM Co-ordinators and CRL's nominated occupational health advisory support will engage with the Framework design teams to ensure health and safety is considered at all stages of the design process. The Crossrail Central CDM co-ordination team will assist in achieving a consistent approach towards communicating good practice and lessons learned and ensuring that there is effective communication where projects interface.
- 5.3 The lead designer will ensure that:
- (a) all health and safety requirements are fully incorporated in the design process;
  - (b) the general principles of prevention are in place during all stages of the works;
  - (c) a competent 'lead health and safety co-ordinator' is in place to liaise with the CDM Co-ordinator;
  - (d) there is a project specific focus within their work that embraces the most significant risks;
  - (e) the team's approach and knowledge, including sub-consultants, is developed through workshops and discussions;
  - (f) there are formal, documented systems and procedures in place to identify and evaluate design options and achieve documented reductions in health and safety risks;
  - (g) there is co-operation and participation in CRL / Crossrail Central led health and safety initiatives for designers and that information is passed on in a timely manner for residual risks, so that their mitigation may be planned by Contractors and others;
  - (h) members of the team have access to appropriate, competent health and safety management advice and support;

- (i) monitoring and reporting, including completion each Period of a health and safety “scorecard” and reporting of incidents and accidents is undertaken, and
- (j) they co-operate fully with CRL’s assurance activities.

## **6 MANAGING CONSTRUCTION RISKS**

- 6.1 Construction risks will be managed across the Crossrail / Partner / Contractor interfaces so as to ensure health, safety and environment matters are properly managed and with the risks appropriately owned. Compliance with the CDM 2007 Regulations will be robustly required by all parties. The CDM Co-ordinator will pass on any relevant health and safety information already in the clients’ possession, or that is reasonably obtainable to pass on to the designers.
- 6.2 Throughout the design stage, health and safety risks will be identified and captured via the framework designers CDM Risk Registers. These risks will then be subject of regular scrutiny and review at workshops involving design team leaders and CDM Co-ordinator functions. Designs will always consider the 'general principles of prevention', enabling the construction process to be carried out safely and without harm to health. Residual risks that cannot be eliminated will be managed, and appropriately indicated on drawings to the contractors.
- 6.3 The CDM Co-ordinator will produce the Pre-Construction Information on behalf of the client to give to the Principle Contractor at the tender stage. The Principle Contractor will develop the Pre-Construction Information into a Construction Phase Plan that will outline how he intends to manage H&S on site for the duration of the project. This will be continually reviewed and updated to allow for design changes and significant changes on site.
- 6.4 During the construction process the contractor will compile and update their risk assessments accordingly and pass these and any relevant parts of the Construction Phase Plan to contractors.

## **7 CONCLUSIONS AND NEXT STEPS**

- 7.1 By working together in compliance with the principles outlined in this paper, Crossrail and our Partners will be well placed to deliver a Project that meets our expectations for exemplary health and safety through the construction phase and into the build railway. This is the ultimate aim of the Crossrail team.

## **8 RECOMMENDATIONS**

- 8.1 The Committee is asked to NOTE the Report.

## **9 CONTACTS**

- 9.1 Contact: Lesley Calladine, Health and Safety Director, Crossrail  
Email: [Lesleycalladine@crossrail.co.uk](mailto:Lesleycalladine@crossrail.co.uk)  
Phone: 020 3229 9179



## Appendix 1: Transport for London and CRL Health Safety and Environmental Policies

Transport for London



### Health, Safety & Environment Policy

Owner: Group HSE Director Effective date: July 2004  
Custodian: Group HSE Advisor Amended: August 2008

The TfL Board, Commissioner and Managing Directors are committed to having health, safety and environmental (HSE) performance that we can be proud of.

By implementing this policy through HSE management systems, we shall:

#### Plan improvements in HSE management by:

- Complying with the spirit and the letter of HSE legislation, Approved Codes of Practice, internal HSE management systems and external HSE standards.
- Ensuring the risks to the health and safety of employees, customers, contractors and 3<sup>rd</sup> parties are systematically managed to as low as is reasonably practicable.
- Setting progressive objectives and targets to improve HSE management and performance in keeping with stakeholder expectations and Mayoral strategies.
- Taking due account of HSE risks and benefits in decision-making and as an integral part of the business planning process including procurement and major projects.
- Striving to realise environmental benefits, in addition to pollution prevention, with a focus on managing emissions and mitigating the effects of, and adapting to climate change.
- Actively supporting the Mayor in delivering the environmental strategies on air quality, ambient noise, biodiversity, energy and municipal waste.

#### Implement and operate effective risk control systems by:

- Ensuring employees have the competence and resources to discharge their personal responsibilities for HSE matters and encouraging a positive HSE culture.
- Providing employees with access to services to promote health and wellbeing.
- Providing premises, plant and equipment and systems of work that contribute to a safe and healthy work place and minimise harm to the environment.
- Securing the commitment and involvement of our employees in improving HSE management through effective communication and consultation mechanisms.
- Ensuring arrangements with contractors promote and actively support the implementation of this policy.
- Planning for foreseeable emergency conditions to ensure effective risk controls and resilience arrangements are in place.

#### Monitor HSE performance, taking corrective action where required by:

- Monitoring HSE management system indicators to improve performance
- Ensuring that root causes are identified in the investigation of incidents.
- Effective auditing arrangements are in place to provide assurance and to identify and ensure appropriate corrective action where required.

#### Undertake regular management reviews

- Regularly review the suitability and effectiveness of HSE management, including this policy, and undertake improvement action where appropriate.

This policy shall be communicated to all employees and be publicly available.

Commissioner for Transport for London

MAYOR OF LONDON

Crossrail Programme



### Health, Safety & Environment Policy

Effective Date: 1st April 2009

Crossrail Limited (CRL), which has been charged with the delivery of the Crossrail Programme for the sponsors, the Secretary of State for Transport and the Mayor of London, is a wholly owned subsidiary of Transport for London (TfL). CRL has therefore adopted the TfL Group Health, Safety and Environment (HS&E) Policy as the high level policy for HS&E leadership for the Crossrail Programme. The TfL Group HS&E Policy will be used to inform the assurance arrangements for all the Crossrail works partners and will be used to influence positively all stakeholder relationships.

In support of the TfL Group HS&E Policy, the CRL Board has made the following additional commitments on behalf of the Crossrail Project:

- To aspire to achieve zero accidents, incidents and near misses across the Programme;
- To seek to have a minimal impact on the environment through our construction activities by ensuring operational controls are robust so as to promote the principles of pollution prevention;
- To aim for HS&E excellence in our own activities and promote exemplary HS&E performance from consultants and contractors;
- To provide effective HS&E leadership on the Programme in order to promote a positive HS&E culture and engage management and workforces in continuous improvement;
- To provide proactive management and assurance of HS&E in design and construction, including the requirements of the Crossrail Act and Environmental Minimum Requirements and all other Crossrail Commitments;
- To set standards for Occupational Health performance that reduce health risks and promote a healthy working environment;
- To promote a culture in which all Crossrail personnel work in accordance with these commitments.

HS&E performance will be regularly monitored and reported to the CRL Executive Committee and the CRL Board.

The TfL HS&E Policy and this Crossrail Policy Statement are to be communicated to all persons working for or on behalf of Crossrail including works and industry partners, contractors, sub-contractors and other stakeholders.

This policy shall be made available to the public via display at all project locations and via the Crossrail website.

Chief Executive of Crossrail Limited

## Appendix 2: Health, Safety and Environment Agreement



### HEALTH SAFETY & ENVIRONMENT AGREEMENT

This agreement signed by the principal parties involved in delivering Crossrail sets out a number of key health, safety and environmental leadership behaviours and values that underpin our shared determination to work together to deliver health, safety and environmental excellence within the Crossrail programme.

We will commit to:

1. **Policies:** Work to meet the spirit and intent of the Crossrail Health, Safety and Environment Policy Statement
2. **Commitments:** Demonstrate our personal commitment to health, safety and environmental excellence, so people on works under our control and influence go home safely
3. **Best Practice:** Innovate, share and adopt health, safety and environmental best practice so that together we may deliver a world class railway
4. **Health:** Promote occupational health and wellbeing as key areas
5. **Arrangements:** Work to the framework set out within the Crossrail publication "Health Safety Environment: Contractors and Industry Partners".

We will regularly monitor progress against the above commitments and embed them within our organisational cultures. The extent of our success will be made publicly available.