

# REPORT OF SOCIETY MEETINGS

## MOVING LONDON FORWARDS: CROSSRAIL PADDINGTON STATION.

### AN UPDATE ON THE PADDINGTON CROSSRAIL PROJECT

by James York & Paul Rowden

A report of the LURS meeting at All Souls Club House  
on Tuesday 11 November 2014

James is the Lead Community Relations Manager for the Paddington Crossrail Project (Contractor Side). Paul is a Crossrail Community Relations Officer (Client Side).

Paul started by talking about Crossrail in general. The project commenced in 2009 and services will begin in 2018. Crossrail is the largest construction project in Europe at present and its overall budgeted cost is £14.8billion. 14,000 people will be employed at the peak of the project, and 74,000 jobs created overall. It will run from Reading to Shenfield (Essex) and Abbey Wood (Kent) with 40 stations, of which 10 will be newly built. Peak time service will be 24 trains per hour, with an expectation of 200million per annum. Funding comes from various sources including Transport for London (TfL), the sale and rental of land and property (including leasing for the building of residential and commercial above station sites), levies, Network Rail and the Department of Transport.

Crossrail is expected to bring £42billion in benefit to the economy and will allow faster and more frequent journeys with fewer changes necessary:

	<b>Current journey time</b>	<b>Crossrail journey time</b>
Slough to Tottenham Court Road	55 minutes	36 minutes
Ilford to Bond Street	35 minutes	22 minutes
Heathrow to Liverpool Street	55 minutes	36 minutes
Liverpool Street to Abbey Wood	40 minutes	22 minutes
Paddington to Canary Wharf	30 minutes	17 minutes
Heathrow to Canary Wharf	75 minutes	40 minutes

Other sustainability benefits are that 97% of excavated material will be recycled along with 32% of the construction material; along with a 50% reduction in train noise and 23% improvement in station energy consumption.

The 42km of tunnels (21km in each direction) are up to 40m deep and wide enough to accommodate a main-line sized train as well as permanent access walkway. They have had to be threaded under and over the existing LU and rail lines as well as utility pipes and even the erstwhile Post Office Railway. They were excavated using eight Tunnel Boring Machines (TBMs) each named after famous women (Ada, Phyllis, Ellie, Jessica, Victoria, Elizabeth, Mary and Sophia). Each TBM features a laser guidance system which guides the cutting head to within millimetres of its destination point. The tunnelling was 83% complete by September 2014 with four TBMs having completed all their work. The remaining four TBMs are due to be finished by Spring of 2015.

To achieve its commitment to minimise road transportation, 85% of the spoil from the tunnels has been taken by rail and river to Wallasea Island in Essex where the RSPB (Royal Society for Protection of Birds) has created a tidal salt-marsh habitat.

The main works contracts have been awarded for all the central London stations and works are now substantially progressed. Canary Wharf station is also well advanced, and the roof garden, cinema and retail units above the station are well into development and projected to open in Spring 2015. The overall aim is to provide stations that will be large, spacious and clean. All station designs are complete to RIBA stage E and the final detail to RIBA stage F will be completed by the Contractors.

On the surface part of Crossrail, a large number of stations are being upgraded along with enhancement of 90km of existing rail network. Works include:

27 station upgrades (11 major reconstructions), 66 km of track works, 61 platform extensions, 146 km of electrification alterations, 360 signalling units and the construction of two major structures (the Stockley Flyover (a bridge to take Crossrail lines from the Heathrow Spur) and the Acton dive-under).

MTR has won the concession to run the Crossrail services and will employ a workforce of around 1,100, of which 400 will be drivers. (This figure of 1,100 breaks down to 850 new jobs with the other 260 posts being transferred from the existing Heathrow Connect and Great Anglia services). 50 apprentice placements will also be provided. 7,779 people have already been trained or obtained further accreditation at the Tunnelling & Underground Construction Academy to become the next generation of tunnel and infrastructure engineers.

Bombardier have the contract to build the new trains at their premises in Derby. The depots to service Crossrail are being constructed at Ilford and Old Oak Common.

The timetable is for construction to be completed by mid-2017 to allow nearly a year for testing, commissioning and trial operation before trains commence operating in December 2018 between Paddington and Abbey Wood. The MTR-operated concession will actually start to run trains as early as May 2015, taking over the existing Shenfield – Liverpool Street ‘Metro’ stopping service from Abellio Greater Anglia, initially using existing rolling stock. To avoid confusion with the fully-fledged Crossrail, this initial service is expected to operate with an interim brand name prior to the arrival of new rolling stock. The remaining parts of the network are set to become operational in phases during 2019, with the Reading extension coming last.

Paul then handed the mic over to James who talked specifically about the Paddington Crossrail station site.

James described this as the “jewel in the crown” of Crossrail. It alone has a budgeted cost of £300million and a timetable spread over six years. The construction contract was awarded to Costain Skan.

Work commenced on 13 February 2012 with the complete closure of Eastbourne Terrace and relocation of the Paddington taxi rank a new site near the H&C station. The “clock” started ticking immediately as Westminster Council made a condition that this road must be reopened in February 2014 – which it did on the 15th (just two days behind schedule).

Paddington Crossrail station has been excavated using the “cut and cover” method and measures 265m long by 30m wide by 30m deep. The station building will make extensive use of natural light to give an “airy” feeling to the concourse and platform levels.

A major concern of those involved in this project was to not cause damage to 1854 station buildings – designed by Isambard Kingdom Brunel and other associated later buildings and structures (such as the Hilton Hotel and the railings and roof above Eastbourne Terrace) a large proportion of which are Grade 1 listed. Any potential subsidence or building movement was monitored by 3,500 Geodetic Prism sensors from which readings were taken every three hours, 24 hours per day.

Alongside the protection of heritage, great emphasis has been placed upon worker safety. For instance: every vehicle delivering to the Paddington Crossrail site had to have 28 extra safety features installed at a cost of £900 per vehicle.

Another “hiccup” in the process was the unexpected discovery of utility cables, supplying St. Mary’s Hospital, homes and the station itself, along with pilings for a previous construction underneath Eastbourne Terrace. These had to be relocated, redirected or removed before the works could continue.

Building the station has needed:

- 170,000 tons of concrete.
- 250,000m<sup>3</sup> of spoil has been removed. 180,000 tons of which has gone to construct Wallasea Island (the remainder was too contaminated and has gone to landfill).
- 14,000 tons of steel.
- 8,818 metres of cable trunking and conduits.
- 80,000 metres of cables.
- 48,000 deliveries of material by road (to a dedicated holding and consolidation site at Harrow Road).
- 165 40m x 1.2m x 3.3m wall panels.
- 51 x 60metre deep pilings to anchor the station box to the bedrock.

The fit-out of the station will be commencing soon as the excavation and base slab is construction. The 2,640 tunnel segments have been removed and piling work for the Bakerloo Line link is completed.

The fit-out phase will also include construction of the platforms and all the M&E (mechanical and electrical) works. The station is due to open in September 2018.

Discussions are in progress about a passenger link walkway from within the Crossrail station to the Bakerloo/District lines. However, any underground link to the H&C platforms would be too complicated to implement.

The project has provided posts for 24 apprentices, 38 placements for graduates and 390 work experience days for attendees of local schools and colleges so far, but targets many more. Staff from the project have donated £8,500 and 600 “man-hours” to local charities and schools. Costain/Skanska, Crossrail and The Paddington Partnership have also sponsored one of the Paddington Bear statues (“The Mayor of Paddington” positioned in Canalside Plaza, near the H&C station) which will be auctioned in support of the NSPCC.

The meeting thanked James and Paul in the usual manner and a period of questions and answers followed which included:

Q: Why will there be no toilets on trains and only at stations?

A: *Crossrail will be a high-frequency metro-style train service, where the vast majority of journeys will be of a short duration and on board toilets would take up a significant amount of space. It is therefore not intended that toilets will be provided on Crossrail trains. Of the 37 stations on the Crossrail route, passengers will have access to a toilet facility at least 28 stations, equivalent to approximately 75 per cent of stations. This comprises a number of additional, existing and improved toilet facilities. London Underground toilet facilities at Whitechapel will be refurbished with new facilities introduced at Tottenham Court Road from 2016 as part of the Underground station upgrade programme. The toilet facilities at Tottenham Court Road, Farringdon, Whitechapel, and Custom House stations will all be designed to accommodate people with restricted mobility.*

Q: Will Freedom Passes be valid on Crossrail?

A: *This is to be confirmed but the expectation is that Crossrail fares will fall into line with other TfL services and be integrated into the standard Oyster system. However, discussion is ongoing about ticketing arrangements for the Heathrow spur and journeys to the outer reaches such as Reading and Shenfield, which do not presently sit within normal TfL fare zones. Decisions regarding fares will be taken by TfL as ultimate operators of the service, whereas Crossrail itself is the organisation charged with constructing the system.*

**Amanda Day**