

THE DEEP TUBE UPGRADE PROGRAMME (DTUP)

by John Hawkins

DTUP will provide new trains and signalling to modernise the Piccadilly, Bakerloo, Central and Waterloo & City lines, starting with the Piccadilly Line upgrade, where capacity will be increased by the equivalent of up to 21,000 passengers per hour from the mid-2020s.

The plan is now for 94 new trains to replace the current 86 1973 Tube Stock trains, to be delivered between August 2023 and 2026, to enable the current 24tph service to be increased to 27tph under current signalling, and to expand peak capacity by a third. After line resignalling in Stage 2 of the upgrade, the service will be increased to 33tph with seven further trains, and perhaps later to 36tph with another eight trains.

The Piccadilly Line rolling stock contract, to be awarded in May 2018, is between Alstom, Bombardier/Hitachi, and Siemens, with CAF withdrawing from the process. Once awarded, hopefully it will reveal things like number of cars in a train. Options for the other three lines will also be included. A chart shows the Piccadilly Line upgrade running until 2028 to achieve a 64% capacity uplift. The Bakerloo upgrade does not start until 2021, and when complete by 2029 will see a 37% uplift. The Central Line upgrade commences in 2025 to complete in 2034 with a 25% uplift. Finally, the Waterloo & City Line upgrade will start and finish some six months later than the Central Line project, to provide a 40% uplift. It is strange that this short line is expected to take so long. This means there will be a 36% increase over all four lines by 2035, representing a third of the LU network.

Major upgrade works will be carried out at Northfields and Cockfosters depots between 2020 and 2024 in readiness for the delivery of the new trains and the increased fleet size. Similar work has been required for the S Stock fleet. Limited works will also be carried out at Uxbridge and Arnos Grove sidings. A new substation will be required to support expanded stabling facilities at South Harrow, and a new transformer room will be provided at Boston Manor.

To optimise London Underground services in West London, Ealing Broadway will be served by Piccadilly Line trains, enabling increased capacity of at least 25 per cent to be introduced on the busier Richmond and Wimbledon branches of the District Line.

The order will be for air-cooled, walk-through, fully accessible trains with in-car audio-visual passenger information and security systems. The new trains will be six metres longer than the existing trains, and therefore use the full platform lengths as earlier Piccadilly Line trains did. This increase in train length, along with a more spacious train interior layout will provide an additional 19 per cent passenger capacity per train. Such extra length cannot be added for the Bakerloo and Central Line upgrades, but could be a feature of future trains for the Northern and Jubilee lines, where current trains are composed of similar length cars to the Piccadilly 1973 Tube Stock, and a 19% capacity upgrade would be welcome. The new train specification requires an average fleet reliability of 120,000km mean distance between service affecting failures. The Piccadilly fleet currently achieves an average of only 32,000km.

For the resignalling of all four lines, TfL has issued an Invitation to Negotiate to Alstom, Siemens and Thales, the three companies previously shortlisted. Tenders are expected back this autumn with a view to awarding the contract by mid-2020. The initial commitment will be for stage 2 of the Piccadilly Line Upgrade only, with the other lines representing future planned options. The Piccadilly Line interim control centre, now being commissioned at South Kensington, will be retained for the new signalling until construction of a single control centre for all four DTUP lines in conjunction with the Bakerloo Line upgrade.

The NTfL Operations and Maintenance Concept document was reviewed in the October 2017 edition of *Underground News*. A subsequent revision, now the DTUP Operations and Maintenance Concept, has been released dated 2 May 2017 – it is not the major update promised, and is again a year old. Interestingly, the introductory paragraph which once showed the first trains in 2023 with a 15-year programme, is now modified to state first trains in 2027 with a 11-year programme, suggesting completion as planned but delay in spending for new Piccadilly Line trains. However, the above planned order for these trains confirms an expected 2023 arrival in London, presumably achieved with 'pausing' of the new Jubilee and Northern Line trains order.

The earlier paper considered a central overhaul facility at Ruislip Depot for both Piccadilly and Central Line trains, but all DTUP trains are now to use the Trains Modification Unit facility at Acton Works. This is currently under construction for the Central Line Improvement Project and will also be used for heavy

overhaul of S Stock in preference to the once planned Neasden facility. Strange that with dispersal of overhauls to line depots, removal of the rail connection to the Works was once considered.