

HS11/HS12 Mk2 Route Loadings

Introduction

Deriving the route loadings for a given service plan can be a difficult and tedious matter, and very prone to error. Furthermore, understanding what a given loading consists of can be problematic at a later time, requiring effectively as much effort to interpret as it originally took to produce (the only way reliably to work it out is effectively to regenerate it).

For my own convenience as much as anything else, the present article elucidates the route loadings corresponding to service plans 3 and 4. Service Plan 3 is the full service plan for HS11/HS12 Mk1A, and SP4 for Mk2. The changes at Mk2 (and indeed from Mk1 to Mk1A) are slight, probably the least significant of any of the proposed routes.

The present article, though really of no interest to anyone but myself, will nonetheless be published on the website, just in case anyone feels moved to challenge my figures, in which case they will be able to see how I derived them, without having to challenge me personally.

The service plans are given in full, since otherwise the information would not be self-contained, and would require consulting the original Route and Service Plans article also.

Service Plan 3

HS11 (all HS Metro):

- 2tphH [HS4 Cardiff Airport ->] Euston Cross – Stratford HS South – Shenfield HS – Southend Airport – Southend HS – Grain – Sheerness – Faversham – Canterbury East – Dover Priory.
- 2tphH [HS7/HS4 Bristol Temple Meads BT ->] Euston Cross – Stratford HS South – Shenfield HS – Southend Airport – Southend HS – Grain – Sheerness – Faversham – Canterbury East – Dover Priory.

Regional Metro:

- 4tphRS Liverpool Street – Stratford – Shenfield – Wickford – Rayleigh – Hockley – Rochford – Southend Airport – Prittlewell – Southend Victoria
- 2tphR Charing Cross – Waterloo East – London Bridge – Ebbsfleet – Rochester – Chatham – Gillingham – Rainham – Newington – Sittingbourne – Teynham – Faversham (split/join) –:
– Whitstable – Chestfield and Swalecliffe – Herne Bay – Birchington on Sea – Westgate on Sea – Margate – Broadstairs – Dumps Park – Ramsgate
– Selling – Canterbury East – Bekesbourne – Adisham – Aylesham – Snowdown – Shepherd's Well – Kearsney – Dover Priory
- 2tphR Victoria – Bromley South – Strood – Rochester – Chatham – Gillingham – Rainham – Newington – Sittingbourne – Teynham – Faversham (split/join) –:
– Whitstable – Chestfield and Swalecliffe – Herne Bay – Birchington on Sea – Westgate on Sea – Margate – Broadstairs – Dumps Park – Ramsgate
– Selling – Canterbury East – Bekesbourne – Adisham – Aylesham – Snowdown – Shepherd's Well – Kearsney – Dover Priory

Representative Hourly Cross-Platform Connections at Southend Airport:

00H [HS4 Cardiff HS ->] Euston Cross – Dover Priory

RS Liverpool Street – Southend Victoria

15H [HS7/HS4 Bristol Temple Meads BT ->] Euston Cross – Dover Priory

RS Liverpool Street – Southend Victoria

– repeating at 30 and 45 minutes past.

Representative Hourly Cross-Platform Connections at Faversham:

00H [HS4 Cardiff HS ->] Euston Cross – Dover Priory

R Charing Cross – Ramsgate / Dover Priory

15H [HS7/HS4 Bristol Temple Meads BT ->] Euston Cross – Dover Priory

R Victoria – Ramsgate / Dover Priory

– repeating at 30 and 45 minutes past.

HS12:

UHS:

- 2tphH [HS4 Swansea ->] Euston Cross – Stratford HS South – Shenfield HS – Chelmsford – Colchester – Ipswich HS – Beccles – Norwich
- 2tphH [HS7/HS4 Cornwall -> Plymouth ->] Euston Cross – Stratford HS South – Shenfield HS – Chelmsford – Colchester – Ipswich – Diss – Norwich
- 2tphH [HS4 Weymouth ->] Euston Cross – Stratford HS South – Shenfield HS – Chelmsford – Colchester – Ipswich HS – Woodbridge – Wickham Market – Saxmundham – Darsham – Halesworth – Bampton – Beccles (split/join) –:
– Oulton Broad South – Lowestoft
– Reedham South – Berney Arms – Yarmouth
- 2tphH [HS4 Bournemouth West ->] Euston Cross – Stratford HS South – Shenfield HS – Chelmsford – Colchester – Manningtree – Mistley – Wrabness – Harwich Parkeston Quay – Dovercourt – Harwich Town

HS Metro:

- 2tphH [HS4 Plymouth via Salisbury ->] Euston Cross – Stratford HS South – Shenfield HS – Chelmsford – Witham – Kelvedon – Marks Tey – Colchester – Wivenhoe – Thorp-le-Soken (splits/joins) – :
– Clacton
– Frinton – Walton
- 2tphH [HS4 Salisbury ->] Euston Cross – Stratford HS South – Shenfield HS – Chelmsford – Witham – White Notley – Cressing – Braintree Freeport – Braintree

Regional Metro:

- 2tphR Liverpool St. – Shenfield GEML – Ingatestone – Chelmsford – Hatfield Peverel – Witham – Kelvedon – Marks Tey – Colchester – Wivenhoe – Thorp-le-Soken (splits/joins) – :
– Clacton
– Frinton – Walton
- 2tphR Liverpool St. – Shenfield GEML – Ingatestone – Chelmsford – Hatfield Peverel – Witham – White Notley – Cressing – Braintree Freeport – Braintree
- 4tphRS (Colne Valley Metro) Sudbury – Bures – Chappel & Wakes Colne – Marks Tey – Colchester – Colchester Town (reverse) – Hythe – Wivenhoe – Alresford – Great Bentley – Weeley – Thorpe-le-Soken (splits/joins) –
– Clacton
– Kirby Cross – Frinton – Walton-on-Naze
- 2tphRS (Felixstowe Metro) Ipswich – Westerfield – Derby Road – Trimley – Felixstowe
- 2tphR Harwich Town – Harwich International – Ipswich – Bury St. Edmunds – Ely – March – Peterborough – Stamford – Oakham – Melton Mowbray – Leicester – Hinckley – Nuneaton – Coleshill Parkway – Birmingham New Street
- 2tphRS (Bury St. Edmunds Metro) Ipswich – Needham Market – Stowmarket – Elmswell – Thurston – Bury St. Edmunds (split/join) –:

- Kennett – Newmarket – Dullingham – Cambridge
- Kennett – Soham – Ely – Manea – March – Whittlesey – Peterborough

It is worth explaining the thinking behind the service pattern on HS12. It is split into logically separate categories, the UHS services and the HS Metro and associated RM(S) services.

The four UHS services serve the major cities and larger towns of East Anglia, and have an identical calling pattern between Euston Cross and Ipswich, except of course for the Harwich service, which calls at Manningtree rather than Ipswich, then all stations to Harwich Town. The service to Norwich via Diss calls at Ipswich GEML station (as does an associated RM service from Harwich to Worcester, and the local Bury St. Edmunds and Felixstowe Metros). The services to Norwich via Beccles and Lowestoft / Yarmouth via the East Suffolk line call at Ipswich HS station. The Norwich service connects cross-platform at Beccles with the Lowestoft and Yarmouth portions of the East Suffolk line service, which split / re-join there, thus providing a significantly faster service between London and Lowestoft / Yarmouth than the through service, whose primary purpose is to provide a through service between London and the East Suffolk line stations, and the above connecting service to Lowestoft and Yarmouth.

The two HS Metro services, together with the two RM services between Liverpool St. and Clacton / Walton and between Liverpool St. and Braintree, are intimately linked in with the Colne Valley Metro service, and together they provide the GEML stopping services between Shenfield and Colchester, of 4tph in total, and the service between London and the Colne Valley stations Sudbury, Bures and Chappel & Wakes Colne, by cross-platform connections at Marks Tey. Appendix C gives a suggested layout at Marks Tey to enable this contra-flow arrangement. Marks Tey is the hub of this group of services. The HS Metro and RM Clacton / Walton services provide an equal-interval stopping service of 4tph between Witham and Clacton / Walton, semi-fast between Colchester and Clacton / Walton. The Colne Valley Metro Sudbury – Clacton / Walton service is interspersed with these, and provides an all-stations service. The HS Metro and RM Braintree services provide an equal-interval stopping service between Shenfield and Witham. The HS Metro Clacton / Walton service connects cross-platform with the RM Braintree service at Witham, and the RM Clacton / Walton service connects with the HS Braintree service.

The station at Witham already has two island platforms, thus two platform faces in each direction. A new flyover will be required to connect trains from Braintree to the outer London line, but, other than that, the existing infrastructure should suffice. A schematic timetable is proposed, below. This is admittedly approximate, illustrative of the salient features of the plan, rather than exact timings. The timings are, however, reasonable, on the basis of calculations later, in the present article, and of existing timings in the current timetable.

Station \ Service	HS Clacton	RM Clacton	HS Braintree	RM Braintree	HS Clacton
Shenfield	00	13	15	28	30
Ingatestone		18		33	
Chelmsford	10	23	25	38	40
Hatfield Peverel		29		44	
Witham	20	35	35	50	50
Kelvedon	25	40			55
Marks Tey	30	45			60
Colchester	35	50			65
White Notley			40	55	

Cressing			43	58	
Braintree FP			46	61	
Braintree			50	65	

The Representative Hourly Cross-Platform Interchange Pattern at Witham (see above table):

00H [HS4 Plymouth via Salisbury ->] Euston Cross – Clacton / Walton
R Liverpool St. – Braintree

15H [HS4 Salisbury ->] Euston Cross – Braintree
R Liverpool St. – Clacton / Walton

– repeating at 30 and 45 minutes past.

The Representative Hourly Cross-Platform Interchange Pattern at Marks Tey is given below. Note that this is for both directions, since everything interconnects there:

00H [HS4 Plymouth via Salisbury ->] Euston Cross – Clacton / Walton
RS Clacton / Walton – Sudbury

07H Clacton / Walton – Euston Cross [-> Plymouth via Salisbury HS4]
RS Sudbury – Clacton / Walton

15R Liverpool St. – Clacton / Walton
RS Clacton / Walton – Sudbury

23R Clacton / Walton – Liverpool St.
RS Sudbury – Clacton / Walton

– repeating at 30, 37, 45 and 53 minutes past.

The existing layout at Colchester includes (i.e. it has a few more, but not relevant to the present argument) two island platforms, thus two platform faces in each direction. The outer faces are for services to and from Clacton / Walton – there is a dive-under east of the station for Clacton / Walton bound services. This very conveniently allows for the following Representative Hourly Cross-Platform Interchange Pattern at Colchester:

00H [HS4 Swansea ->] Euston Cross – Norwich via Beccles
H [HS4 Plymouth via Salisbury ->] Euston Cross – Clacton / Walton

07H [HS4 Bournemouth West ->] Euston Cross – Harwich
RS Sudbury – Clacton / Walton

15H [HS7/HS4 Cornwall -> Plymouth ->] Euston Cross – Norwich via Diss
R Liverpool St. – Clacton / Walton

23H [HS4 Weymouth ->] Euston Cross – Lowestoft / Yarmouth
RS Sudbury – Clacton / Walton

– repeating at 30, 37, 45 and 53 minutes past.

At Ipswich, the Norwich via Beccles and Lowestoft / Yarmouth services use the (underground) HS station, while the Norwich via Diss and other services use the GEMML station. On calculations presented later in this article, the Norwich service takes 16.5 minutes from Ipswich to Beccles, while the Lowestoft / Yarmouth service takes 62.5 minutes (with 7 stops). These calculations include the standard 3 minutes wait per stop, which is certainly more than actually needed for small stations like many of those on the East Suffolk line. By reducing station wait times and other measures, it should easily be possible to reduce this time by 9 minutes to 53.5 minutes. Thus, timing the Norwich train to depart Ipswich at 00 minutes and the Lowestoft / Yarmouth train at 23 minutes, then the Norwich train reaches Beccles at 16.5 minutes, and the Lowestoft / Yarmouth train reached Beccles at 76.5 minutes, thus 60 minutes later. Thus timing departures from Ipswich at 00 and 23 minutes, the Lowestoft / Yarmouth train reaches Beccles at the same time as the Norwich train leaving Ipswich 60 minutes later, i.e. the second following train. (Hence it is surely unimaginable that Lowestoft and Yarmouth passengers will do other than take a Norwich train and change at Beccles. Only holidaymakers enjoying a deliberately leisurely journey, for whom, indeed, (like me,) the journey is an integral part of the holiday, would think of traveling to those destinations via the through service.)

Representative Hourly Non-Cross-Platform Interchange Pattern at Ipswich:

00H [HS4 Swansea →] Euston Cross – Ipswich HS – Norwich via Beccles
(no connection)

15H [HS7/HS4 Cornwall → Plymouth →] Euston Cross – Ipswich GEMML – Norwich via Diss
R Harwich Town – Worcester Shrub Hill
RS Ipswich – Felixstowe
RS Ipswich – Cambridge / Peterborough

23H [HS4 Weymouth →] Euston Cross – Lowestoft / Yarmouth
(no connection)

– repeating at 30, 45 and 53 minutes past (see Appendix D for elucidation of this interchange pattern of the Norwich via Diss service, as there is much hidden detail).

Representative Hourly Non-Cross-Platform Interchange Pattern at Beccles:

00H [HS4 Swansea →] Euston Cross – Norwich
H [HS4 Weymouth →] Euston Cross – Lowestoft / Yarmouth

– repeating at 30 minutes past.

Elucidation of the loadings:

1. Euston Cross – Shenfield HS Junction (HS11/HS12 services only)
 - 2tphH Cardiff Airport – Dover
 - 2tphH Bristol Temples Meads BT - Dover
 - 2tphH Swansea – Norsich via Beccles
 - 2tphH Cornwall – Plymouth – Norwich via Diss
 - 2tphH Weymouth – Lowestoft / Yarmouth
 - 2tphH Bournemouth West – Harwich
 - 2tphH Plymouth via Salisbury – Clacton / Walton
 - 2tphH Salisbury - Braintree
 - = 16tph [32tph including 16tph HS2/HS1]
2. Liverpool St. – Shenfield GEML
 - 4tphR Liverpool St. – Southend Victoria
 - 2tphR Liverpool St. – Clacton / Walton
 - 2tphR Liverpool St. – Braintree
 - = 8tph
3. Shenfield GEML – Shenfield North Junction
 - 2tphR Liverpool St. – Clacton / Walton
 - 2tphR Liverpool St. – Braintree
 - = 4tph
4. Shenfield HS Junction – Faversham
 - 2tphH Cardiff Airport – Dover
 - 2tphH Bristol Temples Meads BT - Dover
 - = 4tph
5. Faversham – Dover Priory
 - 2tphH Cardiff Airport – Dover
 - 2tphH Bristol Temples Meads BT - Dover
 - 2tphR Charing Cross – Dover (portion) via Ebbsfleet and Faversham
 - 2tphR Victoria – Dover (portion) via Bromley South and Faversham
 - = 8tph
6. Shenfield HS Junction – Shenfield North Junction
 - 2tphH Swansea – Norsich via Beccles
 - 2tphH Cornwall – Plymouth – Norwich via Diss
 - 2tphH Weymouth – Lowestoft / Yarmouth
 - 2tphH Bournemouth West – Harwich
 - 2tphH Plymouth via Salisbury – Clacton / Walton
 - 2tphH Salisbury - Braintree
 - = 12tph

7. Shenfield North Junction – Witham
 - 2tphH Swansea – Norsich via Beccles
 - 2tphH Cornwall – Plymouth – Norwich via Diss
 - 2tphH Weymouth – Lowestoft / Yarmouth
 - 2tphH Bournemouth West – Harwich
 - 2tphH Plymouth via Salisbury – Clacton / Walton
 - 2tphH Salisbury - Braintree
 - 2tphR Liverpool St. – Clacton / Walton
 - 2tphR Liverpool St. – Braintree
 - = 16tph
8. Witham – Marks Tey
 - 2tphH Swansea – Norsich via Beccles
 - 2tphH Cornwall – Plymouth – Norwich via Diss
 - 2tphH Weymouth – Lowestoft / Yarmouth
 - 2tphH Bournemouth West – Harwich
 - 2tphH Plymouth via Salisbury – Clacton / Walton
 - 2tphR Liverpool St. – Clacton / Walton
 - = 12tph
9. Marks Tey – Colchester Junction
 - 2tphH Swansea – Norsich via Beccles
 - 2tphH Cornwall – Plymouth – Norwich via Diss
 - 2tphH Weymouth – Lowestoft / Yarmouth
 - 2tphH Bournemouth West – Harwich
 - 2tphH Plymouth via Salisbury – Clacton / Walton
 - 2tphR Liverpool St. – Clacton / Walton
 - 4tphRS Sudbury – Clacton / Walton
 - = 16tph
10. Colchester Junction – Manningtree South Junction
 - 2tphH Swansea – Norsich via Beccles
 - 2tphH Cornwall – Plymouth – Norwich via Diss
 - 2tphH Weymouth – Lowestoft / Yarmouth
 - 2tphH Bournemouth West – Harwich
 - = 8tph
11. Manningtree South Junction – Manningtree North Junction
 - 2tphH Swansea – Norsich via Beccles
 - 2tphH Cornwall – Plymouth – Norwich via Diss
 - 2tphH Weymouth – Lowestoft / Yarmouth
 - = 6tph

12. Manningtree North Junction – Pinewood Junction
2tphH Swansea – Norsich via Beccles
2tphH Cornwall – Plymouth – Norwich via Diss
2tphH Weymouth – Lowestoft / Yarmouth
2tphR Harwich – Worcester Shrub Hill
= 8tph
13. Pinewood Junction – Woodbridge Junction
2tphH Swansea – Norsich via Beccles
2tphH Weymouth – Lowestoft / Yarmouth
= 4tph
14. Woodbridge Junction – Bell Grove Junction HS12
2tphH Swansea – Norsich via Beccles
=2tph
15. Woodbridge Junction – Bell Grove Junction East Suffolk
2tphH Weymouth – Lowestoft / Yarmouth
=2tph
16. Bell Grove Junction – Beccles Junction
2tphH Swansea – Norsich via Beccles
2tphH Weymouth – Lowestoft / Yarmouth
= 4tph
17. Beccles Junction – Reedham South Junction
2tphH Swansea – Norsich via Beccles
2tphH Weymouth – Yarmouth (portion)
= 4tph
18. Reedham South Junction – Norwich HS
2tphH Swansea – Norwich via Beccles
=2tph

Service Plan 4

Service Plan 4 is essentially unchanged from SP3. The only difference is that new HS (300kph) infrastructure is provided between Shenfield North and Colchester HS junctions. Even this affects the timings only minimally. The true benefit and justification is to separate UHS from HS Metro and RM traffic, which both then constitute exactly and very-nearly same-speed groupings.

Elucidation of the loadings:

HS12 Main Line

1. Euston Cross – Shenfield HS Junction (HS11/HS12 services only)
 - 2tphH Cardiff Airport – Dover
 - 2tphH Bristol Temples Meads BT - Dover
 - 2tphH Swansea – Norsich via Beccles
 - 2tphH Cornwall – Plymouth – Norwich via Diss
 - 2tphH Weymouth – Lowestoft / Yarmouth
 - 2tphH Bournemouth West – Harwich
 - 2tphH Plymouth via Salisbury – Clacton / Walton
 - 2tphH Salisbury - Braintree
 - = 16tph [32tph including 16tph HS2/HS1]
2. Shenfield HS Junction – Faversham
 - 2tphH Cardiff Airport – Dover
 - 2tphH Bristol Temples Meads BT - Dover
 - = 4tph
3. Faversham – Dover Priory
 - 2tphH Cardiff Airport – Dover
 - 2tphH Bristol Temples Meads BT - Dover
 - 2tphR Charing Cross – Dover (portion) via Ebbsfleet and Faversham
 - 2tphR Victoria – Dover (portion) via Bromley South and Faversham
 - = 8tph
4. Shenfield HS Junction – Shenfield North Junction
 - 2tphH Swansea – Norsich via Beccles
 - 2tphH Cornwall – Plymouth – Norwich via Diss
 - 2tphH Weymouth – Lowestoft / Yarmouth
 - 2tphH Bournemouth West – Harwich
 - 2tphH Plymouth via Salisbury – Clacton / Walton
 - 2tphH Salisbury - Braintree
 - = 12tph

5. Shenfield North Junction – Colchester HS Junction
2tphH Swansea – Norsich via Beccles
2tphH Cornwall – Plymouth – Norwich via Diss
2tphH Weymouth – Lowestoft / Yarmouth
2tphH Bournemouth West – Harwich
= 8tph
6. Colchester HS Junction – Colchester (East) Junction, central (HS) tracks
2tphH Swansea – Norsich via Beccles
2tphH Cornwall – Plymouth – Norwich via Diss
2tphH Weymouth – Lowestoft / Yarmouth
2tphH Bournemouth West – Harwich
= 8tph
7. Colchester (East) Junction – Manningtree South Junction
2tphH Swansea – Norsich via Beccles
2tphH Cornwall – Plymouth – Norwich via Diss
2tphH Weymouth – Lowestoft / Yarmouth
2tphH Bournemouth West – Harwich
= 8tph
8. Manningtree South Junction – Manningtree North Junction
2tphH Swansea – Norsich via Beccles
2tphH Cornwall – Plymouth – Norwich via Diss
2tphH Weymouth – Lowestoft / Yarmouth
= 6tph
9. Manningtree North Junction – Pinewood Junction
2tphH Swansea – Norsich via Beccles
2tphH Cornwall – Plymouth – Norwich via Diss
2tphH Weymouth – Lowestoft / Yarmouth
2tphR Harwich – Worcester Shrub Hill
= 8tph
10. Pinewood Junction – Woodbridge Junction
2tphH Swansea – Norsich via Beccles
2tphH Weymouth – Lowestoft / Yarmouth
= 4tph
11. Woodbridge Junction – Bell Grove Junction HS12
2tphH Swansea – Norsich via Beccles
=2tph
12. Woodbridge Junction – Bell Grove Junction East Suffolk
2tphH Weymouth – Lowestoft / Yarmouth
=2tph

13. Bell Grove Junction – Beccles Junction
 - 2tphH Swansea – Norsich via Beccles
 - 2tphH Weymouth – Lowestoft / Yarmouth
 - = 4tph
14. Beccles Junction – Reedham South Junction
 - 2tphH Swansea – Norsich via Beccles
 - 2tphH Weymouth – Yarmouth (portion)
 - = 4tph
15. Reedham South Junction – Norwich HS
 - 2tphH Swansea – Norwich via Beccles
 - = 2tph

Classic Tracks (Shenfield North Junction – Colchester HS Junction)

1. Shenfield North Junction – Witham
 - 2tphH Plymouth via Salisbury – Clacton / Walton
 - 2tphH Salisbury - Braintree
 - 2tphR Liverpool St. – Clacton / Walton
 - 2tphR Liverpool St. – Braintree
 - = 8tph
2. Witham – Marks Tey
 - 2tphH Plymouth via Salisbury – Clacton / Walton
 - 2tphR Liverpool St. – Clacton / Walton
 - = 4tph
3. Marks Tey – Colchester HS Junction
 - 2tphH Plymouth via Salisbury – Clacton / Walton
 - 2tphR Liverpool St. – Clacton / Walton
 - 4tphRS Sudbury – Clacton / Walton
 - = 8tph
10. Colchester HS Junction – Colchester (East) Junction, outer (classic) tracks
 - 2tphH Plymouth via Salisbury – Clacton / Walton
 - 2tphR Liverpool St. – Clacton / Walton
 - 4tphRS Sudbury – Clacton / Walton
 - = 8tph