

RESIGNALLING THE SUB-SURFACE RAILWAY

by John Hawkins

Details are emerging of Thales scheme for resignalling the sub-surface railway, although a contract is not expected to be finalised until “later this Summer” (Commissioner’s Report to July TfL Board meeting)¹.

This is the third attempt to bring control of these lines into the 21st century. Plan A, as it were, back in 2003, was for Westinghouse to commence at Watford and resignal 41 stages over 6 years to ensure that new signalling was available before the new S Stock entered service on each line. This would have enabled more frequent services to compensate for the lower seating capacity of the new trains, and would have been nearing completion by now. However, with the collapse of Metronet in 2007 this contract was abandoned by TfL with a claim that it was not value for money. After a four year delay TfL came up with a low-cost plan B from Bombardier to commence from Uxbridge and resignal 12 stages over 2 years. This was again abandoned in late 2013 with insufficient evidence of progress towards that goal.

So now we have what must be plan C, with Thales proposing to commence from Hammersmith and resignal 14 stages over 2½ years. The first area from Hammersmith to Paddington would serve as a trial area for five months from early 2017 before four further areas are converted around the Circle Line. It would appear that the idea is now to resignal the Hammersmith & City and Circle lines in 2017-18 to enable service increases there by the year previously promised for completion of all lines. These areas could also be used by District Line trains between Upminster and Earl’s Court, allowing Tower Hill trains to be extended to Barking in the peaks. However, the difficult interworking with National Rail west of Earl’s Court is to be left until late 2019 with final completion on the Wimbledon branch some two years after the Bombardier plan, but still earlier than the expected completion at the time the contract was abandoned. The Metropolitan branches are to be resignalled in 2018-19 to enable a service boost there before District Line completion.

With the weary commuters’ experience over recent years, it would be reasonable to “believe it when you see it”, but Thales recent performance under TfL control on the Northern Line could inspire confidence that things are about to happen at last.

PROPOSED COMMISSIONING DATES

	Area	Date
1	Hammersmith – Paddington	March 2017
2	Paddington/Bayswater/Finchley Road – Euston Square	August 2017
	Area	Date
3	Euston Square – Monument and Stepney Green	October 2017
4	Monument – Sloane Square	December 2017
5	Sloane Square – Fulham Broadway/Barons Court/Olympia/Bayswater	February 2018
6	Stepney Green – Becontree	April 2018
7	Becontree – Upminster	June 2018
8	Finchley Road – Wembley Park	August 2018
9	Wembley Park – West Harrow/Moor Park	October 2018
10	West Harrow/South Harrow – Uxbridge	December 2018

¹ The contract is now expected this autumn – note slippage since July TfL Board meeting, a little like Bombardier’s expected completion date! It looks like they are trying to cut the public contract cost by reviewing tasks to be taken in-house, i.e. Train Fitment, End State Track Layout, Wayside Infrastructure, Service Control Centre integration, Operational & Maintenance Readiness. This indicates how wide-reaching resignalling is these days. We still don’t know if they are using the ‘wiggly-wire’ system of the Northern Line, or a more modern pure radio system. Also it’s unclear how the Piccadilly Line will interwork, but I note that it still resignals to Northfields. Is that to become a dual D&P depot again to accommodate the new trains, or only whilst depots are rebuilt? I guess that Hammersmith & City will convert first to Whitechapel, before the Circle trains start to convert. That indicates some over-lay system so that the Circles can still use the old signalling at first. The Mets will also need to change to the new system to allow the service upgrade, along with the Districts east of Earl’s Court, which will require all trains to be fitted by mid-2018. I don’t know why they have introduced an extra stage on the south side of the Circle since it will be plain track but double crossover at Embankment. There is a couple of months between stages, so that will be an easy one! Outer areas cover much more distance in the same time periods! The extra stage to Wimbledon is obviously to leave longer for Network Rail to agree with it.

11	Moor Park – Amersham/Chesham/Watford/Watford Junction	February 2019
12	Barons Court – Chiswick Park/Richmond	April 2019
13	Chiswick Park – Northfields/Ealing Broadway	June 2019
14	Fulham Broadway – Wimbledon	September 2019

Regarding the Piccadilly/District interface, new signalling is clearly shown reaching North Ealing as a change-over point, but not Northfields or even South Ealing. The 'fast' lines are not included east of Acton Town. It seems that the Acton/Ealing area will retain its conventional signalling for the Piccadilly, with the new signalling overlaid. This includes to Ealing Broadway, enabling the Piccadilly to be diverted there if required. Presumably a similar arrangement will apply to Uxbridge and with National Rail interworking areas.

With the initial trial on the Hammersmith & City Line, this sort of arrangement applied on the first trial area on the Jubilee, between two stations on the Stanmore branch. If the train was fitted and the driver trained, then they changed over and used the new signalling, ignoring the old signals. This means trains passing red signals at normal speeds! Like on the original Victoria Line signalling lunar white aspects, trains can continue in auto but not manually since they require a shorter clear section than conventional signalling.

As readers know, the Victoria then Central and now Jubilee & Northern lines operate on the basis of only cab-signalling fitted trains in traffic hours. But the trial Jubilee area was overlaid on the classic signalling system, as may happen on the SUP for National Rail & Piccadilly trains. It has taken some searching, but I came up with the details on dual-fitted Seltrac:

http://lurs.org.uk/articles10_htm_files/jubilee%20line%20upgrade.pdf on page 78/79:

"For the dual-fitted area, which was commissioned on 26 March 2008 and decommissioned on 18 June 2009, the Seltrac 40 equipment was overlaid on top of the existing fixed block signalling from Canons Park to Kingsbury, including the reception road No.33 of Stanmore sidings. This gave drivers practical experience of driving to the responses of the in-cab system rather than simply looking out of the cab window working from signal to signal as they were used to".

I think that the idea was that drivers needed three months experience to drive up to the target speed without exceeding it and getting a brake application. They would then have gone on to implementing the system through the Jubilee Line in stages before one change-over to auto-operation on the whole line. However, implementation took so long that they gave up on the dual-fitted area. The Northern Line planned the same from Brent Cross to Colindale northbound – see http://lurs.org.uk/documents/pdf09/may/a_better_northern-line.pdf (third of the way down on page 5), but gave up on the idea after Jubilee Line experience and went straight to ATO as each area was commissioned.

I believe early plans for the Jubilee Line included installing a permanent dual-fitted area on the northbound to allow the Metropolitan Line to still reverse at Finchley Road back to Neasden, but this must have been abandoned for simplification or due to costs. So the SUP system should not be too much of a system upgrade for Thales.

ORIGINAL SSL DTG-R SIGNALLING SYSTEM COMMISSIONING PLAN (WHAT MIGHT HAVE BEEN – 1)

	Area	Date	Note
1	Watford – Croxley	December 2008	(1)
2	Moor Park – Chorleywood	Late Spring May Bank Holiday 2009	(2)
3	Chalfont – Amersham/Chesham	July 2009	(3)
	Area	Date	Note
4	Northwood – North Harrow	August Bank Holiday 2009	
5	Harrow-on-the-Hill	Christmas 2009	(4)
6	West Harrow – Eastcote	February 2010	
7	Ruislip Manor – Ruislip Siding	March 2010	
8	Ickenham – Uxbridge	Easter (April) 2010	(5)
9	Northwick Park – Preston Road	May 2010	(6)
10	Wembley Park – Neasden	June 2010	(7)
	Neasden – Kilburn		(8)

11	Kilburn – Finchley Road	July 2010	(7)
12	Swiss Cottage – Lords	August Bank Holiday 2010	(9)
16	Whitechapel – Bow Road	October 2010	(10)
17	Baker Street (Met.)	Christmas 2010	(11)
18	Bromley – West Ham	February 2011	(12)
19	Plaistow – Upton Park	March 2011	
20	East Ham – Barking	Easter (April) 2011	
21	Barking Sidings – Upney	Late Spring May Bank Holiday 2011	
22	Becontree – Dagenham East	June 2011	(13)
22	Elm Park – Hornchurch	July 2011	
23	Upminster	August 2011	(14)
24	Wimbledon – East Putney	September 2011	
25	Putney Bridge – Fulham Broadway	October 2011	
26	Aldgate/Aldgate East – Liverpool Street	Christmas 2011	
27	Hammersmith – Goldhawk Road	January 2012	(15)
28	Shepherd's Bush – Ladbroke Grove	February 2012	
29	Westbourne Park – Paddington Suburban	March 2012	
30	Paddington (Circle) – Bayswater	April 2012	
30	Notting Hill Gate – High Street Kensington	May 2012	
31	Praed Street Junction – Moorgate	Christmas 2012	(16)
32	Ealing Broadway – Ealing Common	February 2013	
	Tower Hill to Monument		(8)
33	Acton Town	Easter 2013	
34	Chiswick Park – Turnham Green	April 2013	
35	Stamford Brook – Ravenscourt Park	May 2013	
36	Hammersmith – Barons Court	June 2013	(17)
36	Richmond branch	August Bank Holiday 2013	
37	Earl's Court to Olympia, West Kensington/West Brompton	Christmas 2013	(18)
38	Gloucester Road – South Kensington	Easter 2014	
39	Sloane Square – Embankment	November 2014	
40	Temple – Cannon Street	Christmas 2014	

STCS implementation complete June 2014 or at stages 39/40 in May/June with full DTG-R capability. Last S7 train delivered August 2015 for District Line.

NOTES:

- (1) First S Stock train delivered February 2009 for testing.
- (2) Rickmansworth cabin closed. Interim control centre opens.
- (3) Amersham cabin closed.
- (4) 100 hour blockade. Harrow cabin closed.
- (5) Rayners Lane cabin closed.
- (6) Transfer signalling control to new Signal Control Centre (SCC).
- (7) Overlay with JNP system.
- (8) No date or conversion stage number(s) given
- (9) Transfer of control of all overlay to SCC.
- (10) Blockade. Whitechapel new layout. Whitechapel cabin closed.
- (11) 100 hour blockade. DTG-R available Met. Line to Baker Street.
- (12) S8 delivery commences.
- (13) Barking cabin closed.
- (14) Upminster cabin closed.
- (15) Hammersmith cabin closed.
- (16) Edgware Road cabin closed.
- (17) Final S7 delivered for C Stock replacement.

(18) 100 hour blockade. DTG-R available Wimbledon – Edgware Road service.

**CITYFLO 650 TBTC SYSTEM COMMISSIONING PLAN
(WHAT MIGHT HAVE BEEN – 2)**

A different programme yet again, with not so much ‘detail’. The date for stage A1 is given as “end-2015” and the last stage D12 is given as “end-2017”, with no other dates included.

Area

- A1 Uxbridge – West Harrow
- A2 Amersham/Chesham/Watford – Northwood
- A3 Northwood/West Harrow – Wembley Park
- A4 Wembley Park – Baker Street
- C5 Hammersmith – King’s Cross
- C6 King’s Cross – Embankment/Whitechapel via Aldgate
- C7 Edgware Road – Embankment via High Street Kensington
- D8 Whitechapel – Barking
- D9 Barking – Upminster
- D10 Earl’s Court – Wimbledon
- D11 Earl’s Court – Acton Town/Richmond
- D12 Acton Town – Ealing Broadway/Rayners Lane