

Crossrail – Delivering an Innovative Major Project

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Introduction

Project Development Innovation

Project Delivery Innovation

The legacy



Introduction



Crossrail – a high capacity metro railway





£19 billion cost

£42 billion net benefit

118km length 41 (10 new) stations

24 trains per hour

200m journeys per year

Crossrail History

Crossrail

Central London Rail Study Jan 1989

First Crossrail Bill 1991 to 1994

London East-West Study Dec 2000

Cross London Rail Links Jun 2001

Hybrid Bill Deposit Feb 2005

Royal Assent Jul 2008

Construction start Jan 2009

Tunnelling complete June 2015

Central Section opened May 2022

Full timetable introduced May 2023



Crossrail Act 2008

CHAPTER 18

CONTENTS

Washe

- Construction and maintenance of scheduled works
- 2 Works: further and supplementary provisions
- 3 Highways
- 4 Overhead lines

Land

- 5 Temporary possession and use
- 6 Acquisition of land within limits shown on deposited plans
- 7 Acquisition of land not subject to the power under section 6(1)
- 8 Extinguishment of private rights of way
- 9 Extinguishment of rights of statutory undertakers etc.

Planning

- 10 Planning: general
- 11 Permitted development: time limit
- 12 Fees for planning applications
- 13 Power to disapply section 10(1)
- 14 EIA regulations: replacement development
- 15 Extension of permitted development rights



Project Development Innovation



Benefits of the project



Traditional Cost Benefit Analysis

Faster and more direct journeys – time saving

Increased capacity – relieving crowding

Mode shift (and consequent reduction in carbon)

Wider Benefits

Agglomeration

Development

Overall BCR 1.97 in 2008

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Option Development 2001-2003



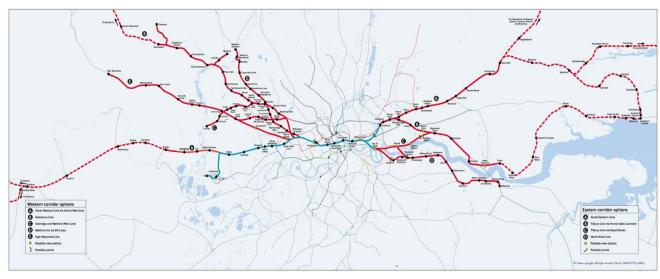
Background

- Policy consulted through Mayor's Transport Strategy
- Project objectives set by Govt and Mayor
- Central London route considered fixed

Processes

- Long list sift appraisal process
- Stakeholder consultation
- Preferred route





Political decision making





Funding Model



Local Government

TfL direct funding £1.9bn

Funding for which TfL is responsible £5.25bn

Business rate supplement, borrowing and direct contribution £4.1bn

Community infrastructure levy £300m

Sale of surplus land and property £500m

Developer contributions £300m

Additional funding was required in 2018/19 to complete the project

Central Government

Direct Grants

Private Sector Funding



£14.8bn

DfT direct funding £4.8bn

Funding for which DfT is responsible £480m

City of London committed funding £250m

Heathrow airport Limited £70m*

Network Rail financing for work on the existing network £2.3bn

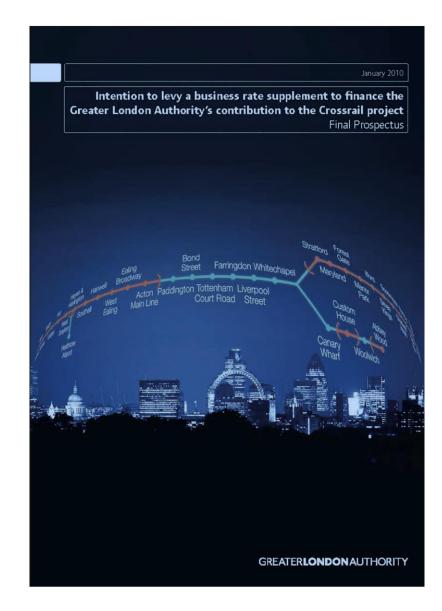
Voluntary funding for London businesses £100m



Business Rate Supplement

Crossrail INTERNATIONAL

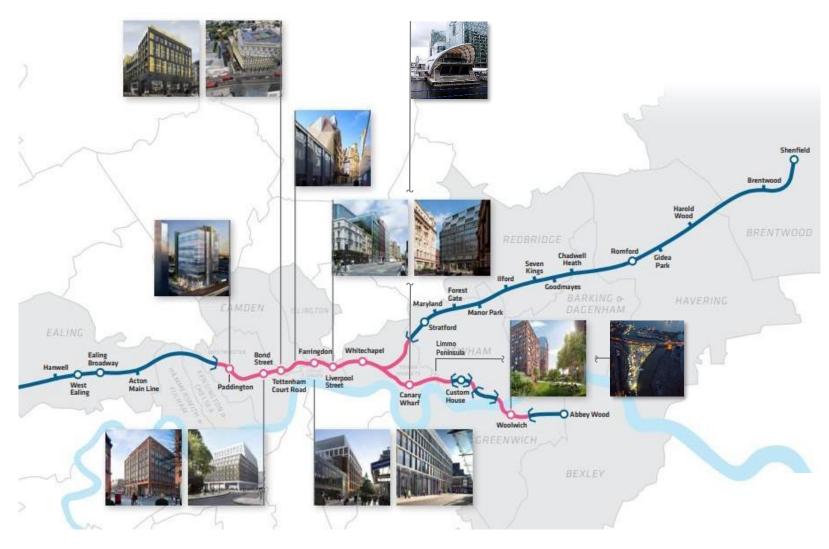
- Enabled by Legislation in 2008
- Unlocked the overall funding –
 supported by London business groups
- Could run until 2041
- 2p additional levy on businesses with over £75,000 rateable value



Crossrail oversite developments







Overall property impact

By 2021

Housing

Development of 90,599 new homes Property uplift

19% uplift in property values Property value: £10.6bn uplift in

property values

4.44mn sq m of commercial space

By 2026

Housing:

Development of 180,000 new homes Rejuvenation

New residential and workspace opportunities Property value

£20.1bn total uplift in propertyvalues within 1 km of a station



GVA

2012 - 2026

Crossrail Property Impact

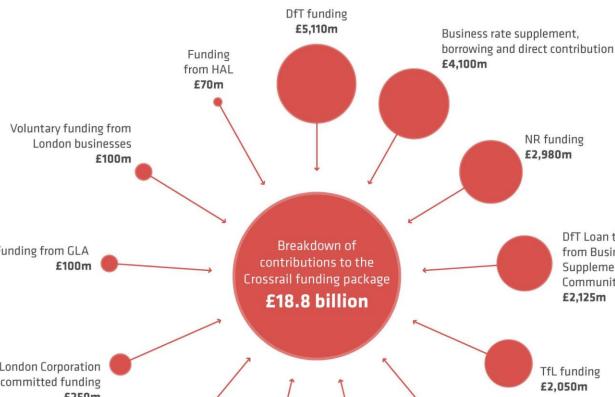
& Regeneration Study

Final funding totals



Business Rate Supplement UK taxpayer **Network Rail (RAB) London Council Tax payer Developers (DAs and CIL)** Loan against revenue **Voluntary business funding**

33% 27.2% **16%** 6% 4% 2.2%

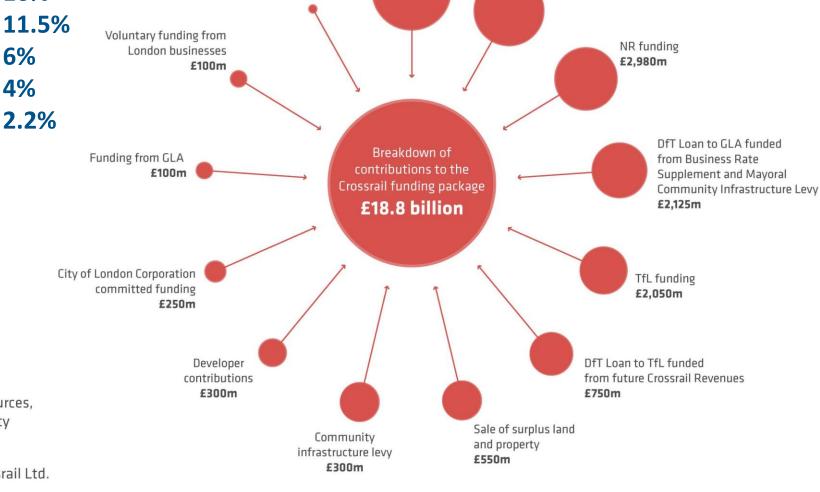


Key

• GLA = Greater London Authority DfT = Department for Transport TfL = Transport for London NR = Network Rail HAL = Heathrow Airport Limited

• Precise levels of funding from some sources, such as sale of surplus land and property may be subject to change.

Source: Transport for London (TfL), Crossrail Ltd.





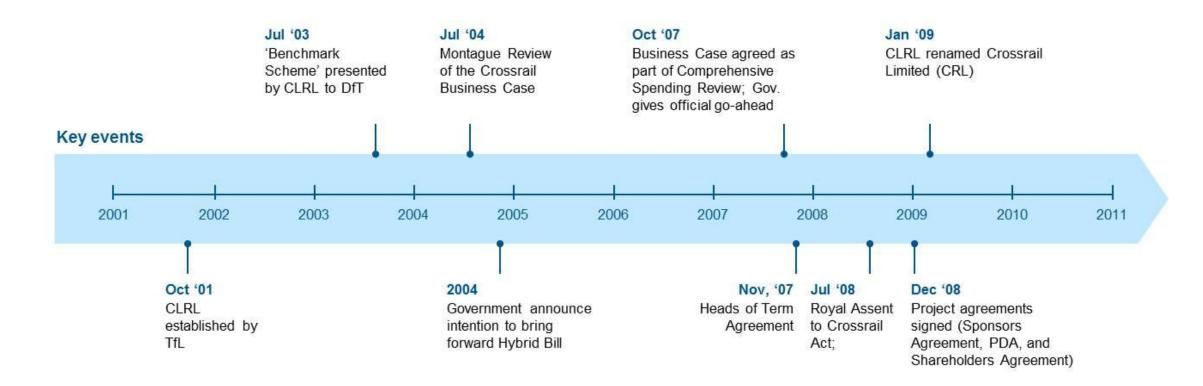
Project Delivery Innovation



Project Governance



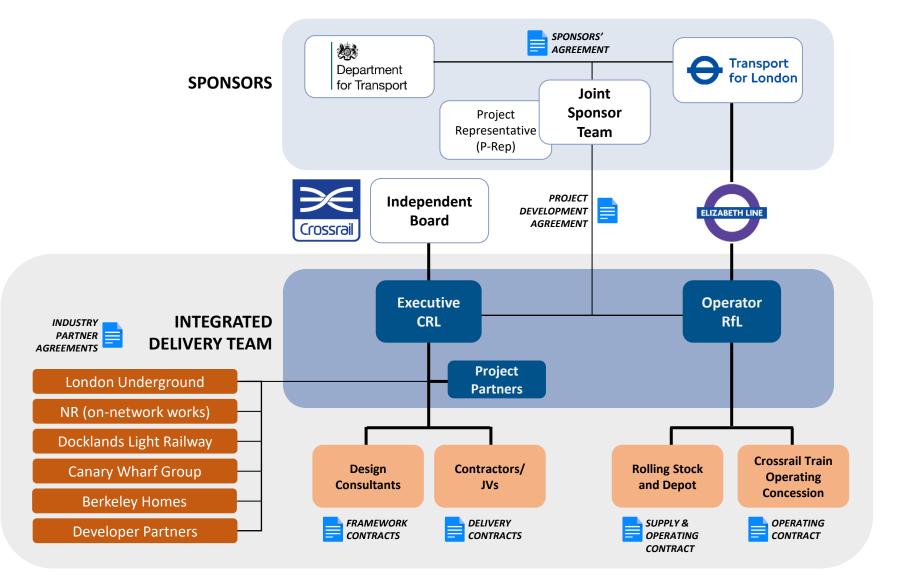
- 2 Sponsors DfT and TfL
- Funding envelope of £14.8bn
- Need for confidence in the delivery organisation



Governance and Organisation







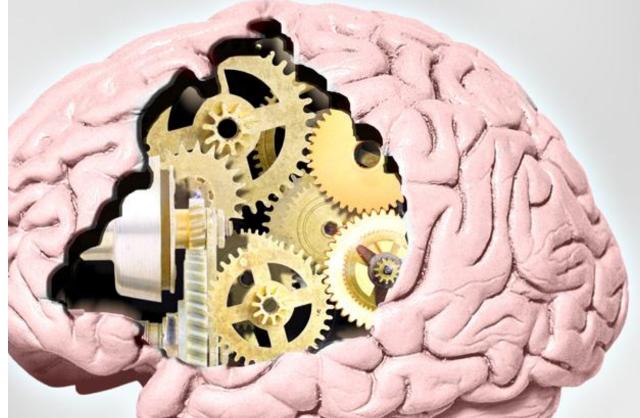
CROSSRAIL Ltd (SPV)

Innovate18



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Crossrail developed the first strategy for managing innovation on a temporary project by fostering collaboration within the supply chain



Crossrail innovation	World first?
Ultra-low carbon concrete for major structures	✓
Light-weight aggregate from London clay	√
Tunnel Energy Segments	\checkmark
Fibre-optic monitoring of SCL	√
HD Drones for site inspections	√

Innovate18



- Jointly funded Tier 1 Contractors £25,000 contribution, matched by Crossrail Limited
- 400 innovations reviewed in first year
- 180 of these were developed and published
- 30 implemented
- Innovations Archive passed to Knowledge Transfer Network I3P (Infrastructure Industry Innovation Portal)





Performance Assurance – Objectives



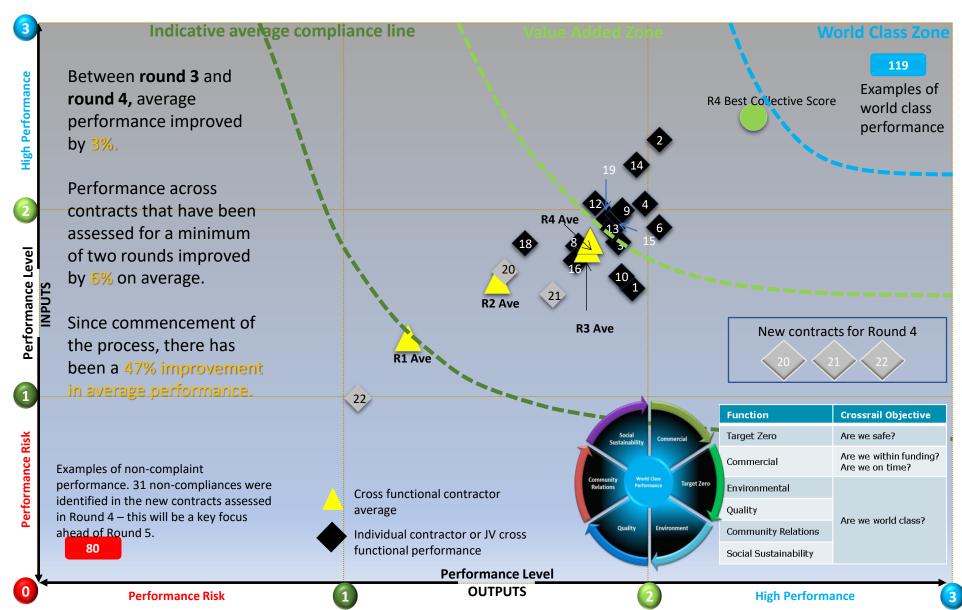
- Support contractor performance to enable world class levels to be achieved
- Provide an objective demonstration of our contractors' performance
- Facilitate collaboration, innovation and sharing of best practice between Crossrail's functions, delivery teams and key contractors
- Sustain the commitment of our contractors to Crossrail through creating wider industry opportunity

To move industry forwards through demonstrating world class performance levels that set the bar for other major projects to follow and in doing so have differentiated those responsible



Round Four Results – By Contractor





Lorry Driver Training

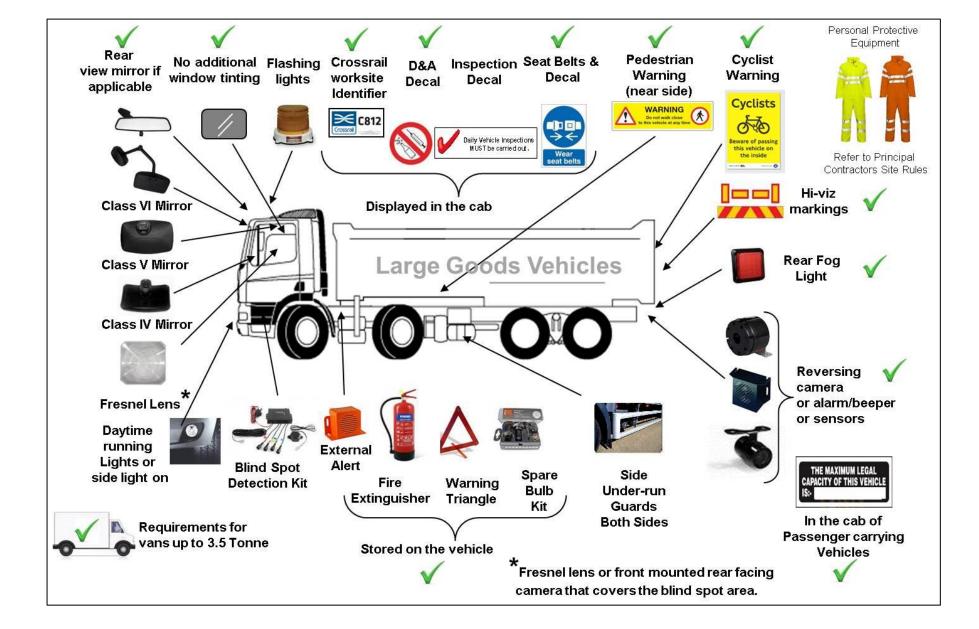






- Introduced in November 2009
- Driver CPC accredited 'award winning' training course
- Over 9200 frequent drivers trained to date
- Over 650 courses delivered to date
- 2 courses run every week with 17 drivers and up to 3 Stakeholder observers attending each course
- Infrequent drivers must read the Driver Information Pack

Vehicles – HGVs and Vans







The legacy





Skills and Capacity Building







- 30,000 people employed, 11,000 at peak of construction
- 1000 apprentices
- Over 5000 local and unemployed people

Crossrail Learning Legacy





The collation, sharing and dissemination of **good practice**, **lessons learned** and **innovation** from major construction projects aimed at raising the bar in the industry and showcasing UK PLC.

Website



HIGHEST RATED DOCUMENTS



*** (5 votes, average: 5.00 out of 5)

The Crossrail innovation programme, at the time of its inception in 2012, focussed on generating innovation through s...

Read Full Document

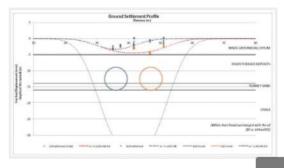


WORKFLOWS FOR MANAGING LAND AND PROPERTY INFORMATION

**** (4 votes, average: 5.00 out of 5)

Crossrail needed to acquire and manage large areas of land during the Crossrail project, the purpose being to constru...

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GROUND SETTLEMENT BEHAVIOUR IN CHALL DUE TO TBM EXCAVATIONS

***** (3 votes, average: 5.00 out of 5)

In Crossrail project contract C310, two new tunnels – the Thames Tunnel (westbound and eastbound) will be construct...

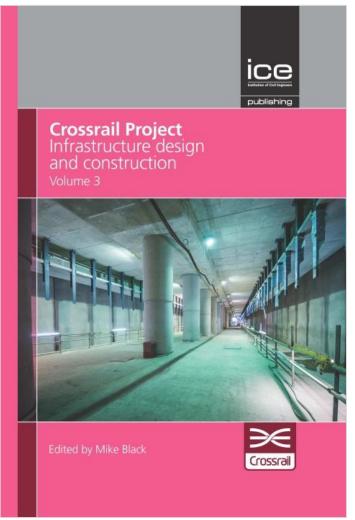
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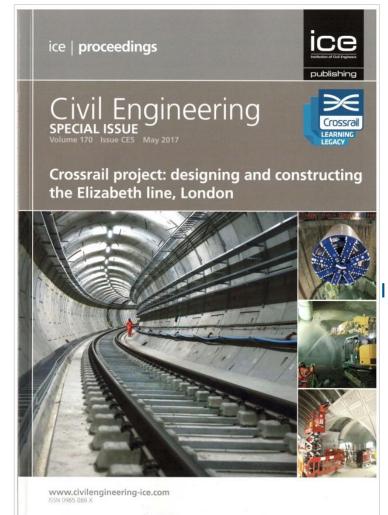
Information dissemination













Crossrail International (CI) is a strategic advisory practice, wholly owned by the UK government's Department for Transport (DfT), providing advice globally to government ministries, municipal agencies and public sector client organisations for the development, delivery and operation of complex rail portfolios, programmes and projects.



Department for Transport







US\$7bn (£5.8bn)

High Speed 1 (HS1) **Channel Tunnel Rail Link** 11 years (1996-2007)

US\$5bn (£4.2bn)

Heathrow Airport Terminal 5 6 years (2002-2008) US\$11bn (£8.8bn)

London 2012 **Summer Olympics** 6 years (2006-2012) US\$8.9bn (£7bn)

Thameslink **Programme** 11 years (2009-2020)

US\$24bn (£19bn)

Elizabeth Line (Crossrail) 14 years (2009-2023) US\$6.2bn (£4.9bn)

Thames Tideway Scheme 9 years (2016-2025)

US\$63bn (£50bn) | 30

High Speed 2 (HS2) Phase 1 and 2a 18 years (2017-2034)



Heathrow



ThamesLink/





HS₂

Delivering the UK's megaprojects

Elizabeth line - Benefits realised



- Predicted 200,000 journeys in a day regularly exceeded
- 4.7 million journeys per week
- 38% of journeys are new or new to public transport
- 1/6 of all journeys on the National Rail network used the line in 2022/23
- Liverpool Street and Paddington leapfrog Waterloo to become busiest stations
- Liverpool St has 80m entries/exits per year
- Tottenham Court Road is the 7th busiest National Rail station despite only being served by one National Rail service
- Revenue above forecast









Terminals 2 & 5 ⊕ →

Trains to Terminals 4 & 5 ⊕ →





crossrail-international.co.uk







