This paper will be considered in public

1 Purpose
1.1 The accompanying presentation provides an overview of Crossrail Operations.
1.2 The presentation covers:
(a) the scope of Crossrail;
(b) the service frequency;
(c) project progress, covering tunnelling, infrastructure works, Network Rail works, station construction;
(d) train control systems;
(e) rolling stock;
(f) the passenger offering;
(g) Crossrail Train Operating Company (CTOC);
(h) current issues; and
(i) railway integration.

2 Recommendation
2.1 The Panel is asked to note this paper and presentation

List of Appendices to this Report:
Appendix 1: Crossrail Presentation

List of Background Papers:
None

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Crossrail Operations
Rail and Underground Panel
10 July 2014

Howard Smith, Operations Director
Crossrail
To Cover

- Project background and progress
- Project: next phases
- Moving towards Operations
- Rolling Stock
- CTOC
- Potential Change
Crossrail Scope

- £14.8bn
- 40 stations – with Reading
- 120 route km
- 2x21km new tunnels
- 8km of existing tunnels
- 65 Class 345 units
- 3 signalling systems
- Regulated and interoperable
Peak Frequencies

24 trains ph. 14 starting or ending at Paddington

12 trains ph between c. London - Shenfield

4 trains ph H’row – c. London
4 trains ph Rdg/Mdhd – c. London
2 trains ph c. London – W. Drayton

12 trains ph between Whitechapel – Abbey Wood
52.7% complete

TBM’s 88% complete

Very good confidence of completing Stage 3 on time December 2018

Tunnel services phased opening 2018-19
42km of Tunnels – 8 TBMs
Stepney Green Caverns
Project Phasing

2012 13 14 15 16 17 18

- Civils and Tunnelling
- NR Surface Works
- Railway Systems
- Stations
- Rolling Stock & Depot
- Test and Commission
- Trial Operation
- Crossrail TOC
Network Rail Surface Works

- 60 platform extensions
- 179 switch & crossing units
- 1000 OLE structures, 150 km OLE
- C25% complete
- Stockley viaduct on track for 50% complete milestone Dec 2014
Surface

Stockley flyover
Bridge launch
Central Stations - Scale
Central Stations:
Whitechapel and Paddington
Platforms – PEDS/PES
Systems Integration

2014 integration activities
Train Control Systems

Central Operating Section (COS)

NR TVSC Didcot

NR Signalling Great Western Mail Line

Old Oak Common Depot

NR Signalling Great Eastern Mail Line

NR IECC Liverpool Street

NR Signalling North Kent Line

London Bridge Via North Kent Line

Plumstead Crossrail Sidings

Abbey Wood

NR MCS Ashford

Maidenhead Ealing Broadway Acton

Paddington High Level

Paddington Jct

Westbourne Park

Bond Street

Tottenham Court Road

Farringdon

Liverpool St Crossrail

Whitechapel

Stepney Green Jnc

Pudding Mill Lane Jnc

Stratford

Shenfield

NR Signalling

London Bridge

Via North Kent Line

S&CS ATP & ATO

S&CS IXL

S&CS ATS
Romford RCC

BUCF

BUCF

S&CS ATS
Romford RCC

NR TVSC Didcot

NR Signalling

Great Western Mail Line

Old Oak Common Depot

NR Signalling

Great Eastern Mail Line

NR IECC Liverpool Street

NR Signalling North Kent Line

London Bridge Via North Kent Line

Plumstead Crossrail Sidings

Abbey Wood

NR MCS Ashford

S&CS ATP & ATO

S&CS IXL

Central Operating Section (COS)
Rolling stock - Class 345
Rolling Stock

- 65 x 200m long, air-conditioned, walk-through trains
- Procurement completed Feb 2014 - 2 months ahead of programme
- Trains enter service 2017
- Also work residual services into Liverpool Street

- 74% of the value of the contract will be spent in the UK
- Support 840 UK manufacturing jobs building the trains in Derby
- Maintenance at OOC, Ilford and stabling at Plumstead and Maidenhead
Old Oak Common
Moving towards Operations
What Passengers Want from Crossrail

- Reliability
  - 95% PPM
  - Timetable development with NR and DfT Iteration 5
  - TRAIL modelling underway to October

- Seamless, reliable information
  - Integrating with TfL on brand new ticket machines, digital screens, social media

- A great environment – stations

- Friendly, well informed staff - CTOC
  - All stations staffed - first to last
The Whole Customer Journey

Pre-journey
- Origin (A)
  - Station
  - Boarding

In-journey
- Train Departs
- Train Arrives

Post-journey
- Alighting
  - Station (Out)
  - Connecting Service (NR/LU etc.)
  - Destination (B)

World-class standards: punctuality, availability of various services, passenger comfort, accessibility, quality of information, staff, systems
An Unusual Railway
COS
- Highly resourced, but any incident requires near instant response or results in ‘stalled’ trains
- Limiting factors are ‘technical’ risks but also things like PIOTs, access/response times

On-Network
- Lower density of traffic but lower resource (time to site)
- Limiting factors are other trains including longer distance and freight
- Significant interworking on GWML with FGW, HEX, Freight
- Need to recover timetable not just headway

Operations and management over the interfaces are key to success
CTOC – The Ambition

- Recognised as world class and setting the benchmark for metro railway services in Europe
- A unique railway but fully integrated with TfL’s transport network
- Offering a step change in quality beyond anything we have achieved before
Crossrail Train Operating Company

- Starts operations May 31st 2015, taking over existing Shenfield-Liverpool Street services

- Based upon highly successful LO structure
  - Paid by performance, no revenue risk transfer
  - Take share of RSD and NR delays
  - Partnership between the Operator and TfL
  - Incentives to support Crossrail programme
OJEU March 2013
Shortlist June 2013

Arriva
Keolis/Go Ahead
MTR
National Express

ITT September 2013
Return of Bids February 2014
Contract Award No later than Nov 2014
Operations May 2015
Potential Change

- Extension to Reading
  - Confirmed March 2014

- HS2

- Stations/Accessibility

- Future increased frequency
Stage 1: May 2017 - Introduction of new rolling stock on Great Eastern – start of ‘Crossrail’
Railway Integration Timeline

Stage 2: May 2018 - Heathrow to Paddington - surface
Stage 3: Dec 2018 – Trains run through Central Section
Stage 4: May 2019 - Central Section passenger service connected to Great Eastern Surface Section
Railway Integration Timeline

Stage 5: Dec 2019 – Full service operating incl Reading
MOVING LONDON FORWARD