

◀ Governance and Decision Making on Crossrail

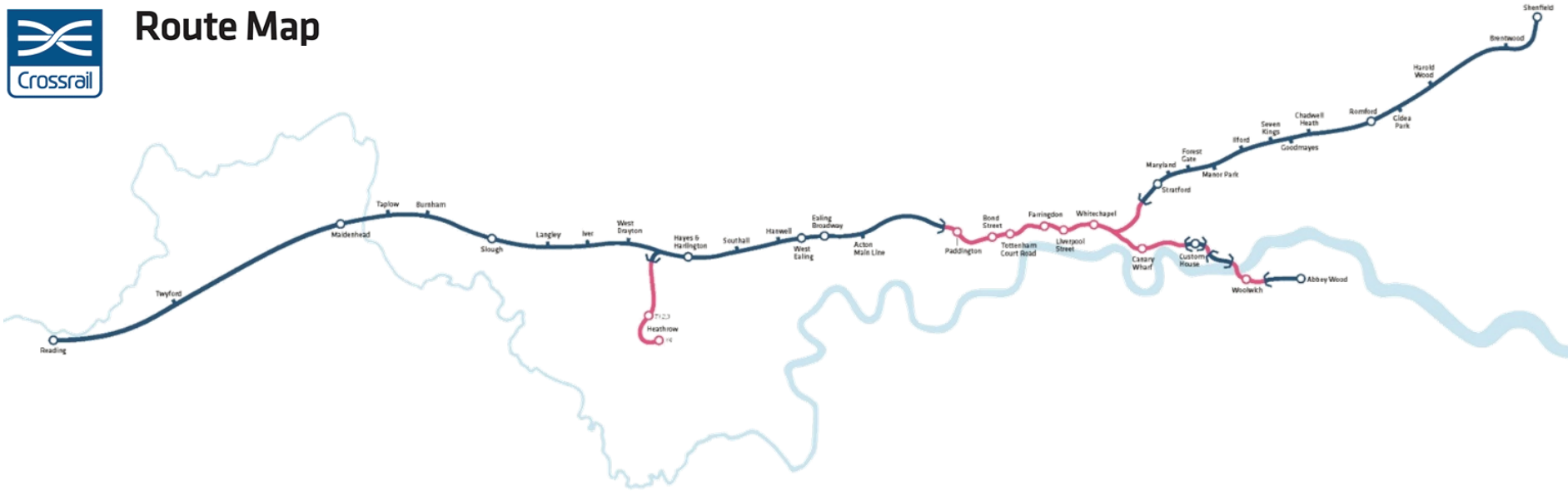
- ◀ Walter Macharg
- ◀ Head of Change Control

Programme Overview

Crossrail Route



Route Map



10%

10% increase in London's rail capacity with up to 72,000 passengers per hour

100km

The route will run over 100km, including through 42km of new tunnels under London

40

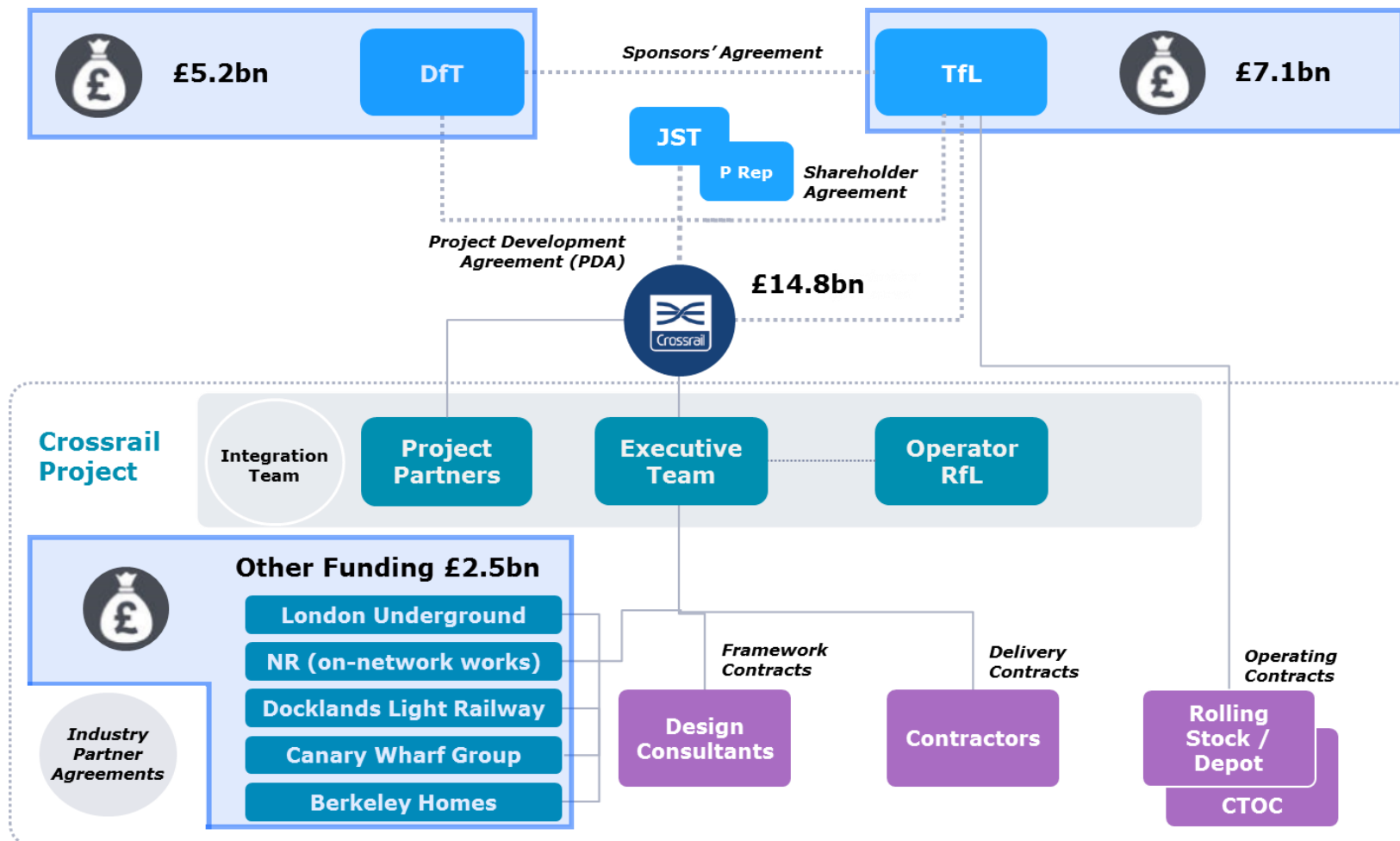
Crossrail will link 40 stations, including 10 new stations

£42bn

Crossrail will add an estimated £42bn to the economy of the UK.

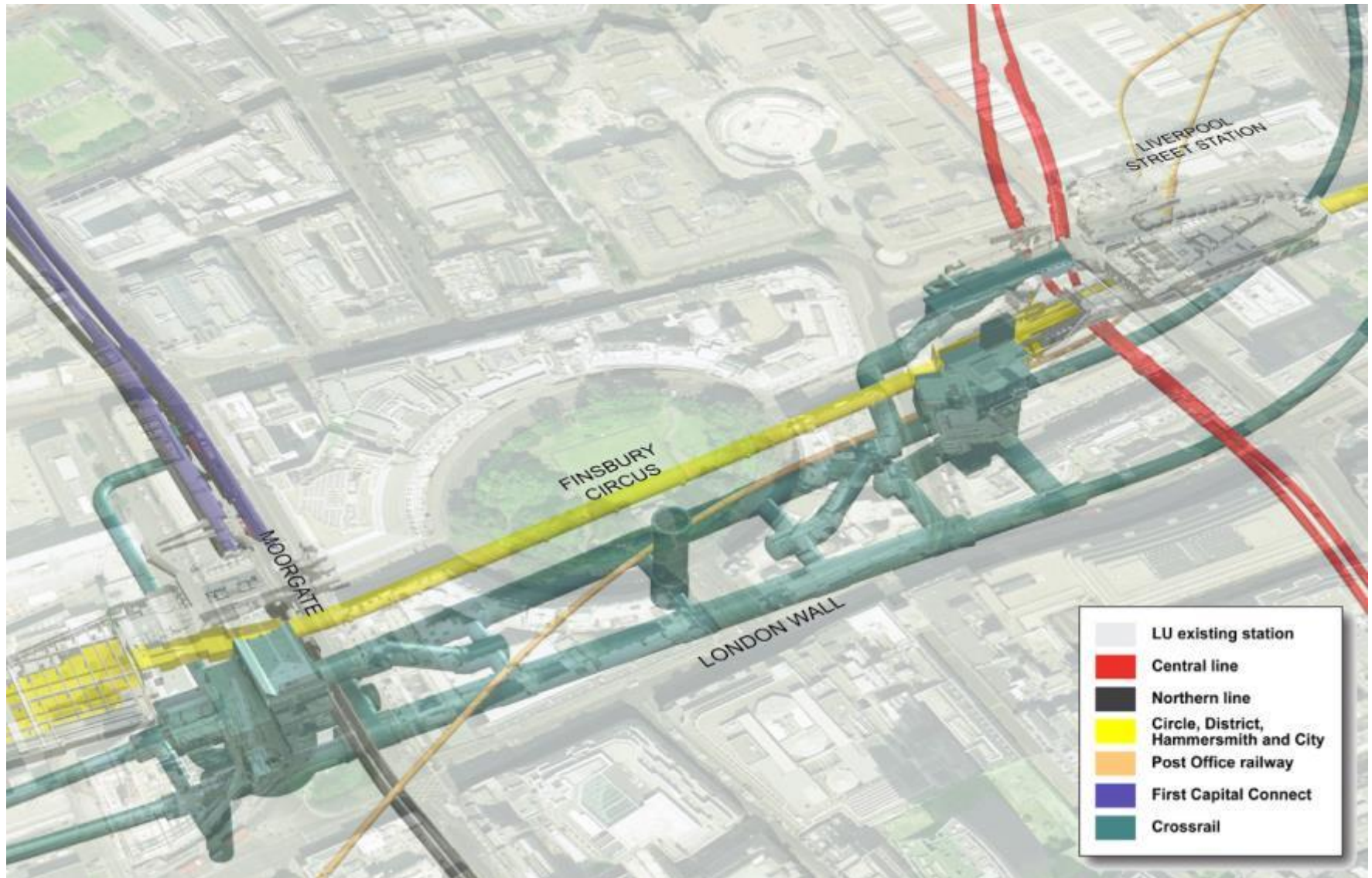
Programme Overview

Organisation and Funding



Programme Overview

Scale and complexity

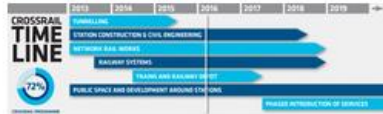




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12 Learning Legacy Themes



PROJECT AND PROGRAMME MANAGEMENT



PROCUREMENT



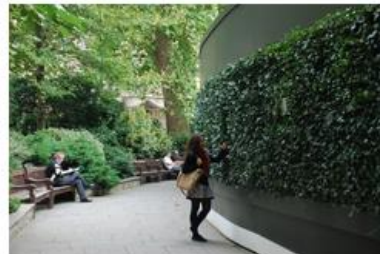
AUTHORISATION AND CONSENTS



LAND AND PROPERTY



HEALTH AND SAFETY



ENVIRONMENT



ENGINEERING



OPERATIONS



TALENT AND RESOURCES



EXTERNAL AFFAIRS



INNOVATION



INFORMATION MANAGEMENT AND TECHNOLOGY

Defining Governance



'Corporate governance involves a set of relationships between a company's management, its board, its shareholders and other stakeholders. Corporate governance also provides the structure through which the objectives of the company are set, and the means of attaining those objectives and monitoring performance are determined'

Organisation for Economic Co-operation and Development
OECD Principles of Corporate Governance 2004
www.oecd.org



As quoted in:

Directing Change A guide to governance of project management

“...The ability to make effective decisions quickly...”

1. Framework

- ▶ Repeatable
- ▶ Reproducible

2. People

- ▶ Provide the evidence
- ▶ Provide the culture & environment
- ▶ ...to make AND implement the decision!

WHY is it important?

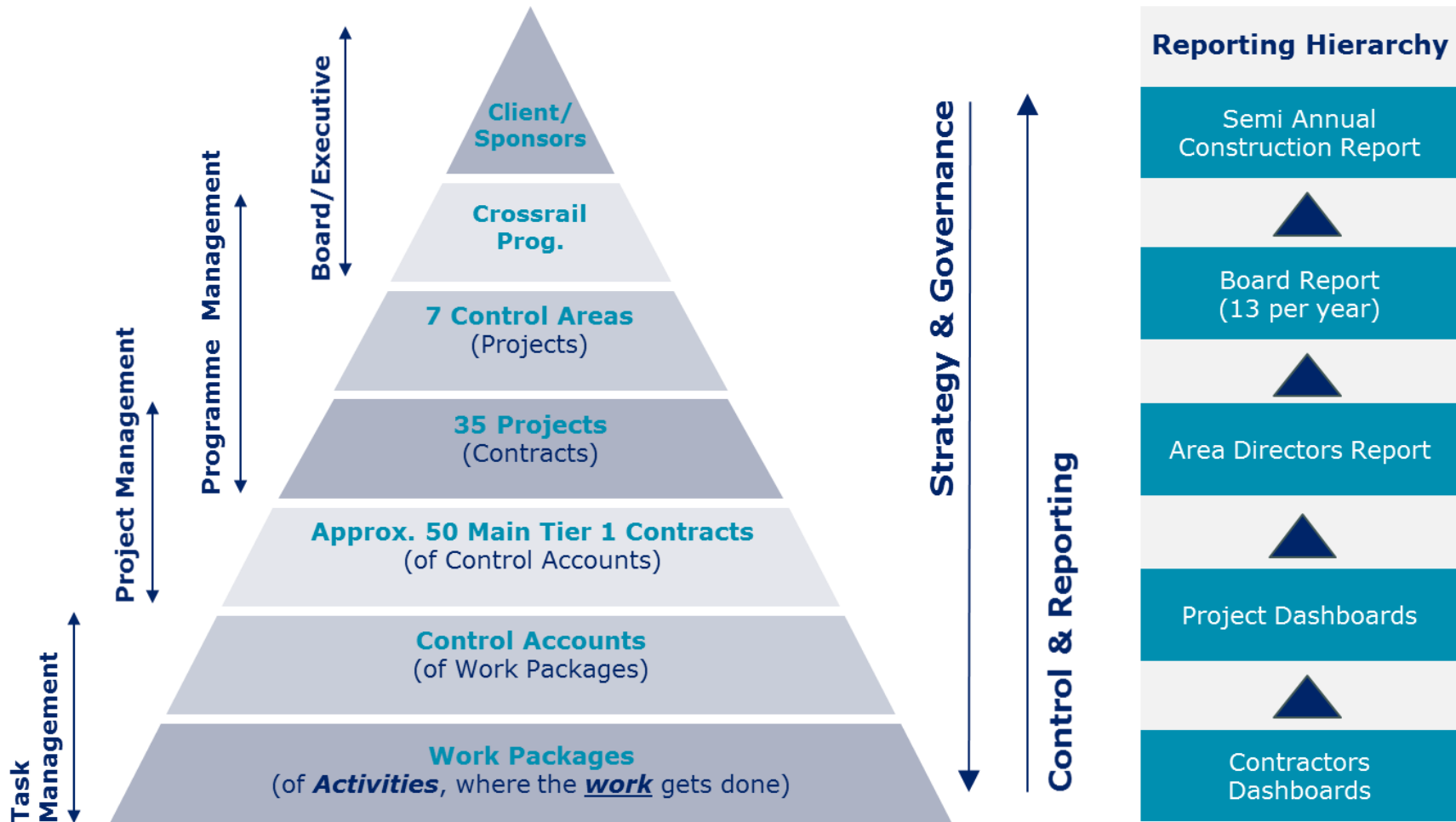


“...it’s better to make a decision and get it wrong that to not make a decision at all...”

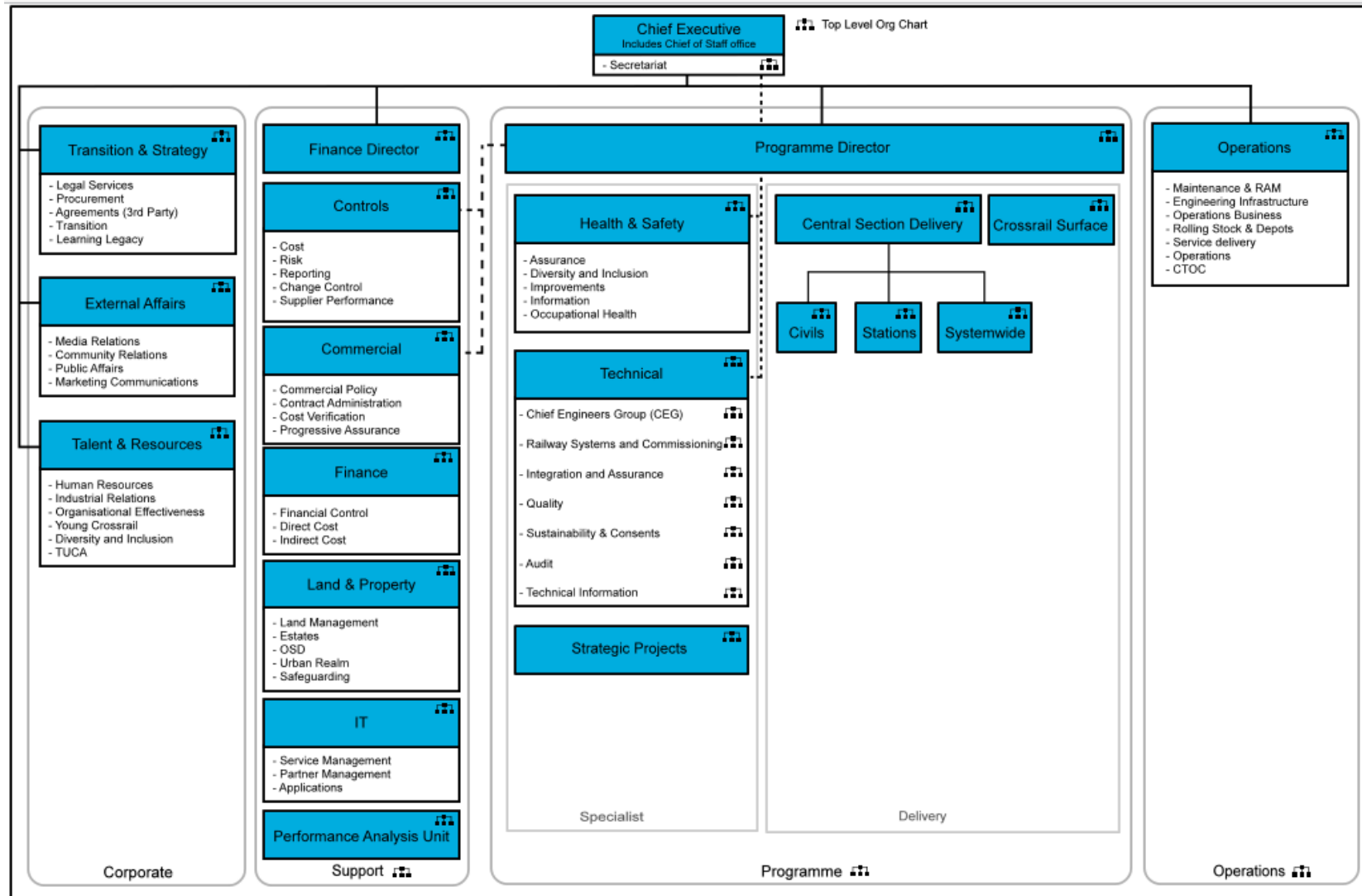
D C O M

X	X	X	X	High Performance
O	X	X	X	Chaos
X	O	X	X	Failure/Low Quality
X	X	O	X	Frustration
X	X	X	O	Lethargy

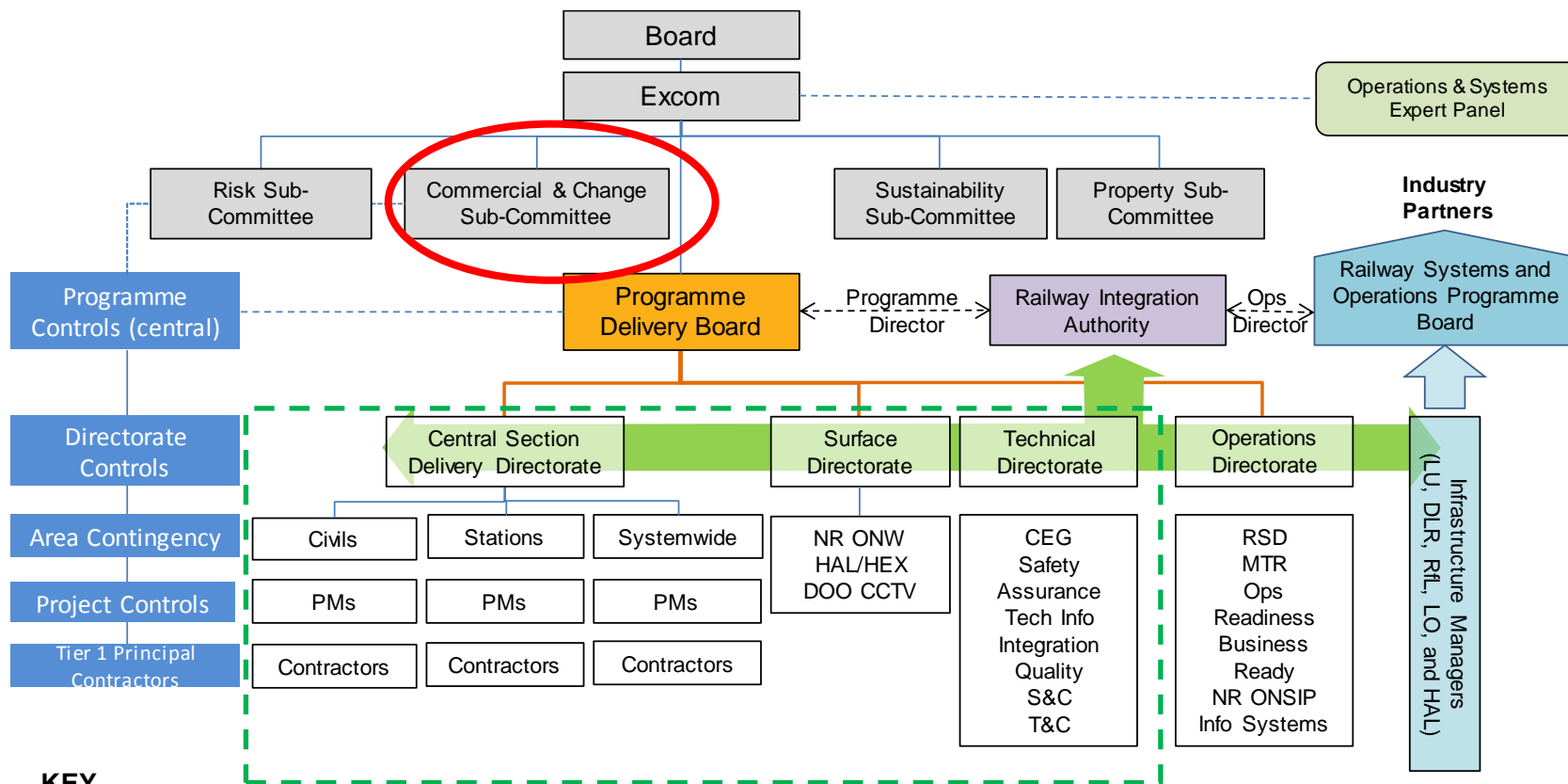
Our Hierarchy



Crossrail Organisation



Governance Framework



KEY

Programme Delivery Board	Delivery on track? Safe, Time, Budget, World-Class and Effective	Programme Directorate
Railway Integration Authority	Handover of end-to-end railway on track? Safe, performs, operable, maintainable and world-class	
Railway Systems and Operations Programme Board	Crossrail operations post-opening with our industry partners on track? Schedule integration	

Implementing clear Governance



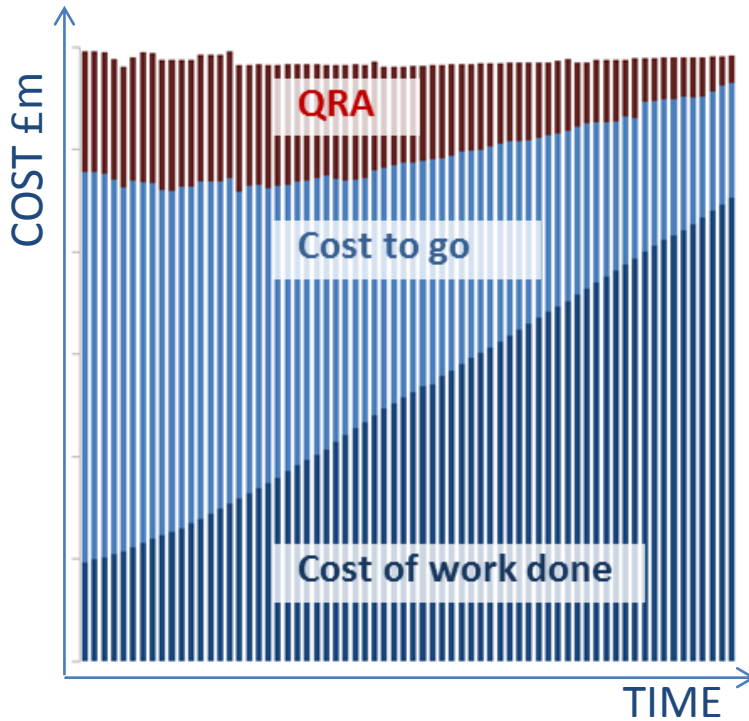
Governance attribute	Process
Terms of reference	<ul style="list-style-type: none">■ CPFR as a response to the PDA■ Development of the scope book
Delegated authority	<ul style="list-style-type: none">■ Segregation of budget and scope■ Risk and associated authority cascaded
Effective controls	<ul style="list-style-type: none">■ Integrated change authority and commitment process■ Forecasting outturn position relative to intervention points■ Integrated review panels
Progressive assurance	<ul style="list-style-type: none">■ Management information for programme challenge■ Integrated audit process as part of programme controls
Embedding	<ul style="list-style-type: none">■ Tools and systems■ Full electronic workflow■ Processes, procedures and training

Streamlined process to enable continued delivery and discharging of CPFR obligations

Cost baseline budget



AFCDC



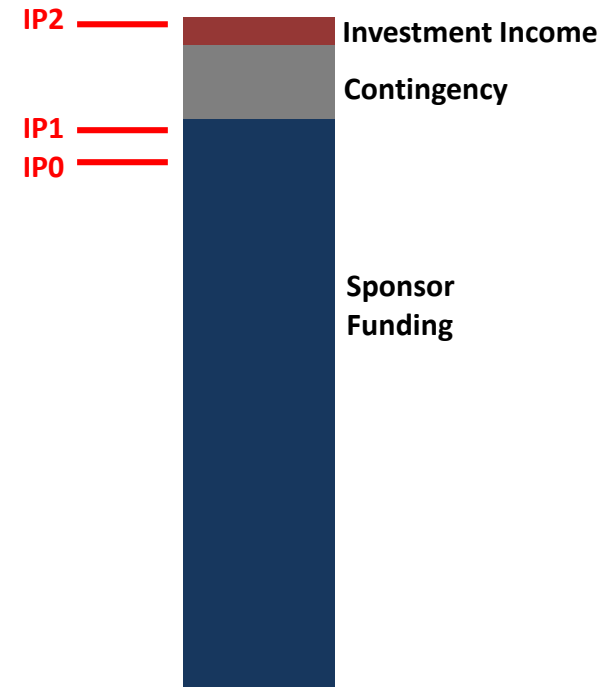
- Comprehensive risk register
- Range of confidence levels

CONTROL BUDGET



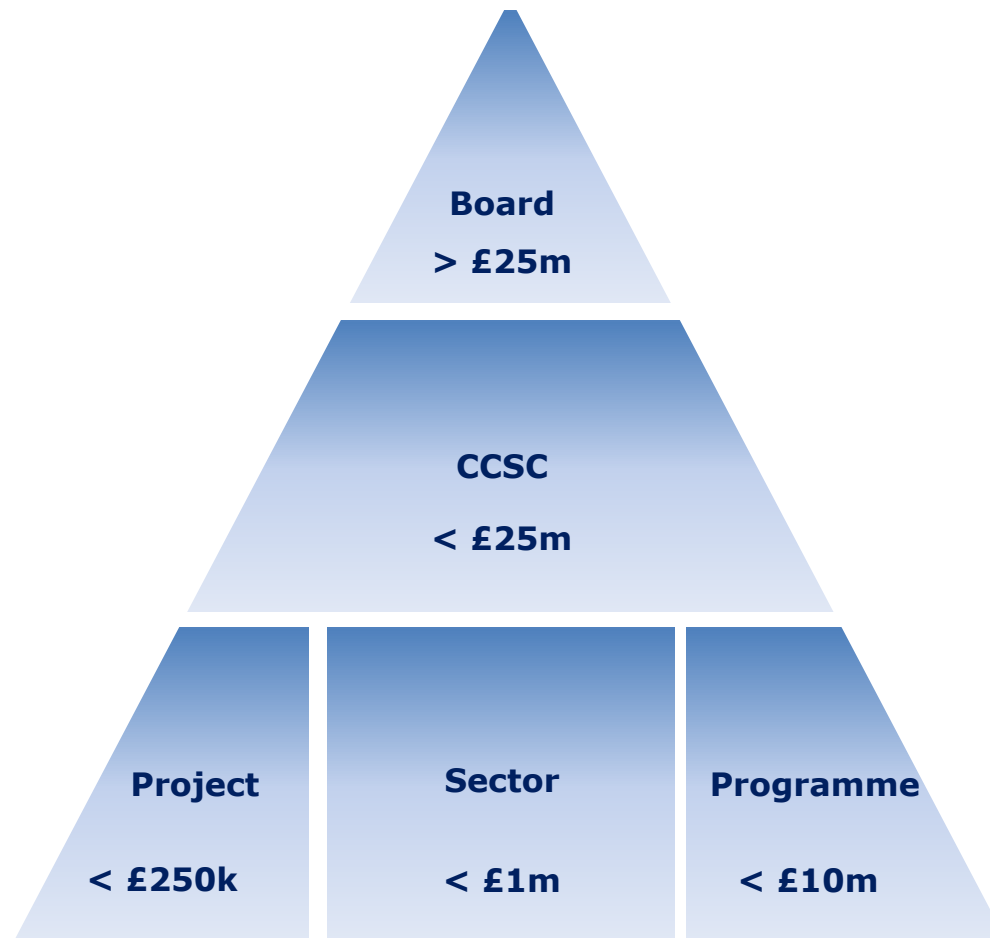
- Authorised by CRL Board
- Analysed in WBS
- Amendments subject to **CHANGE CONTROL**

FUNDING



- Forecast cash flows and risk
- PDA defines **Intervention Points**

Delegation and empowerment



Contingency budget



Coverage

CONTINGENCY TYPE		Coverage
	BOARD	<ul style="list-style-type: none">• Top slice above Intervention Point 1• Board level risks
	PROGRAMME	<ul style="list-style-type: none">• Funds excess cost from programme level risk,• Source of which Contract, Project and Sector Contingency is allocated through the Investment Authority process.
	SECTOR	<ul style="list-style-type: none">• Central allocation of risks to manage interface risks between projects and Sector, managed by the Sector Director.
	PROJECT	<ul style="list-style-type: none">• Specific contingency to fund project level risk events managed through a portfolio of contracts.• Held at project level for the PM to optimise Project performance.
	CONTRACTOR (Included in Target Cost)	<ul style="list-style-type: none">• To fund events such as delivery cost overrun and other Contractor Risks

Delivery and Financing
Budget

Crossrail Systems Setup

Gaining Control



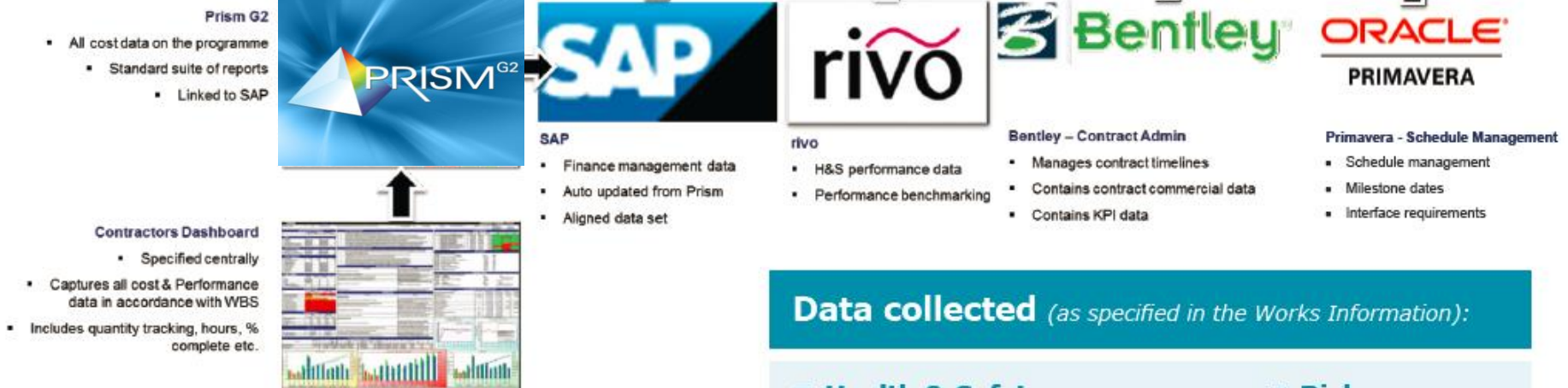
We had to develop the systems specifications and procure an integrated suite of standard systems. The data warehouse formed the 'single source of truth' and enabled dynamic data interrogation



Qlikview

- Dynamic dashboard Reporting
- Drill down reports

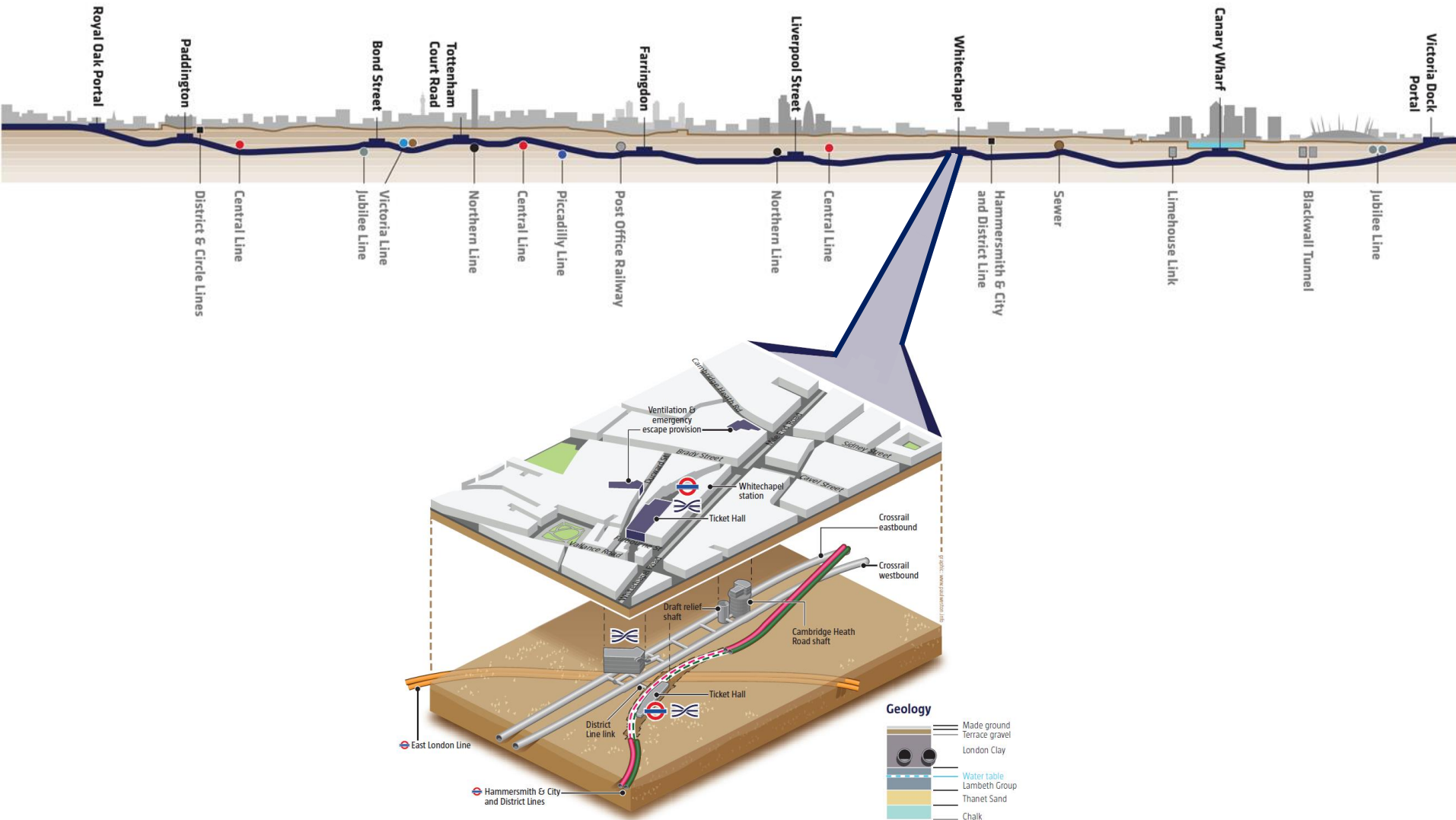
Data Warehouse



Data collected (as specified in the Works Information):

- Health & Safety
- % Complete - QURR / EPPR
- Earned Value
- Risk
- Schedule
- Sustainability

Crossrail below the surface

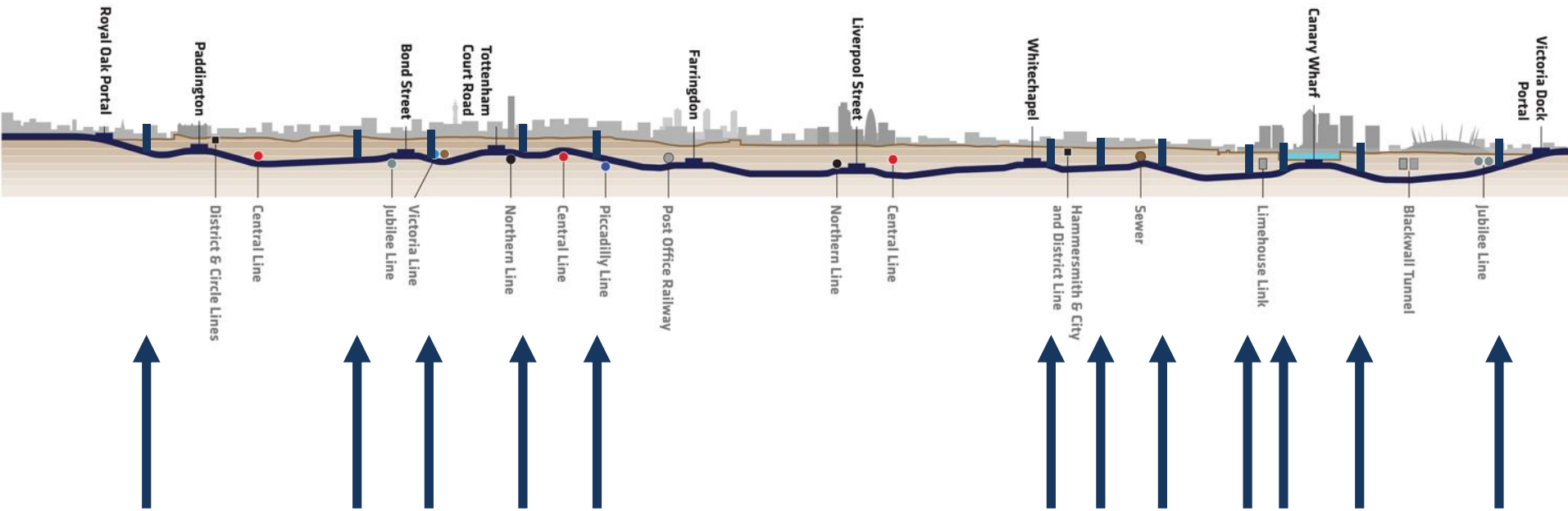


Case Study - Deletion of 8 shafts



- Benefits
- Foreseen consequences
- Unforeseen consequences

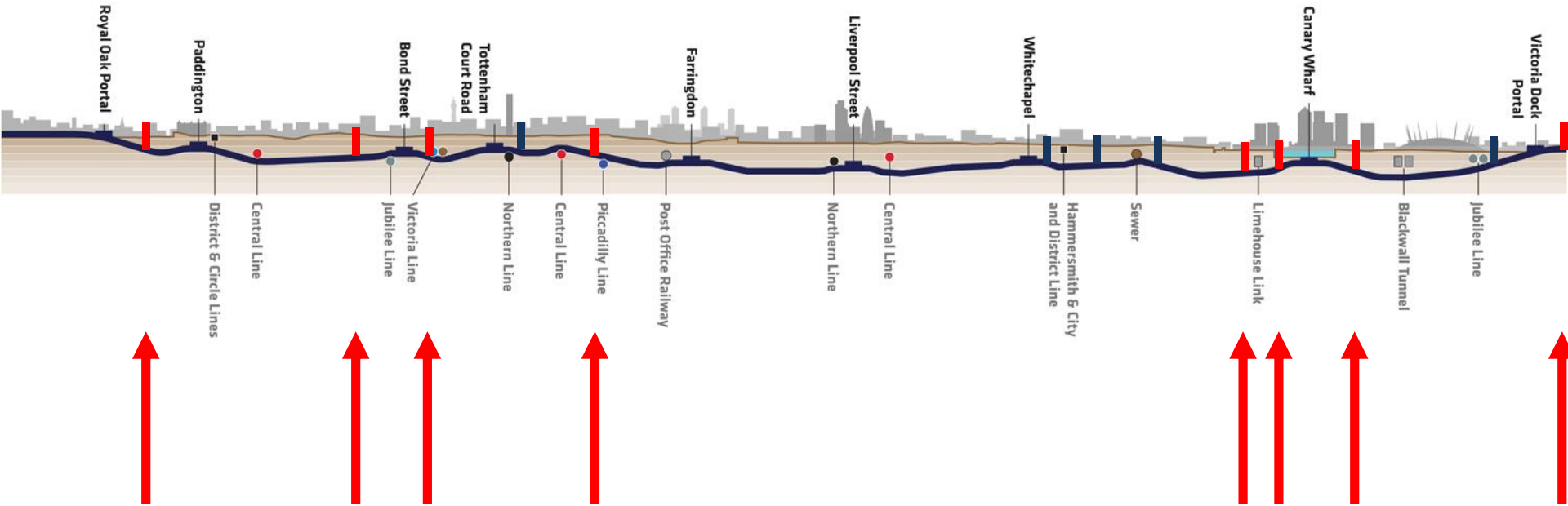
Ventilation Shafts



- x13 ventilation and emergency intervention shafts
- Control air flow and the 'piston effect' during normal operation
- ESSENTIAL to control smoke in the event of a fire and to provide safe egress



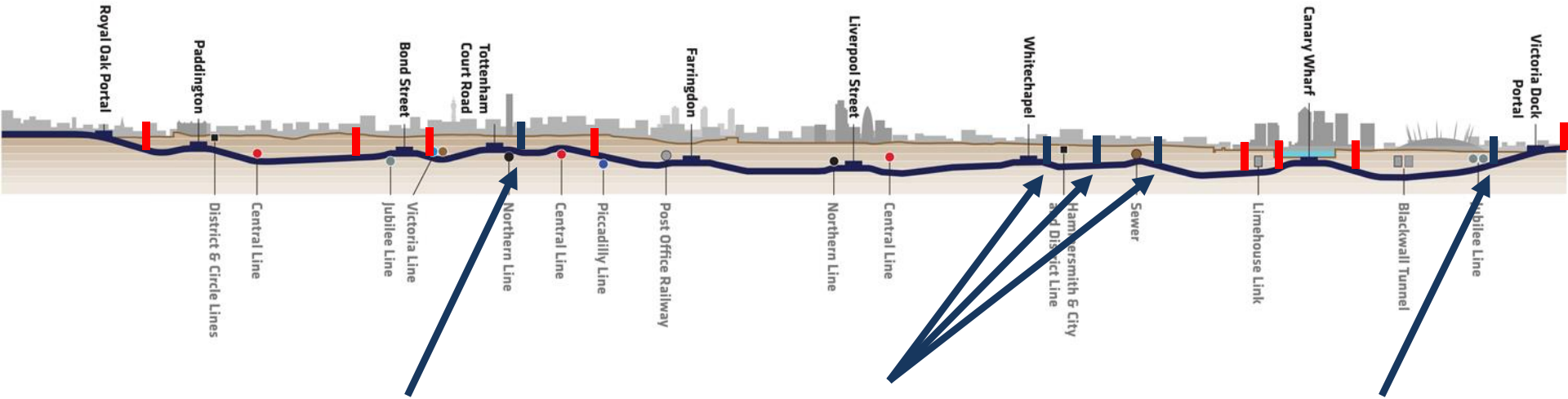
Ventilation Shafts



x8 shafts REMOVED... Westbourne Bridge, Hyde Park, Park Lane, Hanbury Street, Lowell Street, Hertsmere Road, Blackwall Way & Warren Lane

1. Provides a significant reduction in surface impacts
2. £118m cost saving
3. Provides the ability to ventilate tunnels in a fire.
4. Requires the introduction of full height PEDs & platform ventilation

Ventilation Shafts



1. Fisher Street

- 2. Stepney Green
- 3. Mile End
- 4. Eleanor Street

5. Limmo Peninsula

Platform Edge Screens



- ← Jubilee Line Extension, London
- ← Platform Edge Doors
- ← No ventilation segregation.

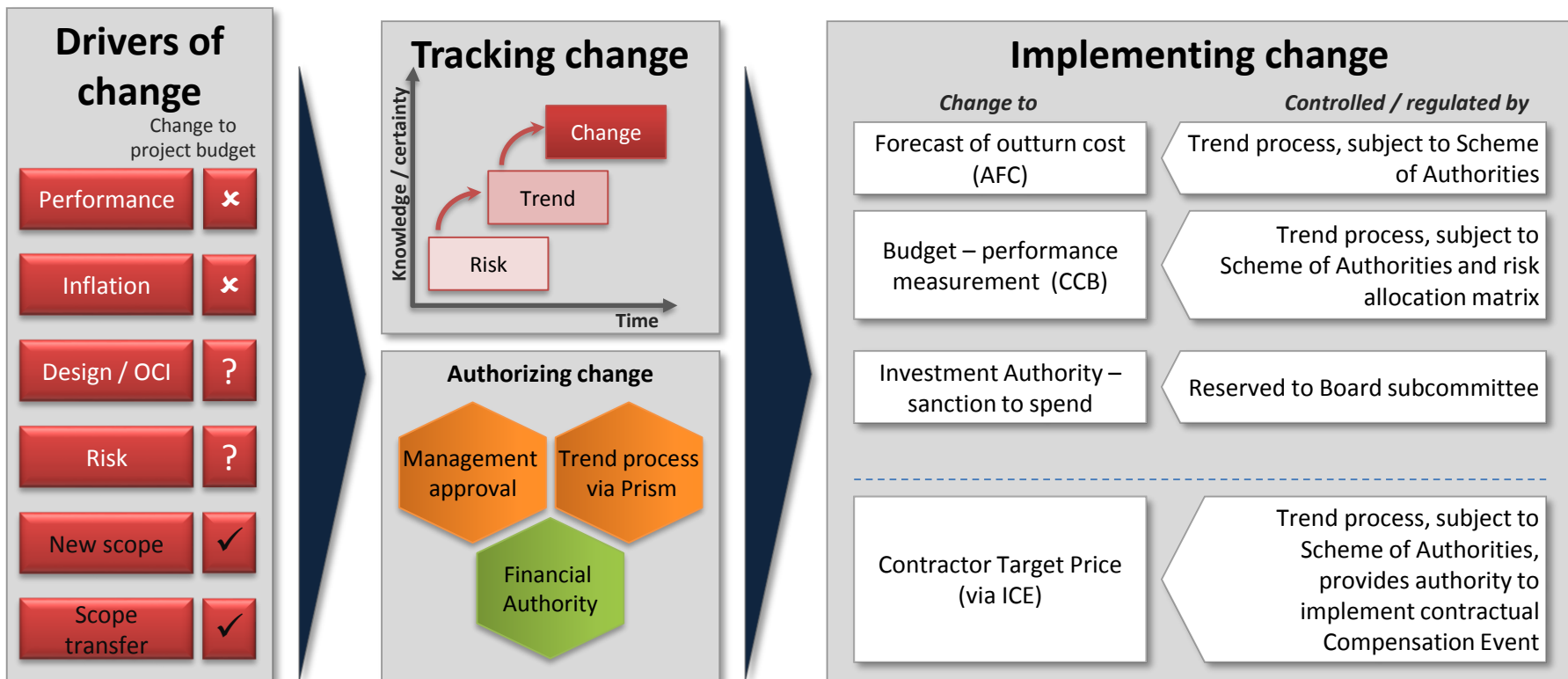
Full height screens →
Ventilation segregation →
£118m cost saving →



- ▶ Collaborative approach
- ▶ Transparency
- ▶ Good process
- ▶ Plan for early completion
- ▶ Expertise

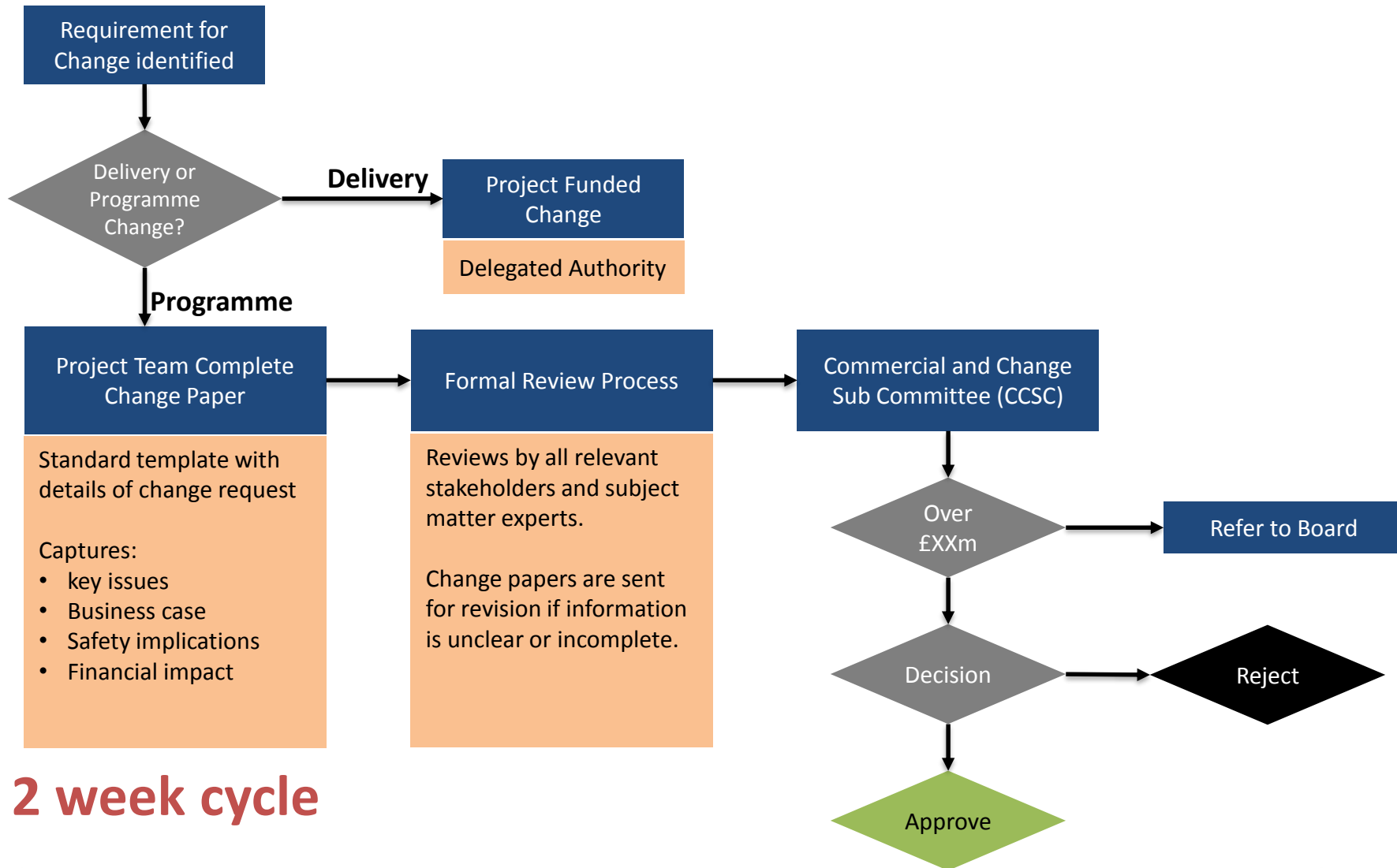
The Crossrail decision making process





- ▶ Baseline: scope and budget
- ▶ Work breakdown structure
- ▶ Delegation
- ▶ Systems – capture cost and change, and control delegation
- ▶ Approval

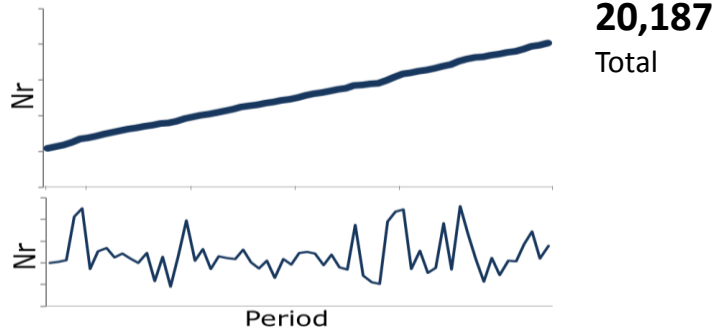
The change approval process



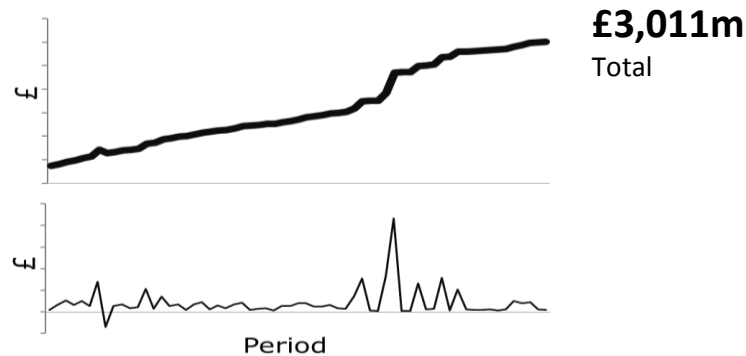
2 week cycle



Volume of change



In excess of 20,000
implemented
compensation events



*700 Programme
Changes in six
years*

What went well



- ▶ Early baseline
- ▶ Formalise Sponsor change process, and maintain a supportive and informed relationship with Sponsors
- ▶ Work Breakdown Structure and Cost Breakdown Structure
- ▶ Structured and disciplined process, director buy in
- ▶ Allocation of risk to appropriate levels of the organisation, and delegation of contingency
- ▶ Early capture of change via integrated systems
- ▶ Formal change control to forecasts and budgets
- ▶ Continual review of risk via QRA and comparison to contingency and total budget authority

Things to do better



- ▶ Level at which to control design change
- ▶ Try to capture design change at time of issue
- ▶ Try to get on the front foot, not be a retrospective budget allocation process



Did we succeed in controlling change?



- ▶ Little major change to design
- ▶ But high volume of design change at the detailed level
- ▶ Contracts let before civils design fully complete
- ▶ Few major Sponsor changes
- ▶ Self imposed schedule change, particular at contract interfaces
- ▶ Contingency budgets were utilised
- ▶ Crossrail remains on target to open the main tunnel in December 2018.

The Elizabeth Line: end to end



- ▶ Elizabeth line permanent track installation is complete - Crossrail

