

## Rail Investment Priorities in London & the South East

This document sets out the author's personal view on possible methods for infrastructure investment prioritisation, built on his experience having been involved in Signalling Supply, Network Rail Major Programmes, and now the Crossrail Programme.

The author has a number of feasibility schemes worked up in more detail, and would be more than happy to share his personal views on incremental investment opportunities targeted at maximising the use of existing rail corridors, if the panel should wish to pursue this.

### How should Rail Investment in London be prioritised?

New major programmes, Crossrail, HS2 and Crossrail 2, creating new railway corridors, in the author's view, should be complemented with work prioritised on two bases;

1. Maximising the use of existing rail corridors, such that each two-track commuter corridor is optimised to carry up to 24 tph of up to 12-Car trains in each direction – i.e. to move up to on average 1,500 people x 24 trains per hour = 36,000 people per hour. Investing in existing corridors in priority to complement and integrate with the new major programmes such as Crossrail, HS2, and Crossrail 2 – e.g. improving the feeder networks to these new schemes.
2. Optimising the development of London by considering transport projects as an integrated part of planning permission for new property development, and not allowing existing railway corridors to be constrained. In fact using developer's to assist in the incremental expansion of existing railway corridors to complement the new major schemes.

### Which existing railway corridors are constrained, and could be expanded?

Existing railway corridors are typically constrained by not having enough platform capacity to support maximum train volumes, and / or are unable to support longer trains. Examples include:

1. 2 track corridor (The DC Lines) alongside West Coast Main Line between Euston and Watford Junction, used by 6-car Underground trains, and short formation London Overground trains at less than 10 trains per hour in total. The proposed link from the Crossrail scheme at Old Oak Common onto the West Coast Main Line could be fed from services using incrementally expanded DC Lines, releasing capacity at Euston by diverting West Coast suburban services through into Crossrail train paths. A win-win for existing corridor usage maximisation, and an enabler for a more major Euston Master Plan (for example).
2. 2 track corridor (The East London Line) connecting the Brighton Lines to the North London Line, but only used by up to 5-Car London Overground trains, with stations that are too closely spaced, and a service frequency of around 15 trains per hour.
3. 4 track corridor between Loughborough Junction and Blackfriars, planned to be used by just 8 trains per hour for through Thameslink services (mainly 8-Car) from 2018, and having capacity only for 8tph of up to 12-Car terminating services at Blackfriars. i.e. 16tph in total for the 4-track corridor. (Constrained further south by Herne Hill and Tulse Hill approaches which could be changed through combined investment in development in these areas)
4. Brighton Main Lines (BML) corridor, serviced at East Croydon by 8 tracks toward London Bridge and London Victoria, and therefore should be capable of fielding up to 80 trains per hour in each direction (considering some services need to service West Croydon), however with only 6 through platforms at East Croydon, a 4-track railway corridor south of there, and a series of flat junctions and inadequate numbers of platforms for splitting and joining

further south, the BML is constrained to a probable maximum capacity of about 40 tph, or half its potential.

5. 4-track (but 3-track in places) North London Line corridor between Dalston Junction and Euston area, reserved for freight traffic to await paths toward Willesden, and a small number of short London Overground trains per hour passenger services. Could service diversion of traffic from the south end of the West Coast DC Lines corridor, linking in a Thameslink-style fashion through to the East London Line, and the Brighton corridor.
6. Great Northern lines terminating in Moorgate – could be extended through tunnels via London Bridge to link to the Bright Main Lines, therefore delivering another 24tph North South corridor opportunity. Tunnelling activity currently being undertaken in the Bank area might be quite easily extended in the immediate future to create new link required.

### What is typical in terms of missed Development opportunities?

In London and the South East up until 2015, with the exception of the new Crossrail development, property development has included very little consideration of the transport opportunities that could be released for the railway corridor. Examples include:

1. The South Bank development at Blackfriars, in which a large residential tower block at the south station will for the next 30 to 50 years block any possibility of access to the remaining old railway bridge piers standing in the River Thames, which could have been used to provide two more terminating platforms for trains from the south arriving at the newly expanded Blackfriars Station. The new towers even include cut-out corners at higher levels for roof garden spaces, yet have no cut-out at bridge level for the railway.
2. The new development at Elephant and Castle has no provision for terminating platforms that could logically have provided a well-connected new southern London Terminus to augment Blackfriars sitting on one of the most underutilised 4-track railway corridors in London.
3. Finsbury Park residential development adjacent to the station on the ECML that is proven (December 2014 debacle) to require major upgrade to increase interchange connectivity.

### How could incremental railway corridor improvements be sized and optimised to support new build railway projects?

Railway corridor improvements could be sized and optimised along the following broad rules:

1. Platforms could be extended generally to accommodate 12-Car trains on most suburban lines serving London
2. Where possible, terminal platforms supporting around 4tph per platform face, should be replaced by Through Connections. At Through Platforms with limited interchange, 24tph in each direction can be accommodated with modern rolling stock using ATO (similar to Thameslink Core Area, and Crossrail Central Operating Section), and 18tph in each direction if driven manually – therefore a huge increase on usable corridor capacity. At large scale interchange stations such as London Bridge and East Croydon, 18tph with ATO, and 15tph manually driven would be more supportable timetable planning rules.
3. Railway corridor incremental improvements could be optimised to support and divert commuter numbers away from the places that are being developed in the new build railways – e.g. diverting traffic away from Euston while Crossrail 2 and HS2 are built. I.e. a similar approach to that used when diverting Thameslink traffic from London Bridge to Blackfriars, but on a more effective and larger scale.

4. The application of Digital Railway techniques to increase capacity (as used on the Thameslink Core Area to give +4tph under ATO / ETCS) should only be considered feasible where successive flat junctions and constrained platforms have first been addressed. E.g. with successive flat junctions on the BML for example, it is the author's personal view that it is not possible for Digital Railway techniques to make a large increase in the overall train flow rates, as all that is achievable in practice is bunching up between successive flat junctions and stations.

#### Examples of incremental improvements for Brighton Main Line corridor:

The following scenario of prioritised incremental railway corridor improvements to support and maximise the usage of the Brighton Main Line gives one example of the sort of schemes that the author would propose:

1. Provision of 6 new platform roads underneath the existing East Croydon Station served exclusively by the London Bridge corridor. i.e. existing above-ground station serves the Victoria corridor only, and underground serves London Bridge.
2. South of East Croydon station, widen the railway corridor to provide for the fly-down connections to the new underground station at East Croydon, thus creating a 6-track approach from the south to both upper and lower platforms. Remodel the junction south of South Croydon station, so as to provide a 50mph grade-separated junction to the East Grinstead lines, and two lines sweeping alongside the allotments to provide a 6 track approach through Purley Oaks, south towards Purley.
3. At Purley, provide 6 platform faces and a 4-track railway corridor toward Coulsdon South for slow-line services, with no platform faces on the Fast Lines.
4. At Coulsdon South provide a 4-track railway corridor in place of the current 2-tracks through the station; 2 non-stopping relief lines in the centre, and moving the platforms to the outside of the corridor. (Fast lines remain unchanged). Relief lines converge just south of the station to run through the deep cuttings and tunnel – i.e. 4-track corridor remains through towards Merstham and Redhill.
5. At Merstham, expand the station to have four platform faces on the Slow Lines, utilising the unused land currently sitting between the Fast and Slow Lines.
6. At Redhill, expand the station to have five platform faces – a new Tonbridge platform to the east of the current station built over the current post office depot, as well as the planned Platform 0 on the west of the station serving the Reigate lines.
7. Provide a grade-separated junction between the Fast and Slow Lines just south of Redhill, before Earlswood Station. Also provide a 12-Car central turn-back platform between the Down Slow and Up Fast at Salfords station, for use during perturbation.
8. North of Gatwick Airport provide a wider northern throat with a 6-track approach, and grade-separated cross-over to allow routing of trains between the Fast and Slow lines to and from the London direction.
9. At Three Bridges, provide 6x12-Car platforms, re-building the currently disused western-most platform face for Up trains from the Horsham lines. Move the siding north of Three Bridges to the centre of the layout between the Fast and Slow Lines to provide a turn-back facility for cross-corridor Depot moves, and provide a grade-separated junction between the Horsham lines and the Brighton Lines north of the turn-back siding.
10. Extend the East Grinstead lines south through the Heritage Bluebell Railway corridor, to Horsted Keynes, and then re-build the dismantled railway between Horsted Keynes and Haywards Heath to re-join the Brighton Main Line. This will provide a cheaper alternative to

BML2 proposals via Lewes, and even allowing for heritage railway traffic, a 2-track corridor extension from East Grinstead could easily support the additional trains envisaged to flow to Brighton in the BML2 scheme. In effect this creates a 4-track railway corridor as far as Haywards Heath on the Brighton Main Line, with 2 tracks via Balcombe and 2 tracks via East Grinstead.

11. Widen the railway corridor to 4-tracks south of Haywards Heath to Wivelsfield, and grade-separate Keymer Junction and remove the level crossing on the Lewes lines by lowering these tracks to pass under the road.
12. While leaving just two tracks through the corridor via Burgess Hill and Hassocks, reinstate the fourth platform at Preston Park, and provide a grade-separated junction north of this station, thus allowing trains from Hove to exclusively serve the 2 western-most platforms, and trains to and from Brighton to exclusively serve the 2 eastern-most platforms.
13. Widen Brighton station by providing 2 new platforms on the eastern-most side where the multi-storey car park is sighted today, providing an increased car-parking capacity below the new platforms.
14. Widen the Brighton throat to allow more flexible approaches, to maximise use of the improved 2-track corridor toward London.

## Summary

This document gives a personal view of the author as to how investment in incremental schemes to release capacity in existing railway corridors might be used in an incremental way to feed and integrate with the new major programmes that are proposed in the London Area such as Crossrail and Crossrail 2, as well as the southern end of the HS2 programme.

While the examples quoted above obviously do not work in isolation, the author has thought through a pattern of works and outline feasibility plans which if the panel had time, and was minded, he would be very pleased to discuss in more detail.

It is hoped that sufficient detail has been included herein to give visibility of an overall philosophy that could be utilised in planning and prioritising investment works.

## Contact Details:

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