

# **CBTC SMA1 & 2 COMMISSIONED**

**by John Hawkins**

The 4LM Communications Based Train Control (CBTC) commissioning has now reached all four sub-surface lines. The CBTC system, having settled down between Hammersmith and Latimer Road since March 2019, the first major step was taken when areas SMA1 and SMA2 were commissioned together on Saturday 31 August to enable Circle and Hammersmith & City Line trains to use the system as far as Euston Square. Significantly, this involves all Metropolitan Line drivers and all S8 stock running south of Finchley Road, and consequently all west end District Line drivers east from Paddington into Edgware Road and back again. After a weekend of trial running, passenger services commenced on Sunday 1 September 2019 at about 12.30.

Hammersmith & City Line trains now operate for almost an hour under CBTC from Euston Square westbound back to the eastbound platform, including reversing time at Hammersmith, or about a third of their round trip. Train Operators are required to check that the Vehicle On-Board Controller (VOBC) is operating at Harrow-on-the-Hill and Wembley Park southbound starting signals so that diversion can be arranged in case of defect. Similarly at King's Cross westbound starting signals, and at Bayswater eastbound starting signal, although no diversion is available from there!

This brought the end to the oldest signal cabin operation on LU, the Metropolitan Railway's 1926 signal box at Edgware Road. The signal cabin used a traditional lever-based system to control the claimed busiest junction in the UK, with around 3,500 lever movements every day to move over 900 trains. Baker Street Signal Control Centre also gave up control of the area from Finchley Road to Euston Square, but can monitor train movements in the area on a large video screen. The area now comes under the new Hammersmith Service Control Centre which will eventually control all trains over these four lines, making up 40% of the LU system. At Paddington District and Circle Line eastbound platform 1, the starting signal is replaced with a two-aspect signal whose red aspect changes to blue when the CBTC system has identified that a train has correctly transitioned onto the system. At Finchley Road platform 4, the southbound starting signal is also replaced by a two-aspect red/blue signal, as is the Euston Square westbound platform 1 starting signal.

The new signals are 11+ metres further from the platforms than the signals they replace. The red/blue signal at Latimer Road westbound platform is bagged out of use along, with all conventional signals in the new area. Also noted was that fixed red lights at the end of tracks are replaced by stop signs, e.g. Baker Street bay roads and Edgware Road siding, presumably because CBTC will normally control train speeds and stopping.

There seems to be a principle with the new signalling that rather than changing ends in the tunnel to reverse over a trailing crossover, the train can be routed to either just past the crossover or to the next station, if close, changes ends in the platform and returns wrong road to the crossover under CBTC, e.g. the new signalled trailing crossover west of Paddington (Suburban) is commissioned. Westbound trains can reverse from the Royal Oak platform or stop clear of the crossover and reverse back to the eastbound line. The hand-worked crossover west of Royal Oak is permanently secured out of use, to be later removed. At Paddington, a detector for a train overrunning Network Rail platform 14 will stop all movement on the adjacent LU lines.

A new move is introduced from Finchley Road northbound platform back south to the Swiss Cottage crossover to regain the southbound line. Trains can continue to use this crossover for local reversal. Another new move is from north of Baker Street on the northbound line back south into the two bay platforms or to the northbound platform. This could be useful for setting a defective northbound train back into a bay road or, following service disruption, to allow trains from the bay roads to return towards Aldgate via the northbound platform 2 and the emergency crossover east of the junction. Noticeably absent from the new moves is reversing from southbound platform 3, which was lost when platforms were lengthened for S8 trains, and was promised to return with resignalling. This means that an incident in the City restricts reversing to the bay platforms, since the northbound platform must be left free for trains returning from the east. S8 trains may be routed west of Baker Street as far as Paddington empty to use the new crossover, but may also reverse from west of Edgware Road on the westbound line. Door controls and video images will not function, although some S8 stop marks have been provided. Rear cab clear plungers are provided at the east end of

Edgware Road middle platforms, with related rear cab clear indicators at the west end to enable stepping back of train operators to be introduced in the future.

## LAST EVENTS

The last *scheduled* train to use the siding at Edgware Road reversing via OP32 (and out in the morning via OP10) was train 175 (in) and 202 (out) formed of (E) 21506-21505 (W).

However, train 201 (W) 21309-21310 (E) was *the* last train via Edgware Road siding in the end due to a Train Operator's physical relief, departing as an additional inner rail working to Barking.

Last trains through all of the boundaries were:

Eastbound (ex-inner rail to Moorgate – train 175 – (E) 21470-21469 (W).

Eastbound (ex-Hammersmith to Edgware Road only) – train 210 – (E) 21537-21536 (W)

Westbound – train 204 – (W) 21554-21553 (E)

Inner Rail – train 215 – (W) 21544-21543 (E)

Northbound – train 447 – (N) 21053-21054 (S)

At Edgware Road, the last train 215 empty to Triangle Sidings departed 30 seconds late at 01.03, crossing Praed Street Junction and out of section at 01.05. Signal lever OP11 was replaced shortly after and the cabin closed after completion of traction current duties at 01.26.







**Above:** (Left and Right) Last memories of the operational signal cabin at Edgware Road, which dates back to 1926.

**Both photos: Jack Gordon**

**Left:** Having been commissioned in the early hours of Saturday 31 August 2019 with empty test running of trains then following, it was decided that the new signalling system was robust enough to carry passengers from around 12.30 on Sunday 1 September, which indeed happened, but with the service variations for the weekend work remaining in place. The 12.40 ex Aldgate with train 711 formed 21021-21022 was the first west/northbound train to Finchley Road in passenger service through the CBTC area. The first District Line train from Paddington to Edgware Road and back under TBTC was train 77 at 12.30.

**Photo: Chris Cobley**

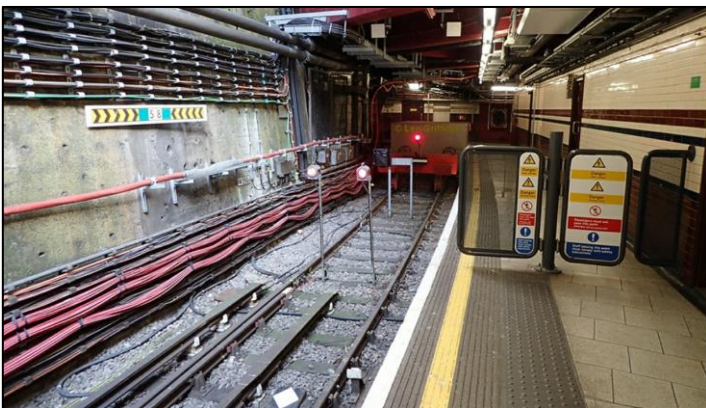
With the new signalling system, it is now possible for the dot matrix indicators at Edgware Road to show the countdown times – and even the correct information for the occasional Ealing Broadway trains via the north side of the Circle Line!

**Below:** (Left) The dead-end in platform 4 at Baker Street on 24 August 2019 before the new signalling system was commissioned. In view is the ‘diamond’ stopping mark, fixed trainstop and two red lights. Beyond that, the new ‘stop’ sign is in place but covered over and a single red light is mounted on the buffer stop itself.

**Photo: Len Griffiths**

**Below (Right)** It’s a bit unnerving when a train enters a terminus platform at Baker Street, still going faster than 10mph (where it should!) and you’re greeted at the end with nothing more than a stop sign! It seems that fixed red lights have had their day! Of course, the simple stop sign is reflective and is picked up by the train’s headlights.

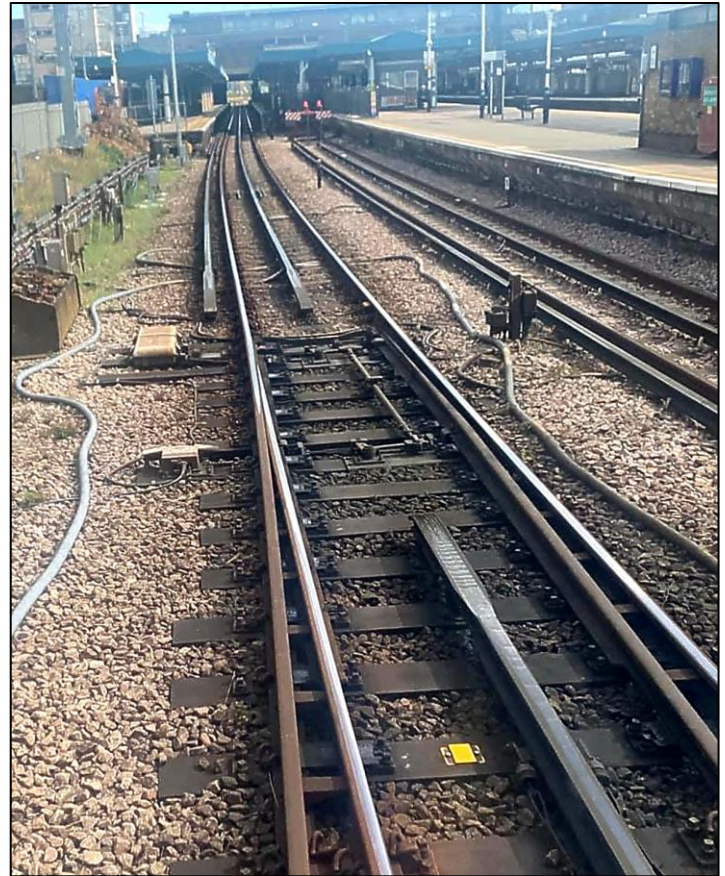
**Photo: Keith Gregory**





On the Hammersmith & City Line, with the securing of Royal Oak crossover west of the station, the question is asked if this is the end of ground frames or hand-worked crossovers on LU running lines?

However, the Barking LU/NR crossover remains but is it classed as a ground frame or hand-worked, as there is no control from Barking cabin? This was part of Metronet bringing Network Rail trains onto LU for track maintenance but since the demise of Metronet, has been rarely used.



**Above:** (Left) The NR/LU crossover just to the west of platform 2 at Barking seen on 27 March 2009 at the time of its installation which connects the Gospel Oak – Barking line with the eastbound District Line.

**Photo: Brian Hardy**

**Above:** (Right) Looking east at the London Underground end of the crossover towards Barking station with the bay platform on the right. The yellow tag can be seen, in the 'four foot', fitted in preparation for the CBTC signalling system. The crossover will be retained for use as it is now.

**Photo: Ed Mackintosh**