



Crossrail : Transforming Travel in London

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- **MTR Corporation** - established 1975 in Hong Kong for the operation of the local metro.
- Currently the best performing railway in the world with an on-time performance measure of 99.9%.
- Since expanding from Hong Kong out to various major cities, **MTR Corporation** has seen a rapid growth in its reputation and is becoming well-known globally for its world class train service delivery
- This success around the globe has played a major part in being awarded the Crossrail contract.

2009 – Melbourne Metro, has seen train service delivery percentages rise to 99% from a constant 60-70% previously.

2009 - Stockholm Metro, Received recognition from the Swedish Institute of Quality for Successful Business Development in 2013.

2011/2012 – Hangzhou & Beijing, delivery and operation of brand new lines delivering metro services.

In 2015, **MTR** will launch a **new premium express train service in Sweden** to connect the country's two largest cities, Stockholm and Gothenburg, with 110 weekly train trips.



Introduction to Crossrail

History and Construction

How MTR Crossrail will Operate

Staged Opening of Crossrail

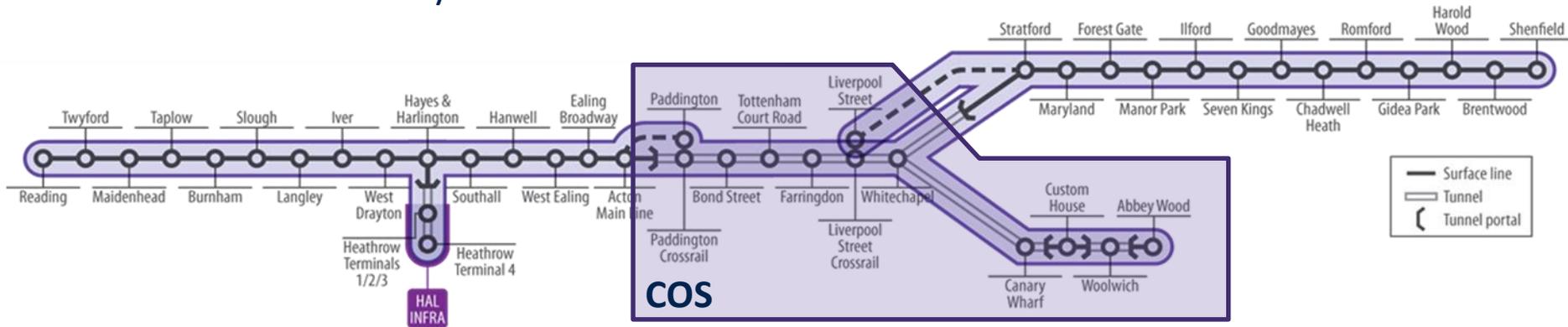
Benefits to London and the UK



What is Crossrail?



- A new **East-West** route across London, linking existing above-ground railway infrastructure in the outer regions with a brand new underground **Central Operating Section (COS)**.
- The Crossrail route **will run over 100km** from Reading and Heathrow in the west to Shenfield and Abbey Wood in the east.



- Crossrail is currently **Europe's largest construction project** – work started in May 2009, with a total funding envelope of £14.8bn.
- **Full Crossrail services through central London will start in late 2019** – an estimated **200 million annual passengers** will use the service.

The Crossrail Route

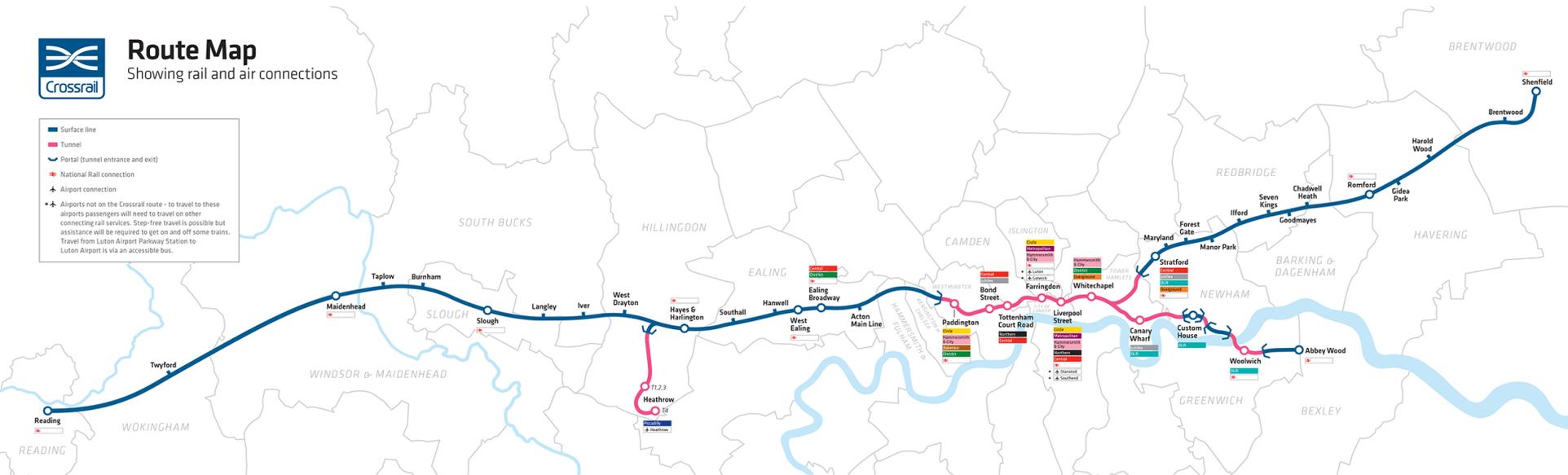


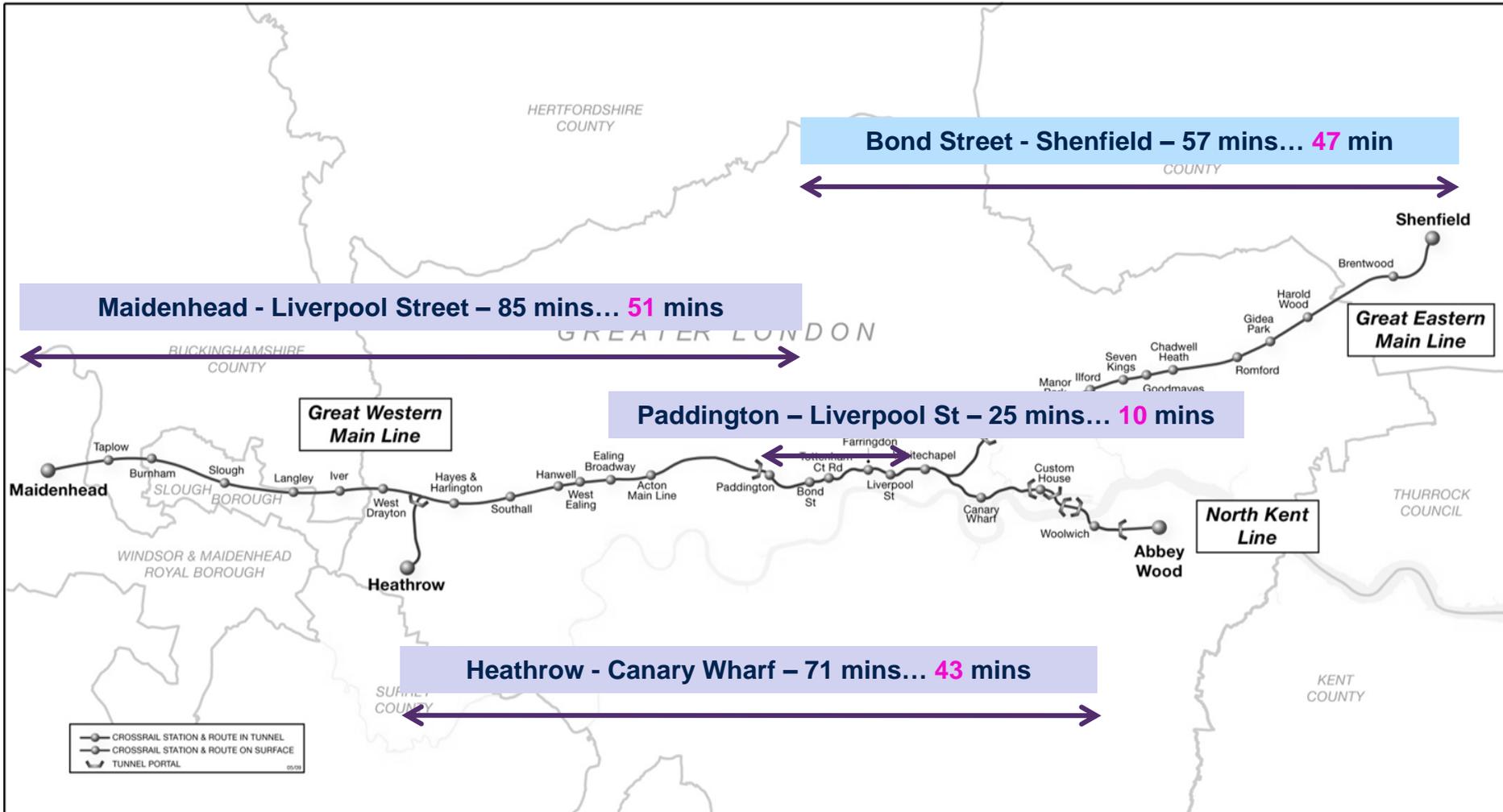
Route Map

Showing rail and air connections

- Surface line
- Tunnel
- ↔ Portal (tunnel entrance and exit)
- National Rail connection
- ✈ Airport connection

✈ Airports not on the Crossrail route - to travel to these airports passengers will need to travel on other connecting rail services. Stop-free travel is possible but assistance will be required to get on and off some trains. Travel from Luton Airport Parkway Station to Luton Airport is via an accessible bus.





High-Level Benefits

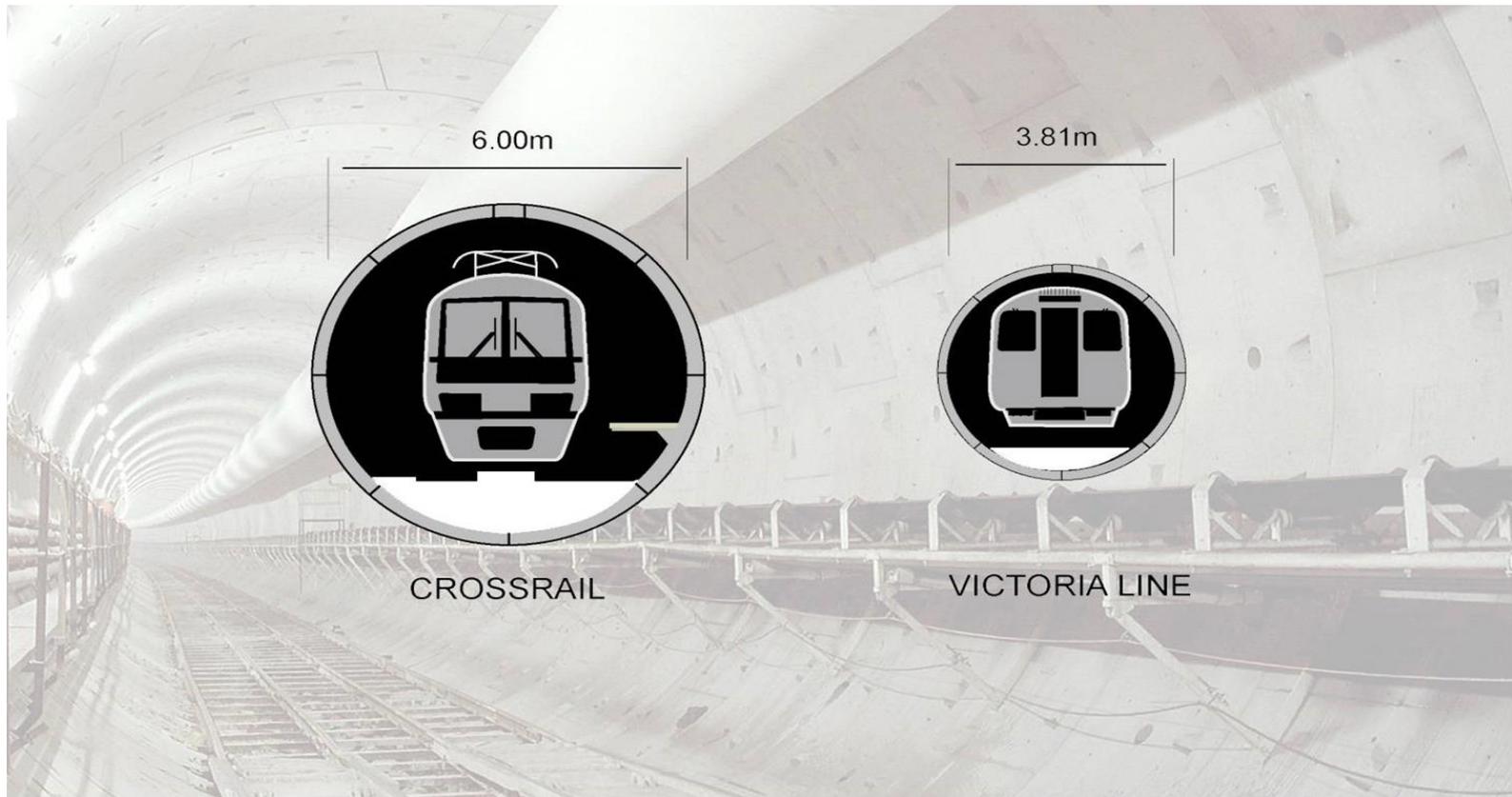
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- Crossrail will **transform rail transport** in London, **increasing capacity by 10%**, the **largest single increase since World War II**.
- There will be **40 Crossrail stations** including **10 new central stations** at Paddington, Bond Street, Tottenham Court Road, Farringdon, Liverpool Street, Whitechapel, Canary Wharf, Custom House, Woolwich and Abbey Wood.
- Crossrail will bring an extra **1.5 million people to within 45 minutes** of central London and will **link London's key employment, leisure and business districts** – Heathrow, West End, the City, Docklands – enabling further economic development.
- Crossrail will help create **£5.5 billion** in added value to residential and commercial real estate along its route between 2012 and 2021.



- Over 42km (26 miles) of new 6m diameter rail tunnels have been bored through central London.
- Tunnelling began in May 2012 and recently completed in June 2015.

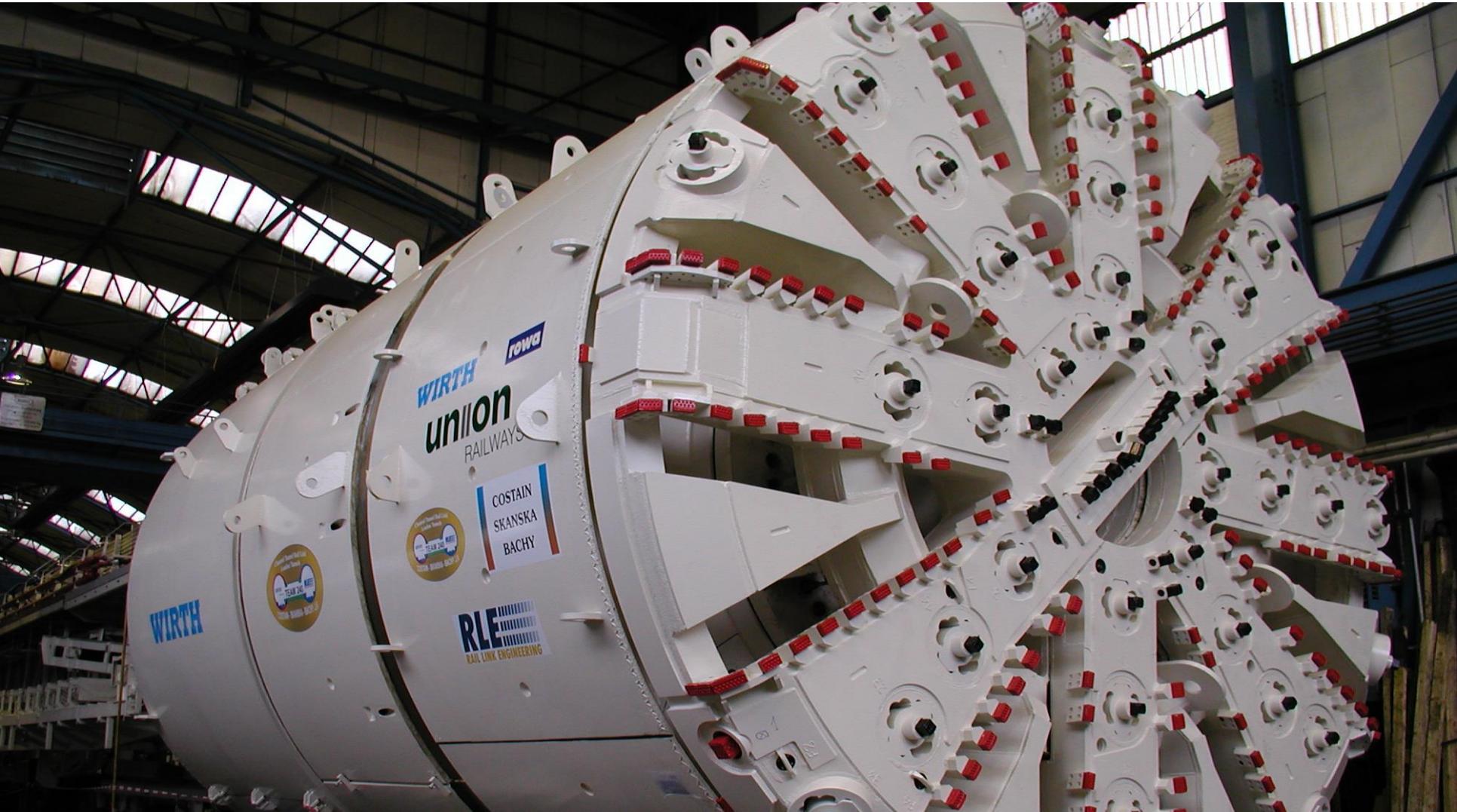


Building Crossrail

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- 8 Tunnel Boring Machines (TBM) were used to construct the main Crossrail running tunnels. Each TBM is up to 120 metres in length.



Surface Work Examples



Railway Depots and Sidings



27 Stations (10 Major)



Track 66km



61 Platform Extensions



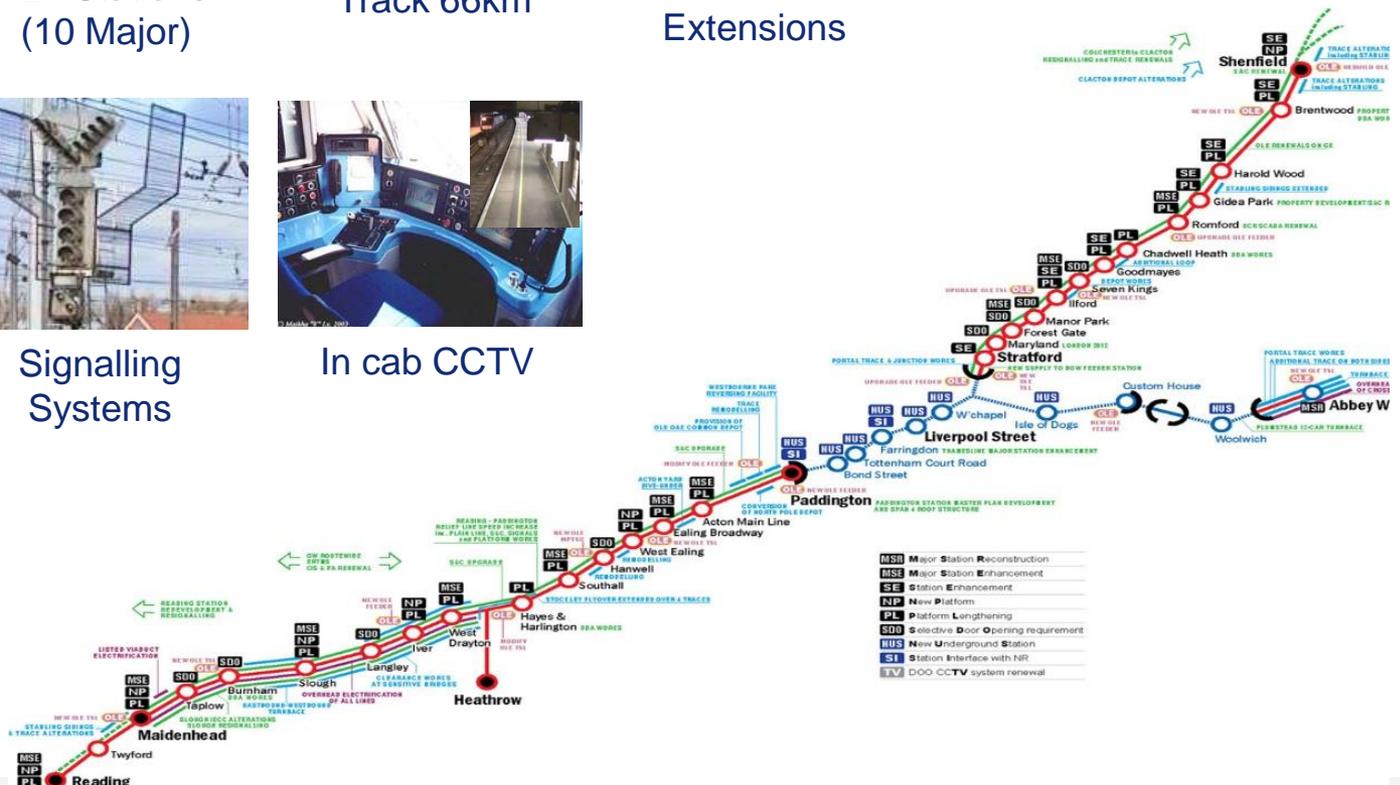
Electrification 146km



Signalling Systems

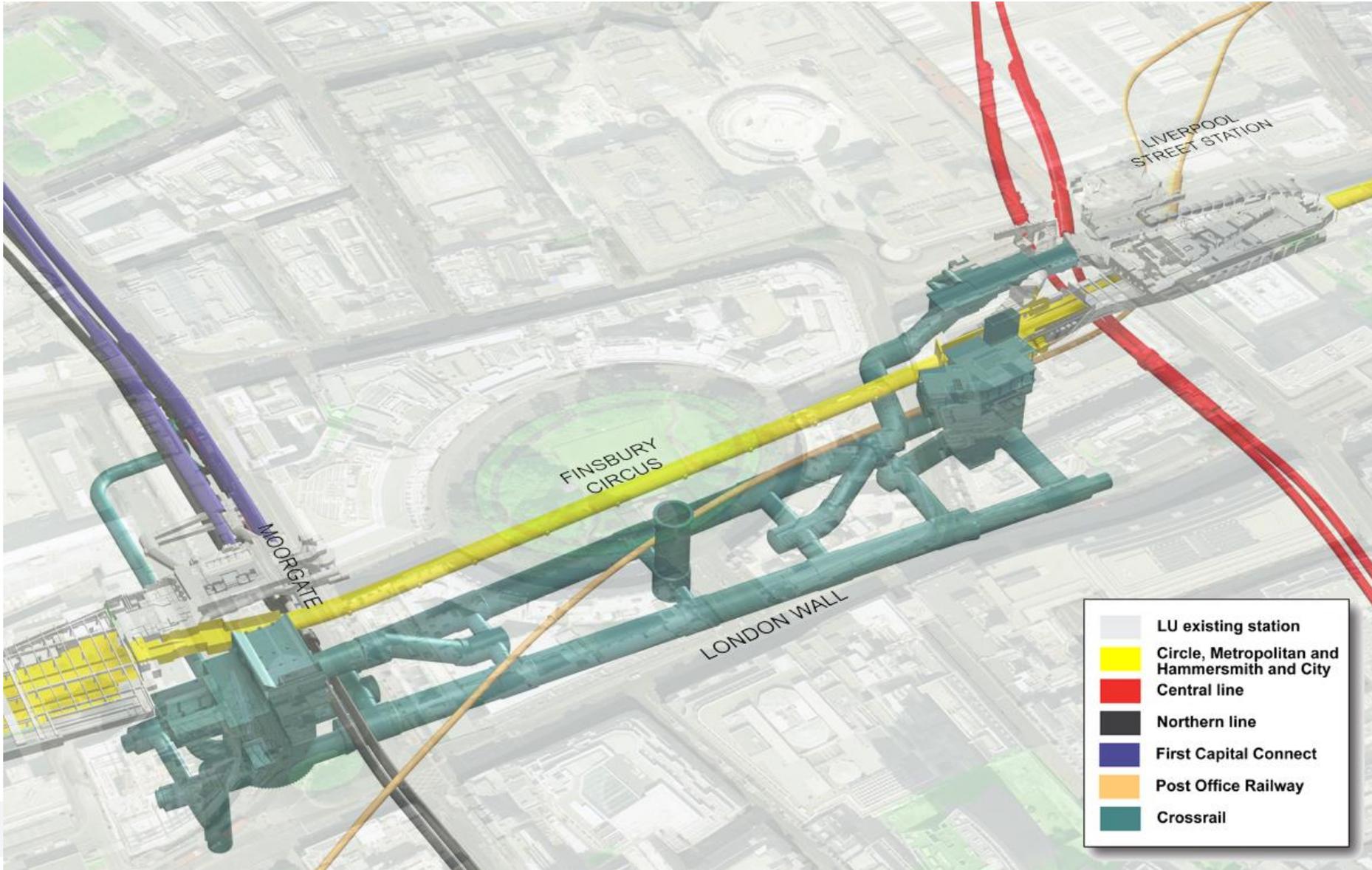


In cab CCTV



New Stations

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- LU existing station
- Circle, Metropolitan and Hammersmith and City
- Central line
- Northern line
- First Capital Connect
- Post Office Railway
- Crossrail

- All Crossrail services will ultimately operate using a brand new ‘first of type’ train.
- Developed by Bombardier Transportation, the new train is known as the Aventura, with the Crossrail variant designated as the Class 345.



- At over 200m long, the Class 345 is capable of carrying up to 1500 passengers (450 seated).
- Built with an emphasis on energy efficiency and use of intelligent on-train energy management systems controlling lighting and air conditioning.
- Re-generative braking will feed energy back into the supply.



Infrastructure Managers



Train Operating Companies



Rolling Stock



Constructor



Regulator



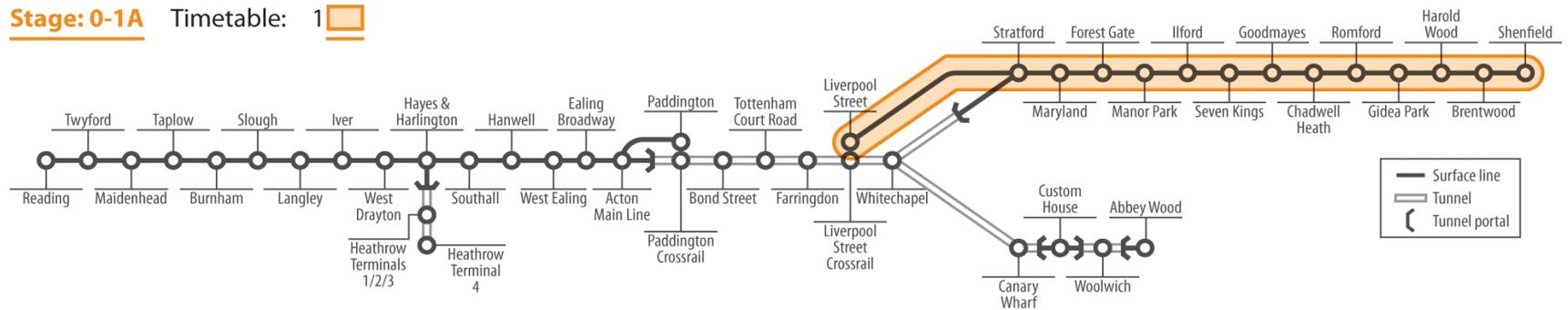
Stages 0 – 1



Stage 0 May 2015 - Class 315 train rebrand/refresh & reliability improvements & station enhancements

Stage 1 May 2017 - Introduction of the new Class 345 train Reduced Length Unit (RLU) followed by progressive withdrawal of the Class 315s

Stage: 0-1A Timetable: 1



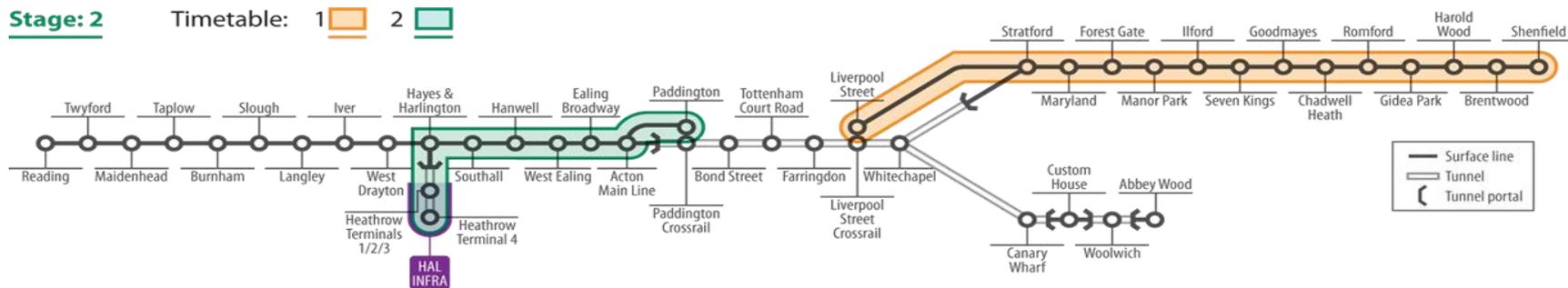
Stage 2 – May 2018



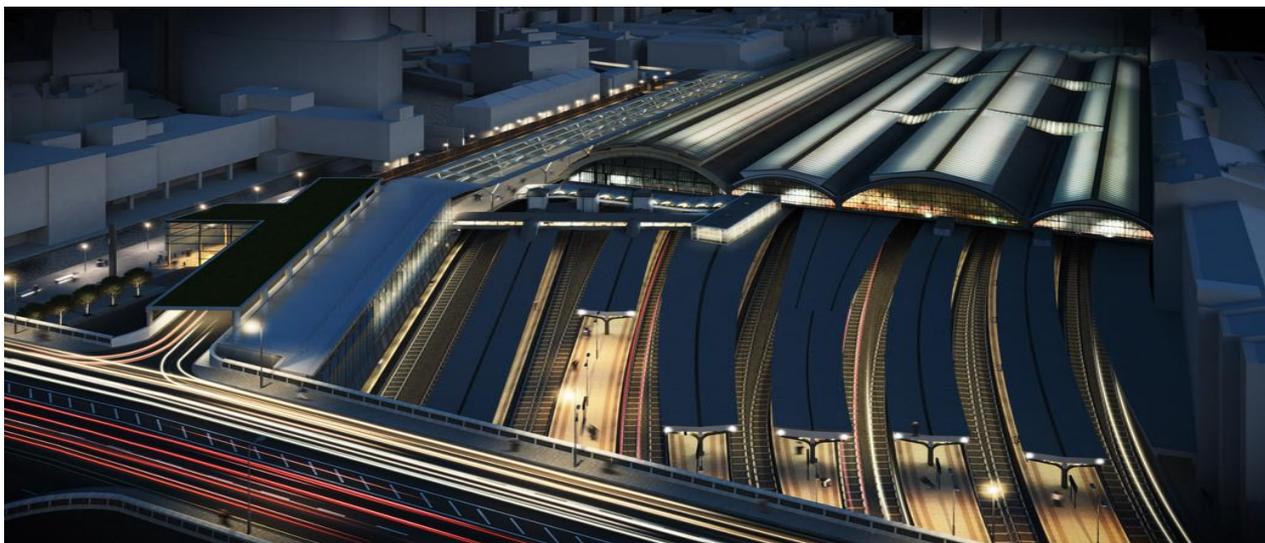
4 trains per hour (tph) service commences between Paddington and Heathrow Terminal 4 using full-length Class 345 trains

Stage: 2

Timetable: 1  2 



Paddington Station (Crossrail) – Artists impression

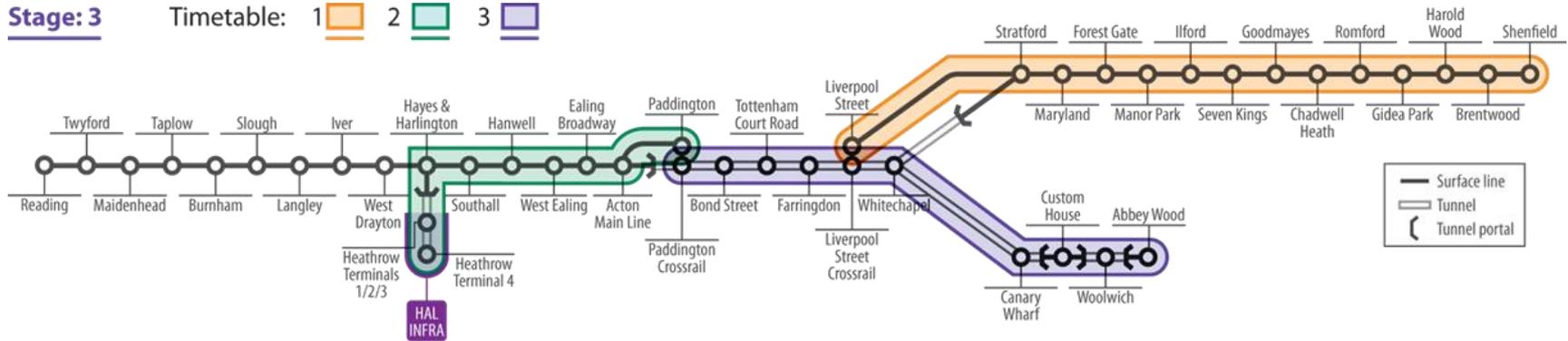




Central Operating Section (COS) opens between Paddington and Abbey Wood

Stage: 3

Timetable: 1  2  3 



Abbey Wood Station (Crossrail) – Artists impression



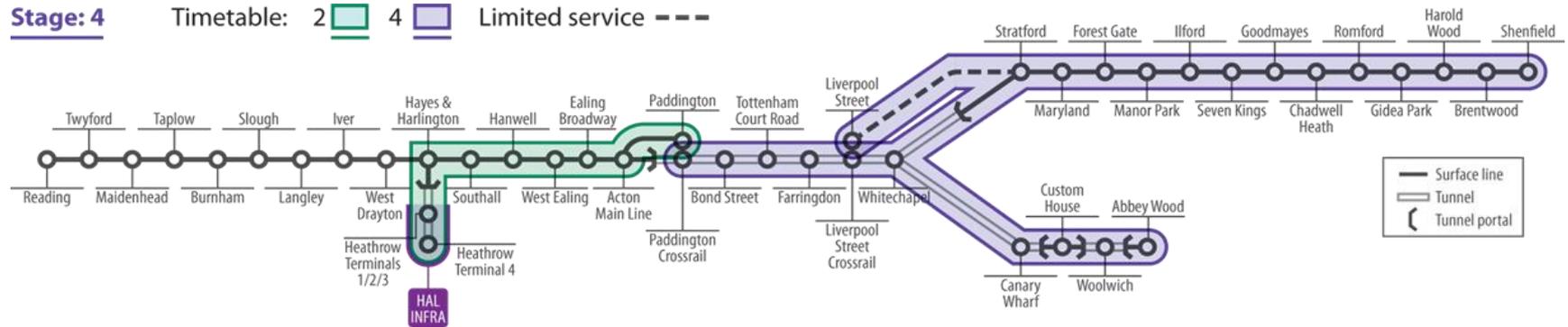
Stage 4 – May 2019



Eastern interface commissioned, services from Shenfield to Paddington commence through the Central Operating System (COS)

Stage: 4

Timetable: 2 4 Limited service - - -



Central Operating System (COS) Tunnel

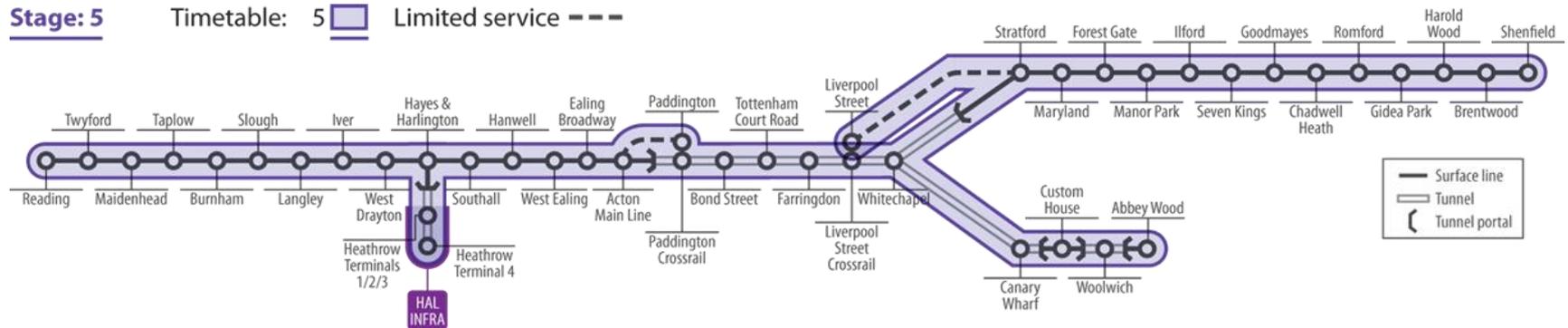


Stage 5 – Dec 2019



Western interface commissioned - completion of Crossrail

Introduction of full end to end services including Reading to Heathrow Airport.





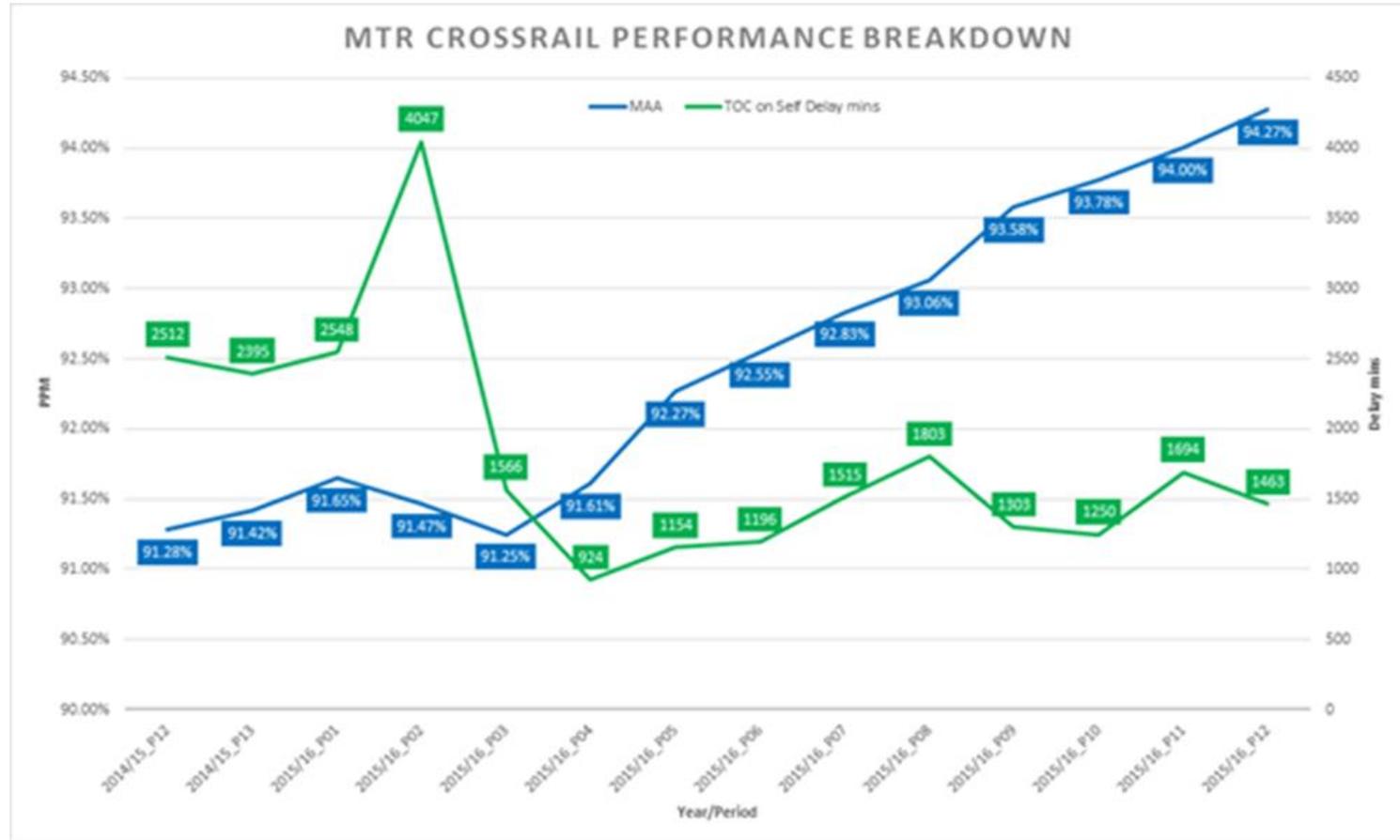
- Our concession sets out the level of train service, service performance, and station standards that TfL expect MTR Crossrail to deliver.
- With a £15bn investment being made in the new railway, TfL expect a “world class” service.
- The performance regimes provide strong contractual incentives on MTR Crossrail to operate the railway to these high standards. These include Key Performance Indicators (KPIs) around:
 - Service Performance
 - Delay Minutes
 - Passenger Performance Measure (trains within 5 minutes of scheduled time)
 - Headway (regular intervals between trains)
 - Ticketless Travel – to be maintained below 3%
 - Customer Satisfaction
 - Mystery Shopper Surveys
 - Ticket Queues
- The agreement also captures a series of additional deliverables, known as Committed Obligations, that MTR offered when it bid for the Crossrail concession.

MTR Crossrail's KPI Performance



Rail KPI	Last period of AGA (former operator) performance	MTR Crossrail (TfL Rail) Average of periods 3-12
NPS Overall Customer Satisfaction	77%	85%
Operator on Self delay minutes	2081	1374.3
Network Rail delay minutes	4526	2366.8
Rolling Stock (Fleet) delay minutes	3496	347.6
Cancellations (all causes)	421	138.1
Right time punctuality	67.23%	82.38%

MTR Crossrail's Punctuality Performance



Conclusion

MTR Crossrail will play a critical role in the successful delivery of a world class Crossrail service

MTR Crossrail has made a very positive start but there is much more to do!

