

# **NMF/HLOS EVIDENCE PACK – NMF Baseline Timetable (2009/10) and Specimen HLOS Options**

## **Network Modelling Framework (NMF) Baseline Timetable (2009/10)**

### **Introduction**

1. The Baseline Timetable is the starting point for all HLOS analysis and represents the train service timetable which is expected to operate in 2009/10. As part of the contract for the NMF SDG and DeltaRail were required to agree the Baseline timetable specification with stakeholders and to prepare and code a baseline timetable accordingly. The following document provides the baseline changes that are incorporated into version 1.3 of the NMF model. In the latter part of this document, a summarized list of specimen HLOS schemes is presented. An expanded list of such schemes will be published in a separate document.

### **Summary of 2009/10 Baseline Timetable**

2. The starting point for the Baseline Timetable is the published December 2005 timetable. This has a large number of differences from the May 2004 timetable for which the 2004/5 passenger revenue is associated in the NMF. The December 2005 timetable was automatically available in NMF having been translated from MOIRA Timetable Editor.
3. For the NMF/HLOS purposes, edits were made to reflect expected changes. Changes were made to both timetable details and rolling stock details.
4. This document lists only those TOCs that have had edits made to their December 2005 timetable details. Where a TOC is not presented here, it is assumed that its timetable is unchanged from that in December 2005.

### ***Greater Western SLC2 Timetable***

5. This timetable was specified as part of the recently re-let of Great Western (including Thames Trains). Class 180s are replaced with HSTs. Changes were made to the seating capacity of the HSTs which are currently being implemented on this franchise. This involves the re-configuration of HSTs on long distance services: with low, medium or high density seating depending on the western destination of the service.

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### ***BML RUS (Southern & Gatwick Express)***

6. This timetable includes the half-hourly Gatwick Express service being replaced with quarter-hourly December 2006 services that run non-stop from London Victoria to Gatwick. It was assumed the updated London Victoria - Gatwick services would remain Class 460 (8 car) as in current Baseline. Six morning peak and 6 evening services London Victoria - Gatwick December 2006 services were extended to run from London Victoria – Brighton and it was assumed that all the extended peak services would be Class 442 (10 car). The other half-hourly service extended to the South Coast with a stop at East Croydon.
7. The fast Brighton - Victoria services stopping at Gatwick (Southern), were replaced with the December 2006 services which do not stop at Gatwick. 3 services London Victoria - Brighton were replaced with 3 London Victoria - Reigate services. 3 Brighton - London Victoria services were replaced with 2 Reigate - London Victoria services and 1 Gatwick – Victoria service. Assumed 377 operation for replaced services.
8. The timetable also includes various other anticipated Southern service timetable revisions including a significant reduction in the splitting and joining of services.

### ***GNER***

9. The May 2007 timetable for the London Kings Cross - Leeds services (half-hourly throughout the day) replaced the 2005 timetable for this service. The formations from the current baseline were maintained.

### ***Grand Central***

10. Coded in NMF as Hull Trains services: all services Hull – London Kings Cross (service group 750) - were replaced with the same services from the May 2007 Network Rail timetable. This increased the services by one a day in each direction. The 3 trains to Sunderland in each direction were left (although they do not exist in the May 2007 timetable).

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### ***Transpennine Express***

11. All services running on the routes between Manchester Airport – Lancaster, Barrow and Windermere (service group 246), and Windermere – Oxenholme, Lancaster, Morecambe and Preston (service group 356) were replaced with corresponding services in the West Coast December 2008 timetable.
12. All services from Manchester Airport – Preston, Blackpool North (Northern Rail) were also replaced with the corresponding services in the December 2008 timetable.
13. Class 158s replaced by Class 185s (increase in seats) for all services, with the exception of additional 2-car Class 170s leased to replace Class 185s on the Manchester/Hull services.
14. Service changes that are driven by the West Coast December 2008 timetable changes include replacing the Oxenholme/Windermere services with services running from Manchester via Oxenholme/Windermere to Glasgow or Edinburgh. These will replace the VXC services. These TPE services are formed of Class 185s.

### ***Thameslink-Great Northern SLC2 Timetable***

15. The timetable represents very limited changes to the December 2005 timetable, the GN timetable is almost unchanged and the Thameslink service incurs only minor changes:
  - all peak period trains formed of 8-cars, with some changes to stopping patterns;
  - rationalisation of services in the off-peak; and
  - reduction in peak period services but increase in peak hour services.

### ***South West Trains***

16. A new hourly Romsey - Salisbury service replaced the current Romsey – Totton service. The new services were allocated 159 3-car (with 196 seats)
17. The service between Brighton and Basingstoke/Reading via Fareham was

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withdrawn. A new service was introduced for Southern to run between Brighton and Southampton in the paths of the withdrawn service (see Southern).

18. The Waterloo – Weymouth stopping pattern was changed to offer a faster journey time. Hamworthy, Wareham and Dorchester South will be the only stations served between Poole and Weymouth.
19. Waterloo – Pool services were extended to Weymouth calling at all stations.
20. Waterloo – Southampton service was extended to Poole and changed to call additionally at Shawford, Swaythling, St Denys, Millbrook, Redbridge, Totton, Ashurst and all stations between Brockenhurst and Poole.

### ***Southern/IKF***

21. A new service was created to run between Brighton and Southampton in the paths of the current South West Trains Brighton-Reading/Basingstoke service. It calls additionally at Cosham, Portchester, Fareham and Swanwick.
22. A new East London Line: Crystal Palace - New Cross Gate service was added running 4 trains per hour throughout the day. The service has the stopping pattern of a Crystal Palace - London Bridge (South East) service. Previous services running from/to Crystal Palace were removed.
23. A new East London Line: West Croydon - New Cross Gate service was added running 4 trains per hour throughout the day. The service has the stopping pattern of a Sutton -London Bridge (South East) service.

### ***West Coast***

24. The West Coast December 2008 timetable included in the Baseline is the DS2 v3 specification. Service changes for a large number of TOCs are implicit in this timetable. Based on published information and departmental guidance, these are summarized as follows:

- 14 Services in each direction running Birmingham – Edinburgh Glasgow Central were added to current baseline (as in specification);

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- Services added are based on a December 2008 timetable provided for TPE;
- These new services were assigned to belong to service code 22112001 which runs on a similar route that belongs to West Coast London Euston-Carlisle / Glasgow;
- The formation assumed for all these services is a class 220 (4-Car) (188 seats), a unit used on this route (the worst case capacity).

25. There is an increase in the services provided as follows:

- 3tph London - Manchester (increase from 2tph);
- 3tph London – Birmingham / Wolverhampton (increase from 2tph);
- 1tph London – Glasgow;
- 1tph London – Crewe / Chester /Holyhead (fast); and
- 1tph London – Liverpool.

### ***Cross Country***

26. The December 2005 timetable was replaced fully with a Service Level Commitment 2 (SLC 2) New Cross Country (NCC) timetable provided with formations already allocated. These services were checked to tie in with the following requirements identified by the new baseline specification. The services provided have been adjusted to maximise high volume routes and generally rationalise route ends. Key changes include:

- Services from the South East and South West – Birmingham – Crewe - Glasgow are stopped short at Birmingham DEC 07 (rolling stock transferred to VWC Chester and to strengthen VXC services via Derby). South West services to run to Manchester and to Edinburgh via Leeds, and South East services to run to Newcastle and to Manchester (December 2008);
- Birmingham - Scotland services via Crewe have been allocated to West Coast;
- No services to Gatwick (adequately served by other TOCs including Great Western);
- Reduced services to the West Country (served instead by Great Western); and
- Additional capacity on some selected corridors, i.e. West/East Midlands via Derby

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and Manchester-Bristol.

### ***Silverlink***

27. The new London – Crewe “sweeper service” to be operated by the West Midlands franchise, was coded as a Silverlink service because of the absence of TOC re-mapping in the NMF. This service will call at major stations on the southern section of the WCML and all stations north of Rugby via Stone/Stoke. This new service replaces some existing Silverlink services.
28. The hourly London Euston - Liverpool Lime Street service in the current baseline was curtailed to a London Euston - Crewe service in both directions using existing formations. The new London - Crewe service also calls at Stoke-on-Trent. Formations allocated for London new Euston – Crewe services remained as in current baseline. Assuming that no more Silverlink services call at Liverpool Lime Street two services in the current baseline running between Liverpool Lime Street and Crewe were deleted. Assuming that no more Silverlink services call at Liverpool Lime Street two services in the up and down direction from Northampton - Liverpool Lime Street were cut short to run from Northampton – Crewe.

### ***Central Trains***

29. The following changes were made to Central services:
- Birmingham - Crewe services were extended to become Birmingham - Liverpool Lime Street services with a regular hourly pattern;
  - Birmingham - Coventry services were extended to become Birmingham - Northampton resulting in a regular hourly pattern;
  - Journey times increased to accommodate VWC and VXC service changes; and
  - Some Northampton - Crewe services cut short or sometimes removed (“replaced” with the Crewe sweeper service);
  - Some Nottingham – Birmingham and Birmingham – Liverpool services are removed, with stations served instead by the Silverlink Crewe sweeper service.

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### ***Arriva Trains Wales***

30. There is a reduction in ATW services on the Crewe/Chester/Holyhead route to accommodate the increased West Coast service on the route.

### ***Northern***

31. On some Northern services, journey time has been increased to make way for West Coast and Cross Country services.

32. A major change has been the addition of a new hourly Nottingham - Leeds service from the December 2008 timetable with class 158 operation.

### ***Scotland***

33. The Great Britain operational timetable for 2009/10 also included a number of amendments to reflect the short term priority projects that are being delivered or commenced between now and the end of the control period 3 (CP3) in Scotland. These include changes that deliver the following:

- a half-hourly service on the Glasgow-Kilmarnock route;
- the provision of two trains an hour in each direction, with a faster journey time, on the Shotts line;
- additional express services from Edinburgh to Aberdeen and associated stopping pattern changes from services between the Central Belt and Inverness, Fife, Aberdeen, Perth and Dundee;
- frequency improvements between Edinburgh – Glasgow Central, via Carstairs; and
- an enhanced North Berwick service.

### **Rolling Stock Changes**

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34. The following changes were made to the allocation of rolling stock:

- TPE services operated by Class 158 vehicles were replaced with class 185s;
- Class 180s were replaced with HST's on GW services;
- An additional 68 class 450 vehicles were added to SWT;
- The IKF class 376 fleet was increased by 30 vehicles by increasing train length from five-car to six-car; and
- Ten additional 3-car class 508s were transferred to Merseyrail from IKF.

35. The following changes made were driven by the West Coast changes:

- TPE lease four additional 2-car 170 trains to replace 185s on the Manchester/Hull services;
- TPE then use the displaced 185s for the existing Manchester – Scotland services;
- VXC then pass the now spare 4 Voyagers (221s) units from their Scotland service to VWC;
- VWC operate the Voyagers (221s) on their Holyhead/Chester (for DS1 and DS2 respectively) service; allowing
- VWC to operate the Pendolinos on their Manchester-London service and enhance the frequency of Manchester/Liverpool-London services.

### **Changes Excluded from the Baseline Timetable**

36. The following schemes, amongst others, are not included in the Baseline timetable specification:

- EM/WM/XC re-mapping;
- Draft, unpublished or un-contracted RPA/RUS recommendations;
- CTRL Domestic services;
- Crossrail, TL2K (but modelled as an HLOS option), IEP;
- Olympics;
- New stations (Liverpool South Parkway, East Midlands Parkway, Chelsea Harbour, and White City and Ebbsfleet);

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- TfL initiatives and other PTE schemes; and
- Airtrack.

37. Note that committed changes to Cross Country services that are associated with the EMWM/XC re-mapping have been included, but the services have not been reallocated to the new TOCs.

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### **HLOS Specimen Options**

Specimen enhancement options were developed by DfT, and modelled in the Network Modelling Framework (NMF), to demonstrate that the HLOS output metric requirements can be delivered within the Statement of Funds Available; as outlined in the Schedule to Appendix A of the Rail White Paper ‘Delivering a Sustainable Railway’.

#### **Option Generation**

The NMF model was used to produce baseline estimates and forecasts of passenger demand, capacity and load factors during the HLOS period 2009-2014, for a set of key city corridors and strategic route sections. However, where empirical demand data were available from recent National Rail Trends and/or Network Rail RUS documents, these were substituted for NMF’s estimates.

NMF baseline outputs were used to develop and prioritise capacity enhancement options, the outcomes of which were estimated in NMF.

The following rolling stock enhancement specimen options were modelled in NMF for their impact on capacity, reliability and safety. The benefits and costs of these options were then appraised. Costs included supporting infrastructure investment costs where appropriate.

#### **Specimen Option Summaries**

##### **Long distance services (InterCity)**

- West Coast train lengthening: 11-car Pendolinos.
- Midland Main Line journey time reduction: 8 minutes saved London–Leicester.
- Transpennine: Liverpool–Manchester extra services, Liverpool–Leeds train lengthening and journey time reduction.

##### **London and South East Services**

- Thameslink Programme (fully delivered by December 2015).
- Enhancement of weekday morning and evening peak services on:
- Southeastern, Southern, South West Trains, First Greater Western, Chiltern, London Midlands (Silverlink), FCC (GN), One (WA), One (GE), C2C.

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### **Regional Services**

Specimen enhancement options, all based on train lengthening, were formulated for weekday morning peak services for regional cities: Birmingham, Bristol, Cardiff (Welsh Assembly Government funding of rolling stock), Leeds, Leicester, Liverpool (non-Merseyrail services), Manchester, Newcastle, Nottingham, and Sheffield.

Additionally, there is also an allowance for a further pool of stock for other regional areas where crowding may become an issue, but this was not modelled within the NMF.