Towards a High Speed **Network**

Appendix D – Suggested Order of Implementation of the Various HS Routes

[This is now published as a separate document because of its size, particularly with the addition of a new set of maps illustrating the network's growth. Appendix D in the original article is now just a stub, summarising what is to be found in this new article,]

The next pair of routes to be implemented following HS2(/HS1) is HS4 and HS11, since their cross-London connection has already been implemented as part of HS2.

Each route is of course actually implemented in segments, so the actual order of implementation is by segment, and segments of different routes can and will be mixed together in the order of implementation. These segments all involve the provision of new infrastructure. The following list of segments, for the various routes, is drawn up from consideration of the service plans section of the relevant Route and Service Plans article. Note that these quite distinct concepts, although clearly related. The relevant segments must be implemented and in place before the service plans which depend upon them can begin. But service plans do not necessarily depend on new infrastructure, and even if they do, the new infrastructure may be on a different route. Despite all that, the Service plan linkages will be pointed out as and when appropriate.

HSm-n means segment n of route HSm, 'Sim' means simultaneous with (implemented at the same time as) other segments, and 'Pre' means (must be) preceded by, thus follows, other segments. (Note: 'preceded by' does not imply that the work cannot **begin** before the preceding segment has been completed, but rather that it can't be completed – thus put into service – before that preceding segment has also been completed and put into service. It could well happen that both are completed and put into service simultaneously.) Do not assume that segments of lower identifying number must precede those of higher number. Usually they do, but the only inter-segment dependencies are those explicitly stated.

The network is implemented in two overall phases. Mk1A is a simplified, cut-down version of the original (Mk1) plans, allowing some sections of classic track to be incorporated. (The original, Mk1 plans were all new build.) This brings significant cost savings and allows faster implementation, while retaining most of the benefits of the original. Additional sections of the original plans may well be added later, as parts of the Mk2 phase, as and when the need for them, as further capacity, is recognised (but having enjoyed many years of service of the Mk1A phase in the meantime. If all the possible Mk2 segments were implemented, the end result would be the same as the original Mk1.

Segment	Contents	Sim	Pre
HS1-1:	Pilgrims' Way Junction – Maidstone HS / Saltwood HS Junction – Dover Priory / Ashford West Junction – Hastings	HS2-3	-
HS2-1:	Queens Park Jn – Birmingham HS / Handsacre Junction	HS7-1	-
HS2-2:	Streethay Junction – Crewe HS South Junction	-	HS2-1

Segment	Contents	Sim	Pre	
HS2-3	Old Oak Common North Junction – Euston Cross – Stratford HS South Junction – Woodgrange Rd. Junction	-	-	
HS2-4:	Crewe HS South Junction – Manchester HS / Bamfurlong Junction	HS8-1	HS2-2	HS2-3
HS2-5:	Preston – Carlisle	-		HS2-4
HS2-6:	Carlisle – Riccarton North Junction	-	HS2-5	HS3-7
HS3-1:	West Hampstead Junction – Northampton station	-		-
HS3-2:	Northampton station – Watkin Rd. Junction – Regent St. Junction	-		HS3-1
HS3-3:	Pancras Cross – West Hampstead Junction	-		-
HS3-4	Collingtree Junction – Langborough Junction	HS7-2		HS3-2
:	Watkin Rd. Junction – Humberstone Rd. Junction /	HS7-2		HS3-2
	Swain St. Junction – Humberstone Rd. Junction /			HS3-3
	Humberstone Rd. Junction – Nuthall South Junction /			
	Stanford Junction – Notttingham Midland station			
HS3-5:	Nottingham Midland station – Nuthall North Junction –	HS9-1		-
	Altofts Junction – Leeds New Lane /			
	Altofts Junction – York			
HS3-6:	York – Newcastle	-		HS3-5
HS3-7:	Derwent Hill Junction – Hexham – Edinburgh /	-	HS3-4	HS3-6
	Paradise Junction – Stocksfield			HS13-2
HS4-1:	Old Oak Common West Junction – Foxhall HS Junction	-		-
HS4-2:	Old Oak Common East Junction – Old Oak Common West Junction	-	HS2-3	HS4-1
HS4-3	Cardiff Central – Aberthaw Junction	-		-
HS4-4	Connections from HS4 to Basingstoke route.	-		-
HS4-5:	Foxhall HS Junction – Cardiff HS /	HS7-3		HS4-1
	Swindon station – Mannington Junction			HS4-2
HS4-6:	Cardiff HS – Swansea	-		HS4-3
HS5-1:	Pancras Cross – Brighton /	-		HS3-3
	Hickstead Junction – Southerham HS Junction – Newhaven /			
	Southerham HS Junction – Eastbourne			
HS5-2:	Winders Hill Junction – Tunbridge Wells	-		HS5-1
HS5-3:	Finches Shaw Junction – Arundel HS – Littlehampton / Bognor	HS6-1		HS5-1
HS5-4:	Barnham Junction – Southampton	HS6-2		HS5-3
HS6-1:	Pancras Cross – King's Lynn	HS5-3		HS5-1
HS6-2:	Ely HS South Junction – Norwich	HS5-4		HS6-1
HS7-1:	Birmingham approaches:	HS2-1		
	Birmingham Curzon St. – Water Orton West Junction /			
	Water Orton West – North Junction /			
	Water Orton North – South Junction /			
	Water Orton West – South Junction /			
	Water Orton South Junction – Birmingham Interchange			
HS7-2:	Birmingham Interchange – Bristol Temple Meads (BT and HS)	HS4-3		HS7-1
HS7-3:	Bristol Temple Meads HS – Plymouth	-		HS7-2

Segment	Contents	Sim	Pre
HS7-4:	Water Orton North Junction – Nuthall North Junction / Awsworth Junction – Strelley Junction	HS3-4	HS2-1 HS7-1
HS8-1:	Liverpool Lime St. – Kenyon West Junction / Kenyon West Junction – Kenyon South Junction / Kenyon West Junction – Kenyon North Junction	HS2-4	-
HS8-2:	Kenyon West Junction – Broughton Junction – Manchester HS – Sheffield HS – Wales Junction / Preston – Gibb Farm Junction – Bolton – Broughton Junction	-	HS3-5 HS8-1
HS8-3:	Ladybower Junction – Paddock Junction	-	HS8-2 HS9-2
HS8-4	Gibb Farm Junction – Bamfurlong Junction.	-	HS8-2`
HS8-5:	Edwalton Junction – Ely /	-	HS3-4 HS8-2
HS9-1:	Gelderd Rd. North Junction – Leeds New Lane – Garforth West Junction – Micklefield Junction / Garforth West Junction – Garforth East Junction	HS3-5	-
HS9-2:	Guide Bridge HS Junction – Paddock Junction – Gelderd Rd. North Junction	-	HS8-2 HS9-1
HS10-1:	Thurlby Junction – Sleaford South Junction	-	HS6-1 HS8-4
HS10-2	Brigg East Junction – Hull Paragon	HS10-1	-
HS11-1:	Manor Park Junction – Shenfield HS Junction	-	-
HS11-2	Stratford HS South Junction – Manor Park Junction	HS4-2	HS11-1
HS11-3:	Shenfield HS Junction – Southend Airport	HS4-3	HS11-2
HS11-4:	Southend Airport – Faversham		HS11-3
HS11-5:	Faversham – Dover Priory		
HS12-1:	Shenfield HS Junction – Shenfield North Junction		
HS12-2:	Shenfield North Junction – Norwich		

The Scottish routes are almost entirely independent of the above. The only linkage is that HS3, in order to be opened to Scotland (HS3-7), relies on HS13 being in service between Edinburgh and Glasgow St. Enoch.

Segment	Contents	Sim	Pre
HS13-1:	Gyle Junction – Bellgrove – Glasgow Airport Parkway /	-	-
HS13-2:	Kirkliston Junction – Humbie Junction		
`	Saltmarket Junction – St. Enoch /	-	HS13-1
	Clyde Junction – St. Enoch /		
	Glasgow Airport Parkway – Dalmuir		
HS13-3:	Glasgow Airport Junction – Dalry – Kilmarnock	-	HS13-2
HS13-4	Edinburgh Waverley HS – Kirkliston Junction		
HS13-5	Kilmarnock – Ayr	-	HS13-3
HS14-1:	Kinnaird Junction – Alloa Junction	-	HS13-1
	Bankhead Junction – Bannockburn Junction		

HS14-2:	Stanley Junction – Craigo Junction	-	HS14-1
HS14-3:	Drumlithie Junction – Duthie Junction	-	HS14-2

The Overall HS Network is implemented as a number of (quite large scale!) work packages. It is assumed that work may be in progress on several routes simultaneously in a package. For full details of the service plans mentioned, refer to the appropriate Route and Service Plans article. The following description of the implementation order is intended to explain **why** this order is chosen, and the benefits intended to be delivered by each WP.

A Note on the Maps

The maps follow the standard colour conventions for the various HS routes. The sections of route new at the current work package are broader. They remain in place for all subsequent work packages, but revert to the normal conventions. In other words, each WP map includes all work completed prior to and within that package, but only the new sections pertaining to that package are highlighted.

The maps show show the routes over which HS services run at (i.e. following implementation of) the current work package. High Speed ;ines, depicted as continuous lines,generally involve new HS infrastructure, but occasionally a section of classic route has been incorporated and upgraded to HS standard. Dotted lines indicate HS services running (at significantly lower speeds) over classic routes,essentially non- or minimally-upgraded.

Ststions are mostly included, except for HS12 where only the most important stations, including all those at the end of branches, are included – there are just too many of them.

WP-0

HS2-3
HS4-2
HS11-2

WP-0 is the building of the complete cross-London inter-regional connection via Euston Cross, including the links to HS4 and HS11. It begins right at the beginning of the implementation, and is possibly the longest-running WP. Other WPs take place alongside WP-0. WP-3 is dependent on WP-0's completion for its own completion, as also is WP-4.

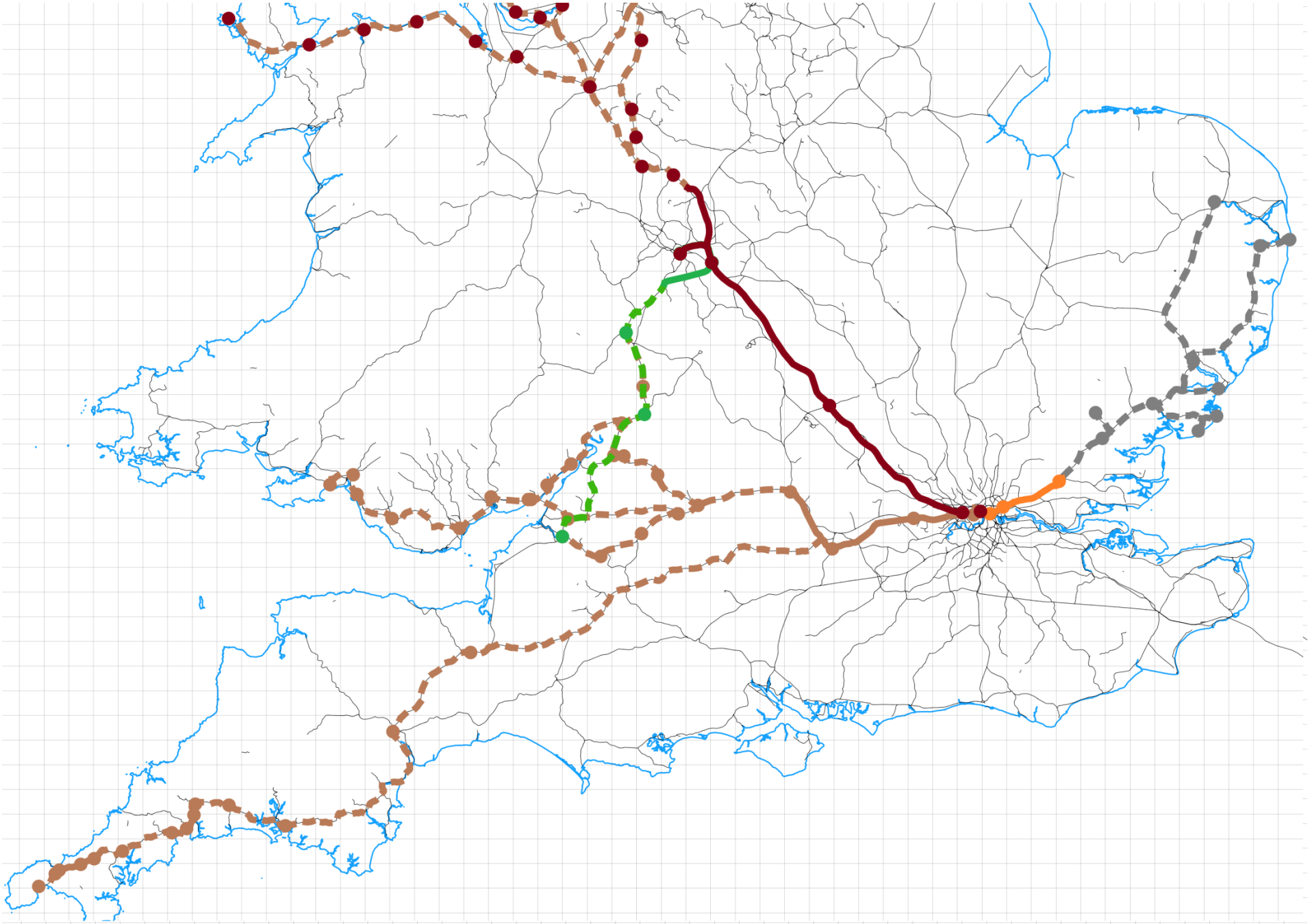
WP-1

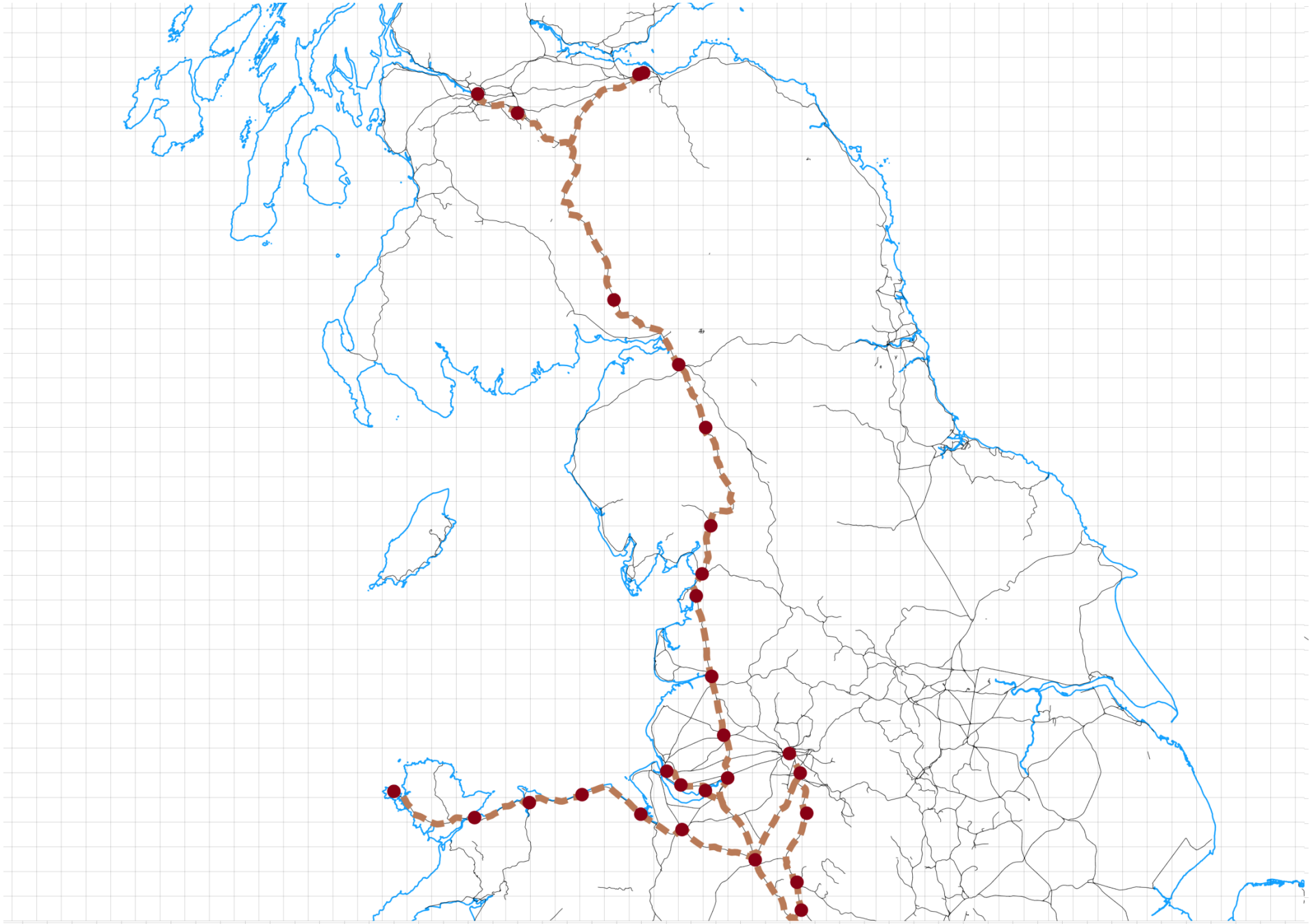
HS2-1
HS7-1
HS4-1
HS11-1
HS12-1

During WP-1:

- HS2 is built from Queens Park Junction (on the WCML 5 miles from Euston) to Birmingham Curzon St. and Handsacre Junction. This enables HS2 SP1 to begin (classic tracks Euston – Old Oak Common, HS tracks thence to Birmingham Curzon St. and Handsacre Junction. (Classic tracks beyond Handsacre Junction lead to Manchester (via Stoke or via Crewe), Liverpool, North Wales, the North West and Scotland.)
- HS7's Birmingham approaches(everything between Water Orton North Junction, Curzon St. and Birmingham Interchange) are built at the same time as the section Birmingham Interchange and – Cofton Hall Junction. HS7 SP1 can thus begin (HS tracks Birmingham Curzon St. – Cofton Hall Junction, classic tracks thence to Bristol Temple Meads.
- HS4 is built from Old Oak Common to Foxhall HS Junction, just beyond Didcot Parkway. HS4 SP1 can thus begin (classic tracks Paddington – Old Oak Common, HS tracks thance to Foxhall HS Junction, and classic tracks thence to South Wales and Bristol.`
- HS11 is built between Manor Park Junction and Shenfield HS Junction, and HS12 thence for the very short distance to Shenfield North Junction. This allows SP1 of HS12 to begin (classic tracks Liverpool St. – Manor Park Junction, HS tracks thence to Shenfield North Junction and classic tracks beyond to Norwich, Loewestoft, Harwich, Clacton/Walton and Braintree). There are no HS11 services at this stage.

This gives a very good preliminary service on all four routes.



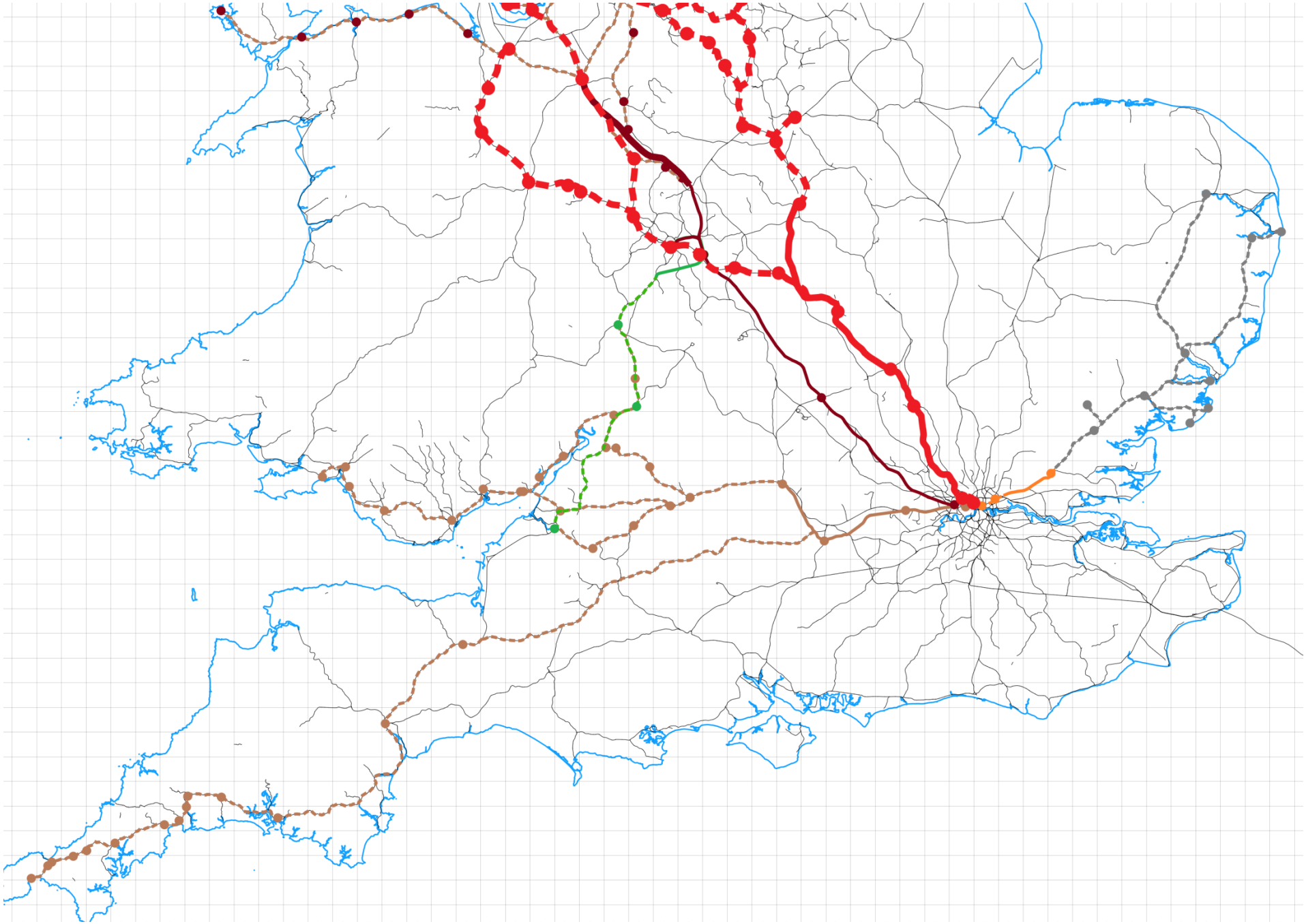


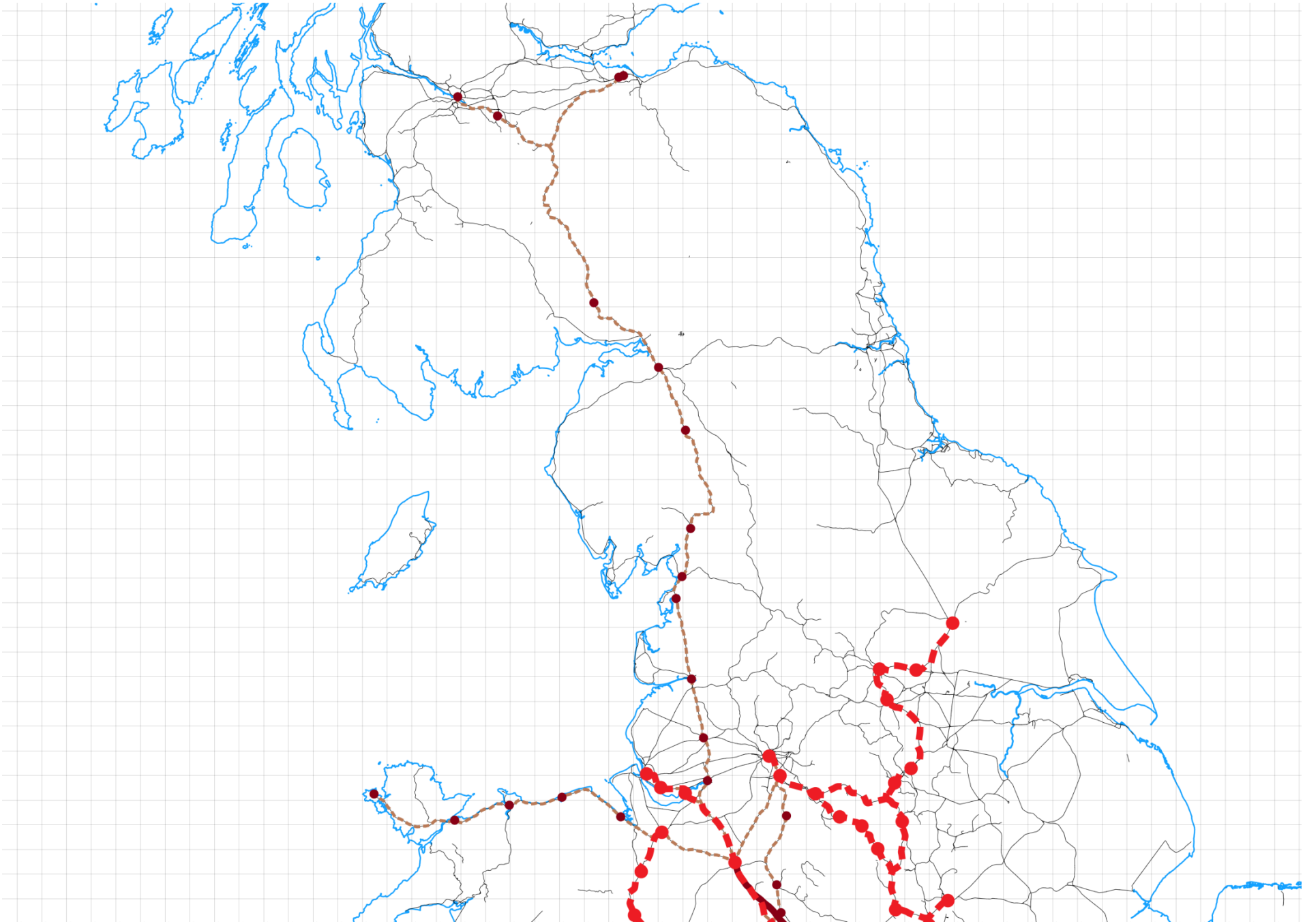
WP-2

HS2-2
HS3-1
HS3-2

During WP-2:

- HS2 is extended from Streethay Junction to Crewe HS South Junction, This allows HS2 SP1A to begin – no change from SP1, but with acceleration of those services not stopping at Stafford. HS2 SP2 depends on the following; it involves no change of services but only of route loadings.
- The first section of HS3 also is built between West Hampstead Junction and Northampton station. The reason that this first segment of HS3 is implemented this early, (further work on HS3 comes quite a bit later, at WP-6,) is twofold: firstly that it allows HS3 SP1 to begin, as soon as HS3 is opened to Northampton station (HS3-1). This is a service between St. Pancras and Wolverhampton, splitting there and continuing on to Liverpool and Chester. This replaces some of the classic services between Euston and the West Midlands, making more capacity available at Euston. Thus HS2 SP2 can begin, which replaces the Euston – Liverpool and Euston – Chester service of HS2 SP1A (which are now served by HS3) with services to Blackpool / Windermere and Holyhead. Secondly, HS3 SP1A begins as soon as HS3 opens between Northampton station and Leicester station (HS3-2). This is a HS replacement for the classic services from St. Pancras to York, via Leeds, and to Manchester, via Miller's Dale, assuming that route has been reopened, (otherwise via Sheffield – reverse – and the Hope Valley,) fast to Leicester then all major stations. A Regional Metro service between St. Pancras and Nottingham serves all major stations, and makes cross-platform connections at Leicester with the HS services. This gives a service of 4tph to every major station as far north as Derby and Nottingham, and 2tph beyond (4tph as far as Sheffield, if the Manchester trains are routed via the Hope Valley). For Leeds this represents a half-way house to what the eastern arm of HS2 Phase 2 would have provided (since that will not now be available until WP-6).





WP-3

HS1-1
HS2-3
HS2-4
HS8-1
HS13-1
HS14-1

Starting with WP-3, Scottish HS lines, in their earliest versions, are opened. These could really be implemented at any time, since there are no dependencies on those south of the border, or vice versa. The deadline is WP-7, when HS3 opens to Scotland; these preliminary stages must all be complete by then.

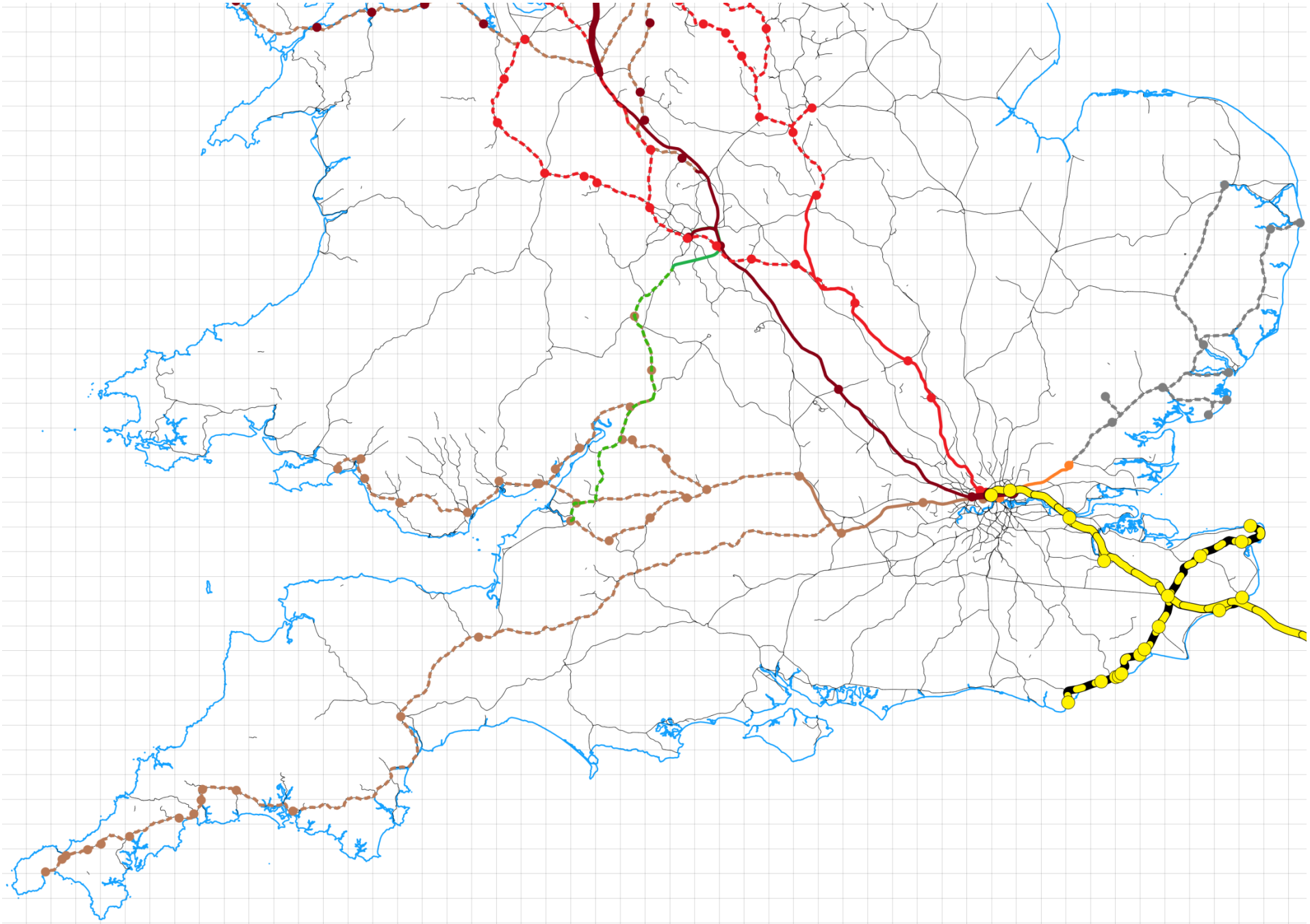
During WP-3:

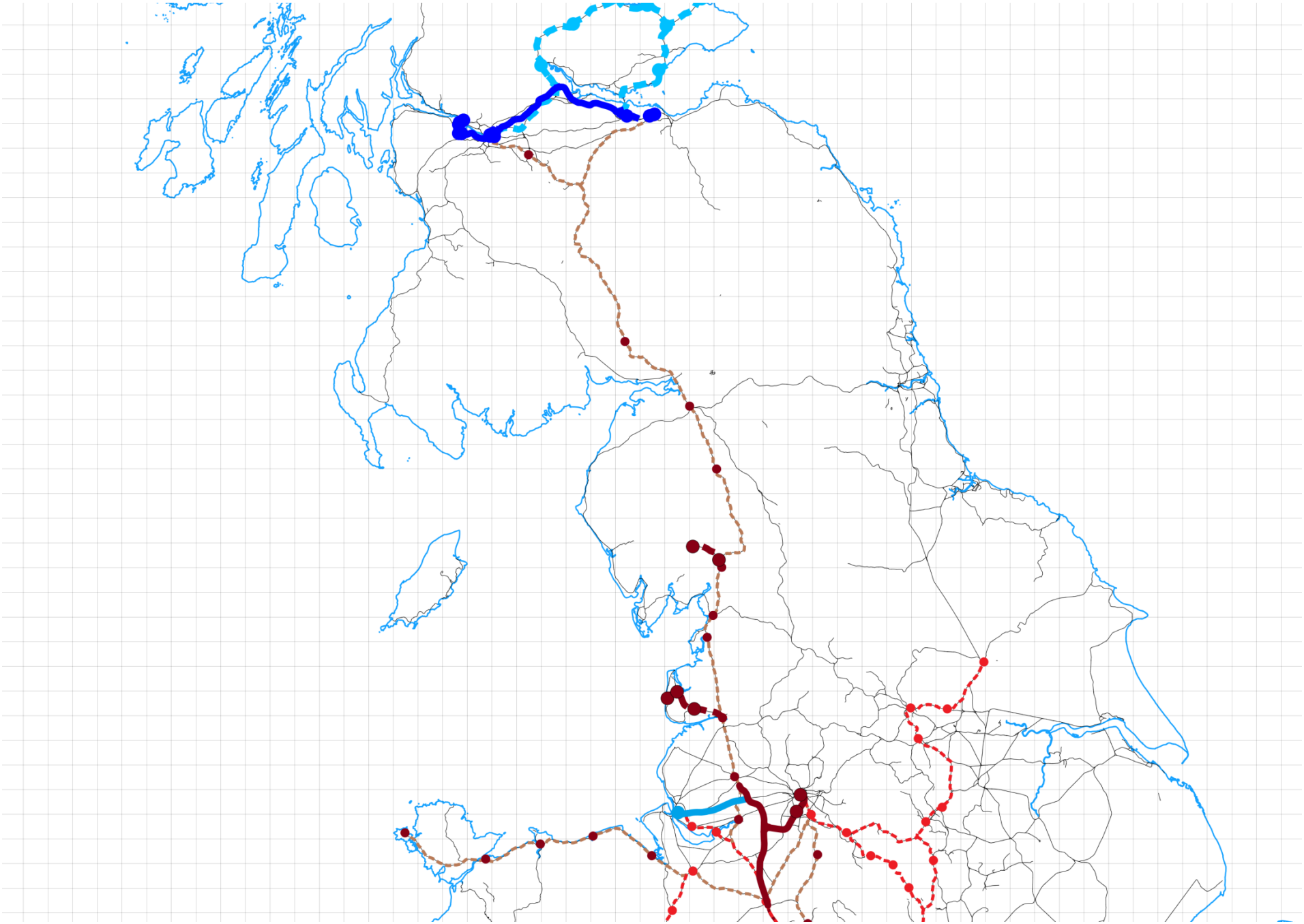
- HS2 is extended from Old Oak Common to Euston Cross, and on to Woodgrange Road Junction, where it joins (and becomes) HS1.
- HS2 is extended from Crewe HS South Junction to Manchester and Bamfurlong Junction and, as HS8-1, to Liverpool.
- The four extensions of HS1, to Maidstone (new build HS), and to Dover, Margate and Eastbourne over classic tracks, are opened.

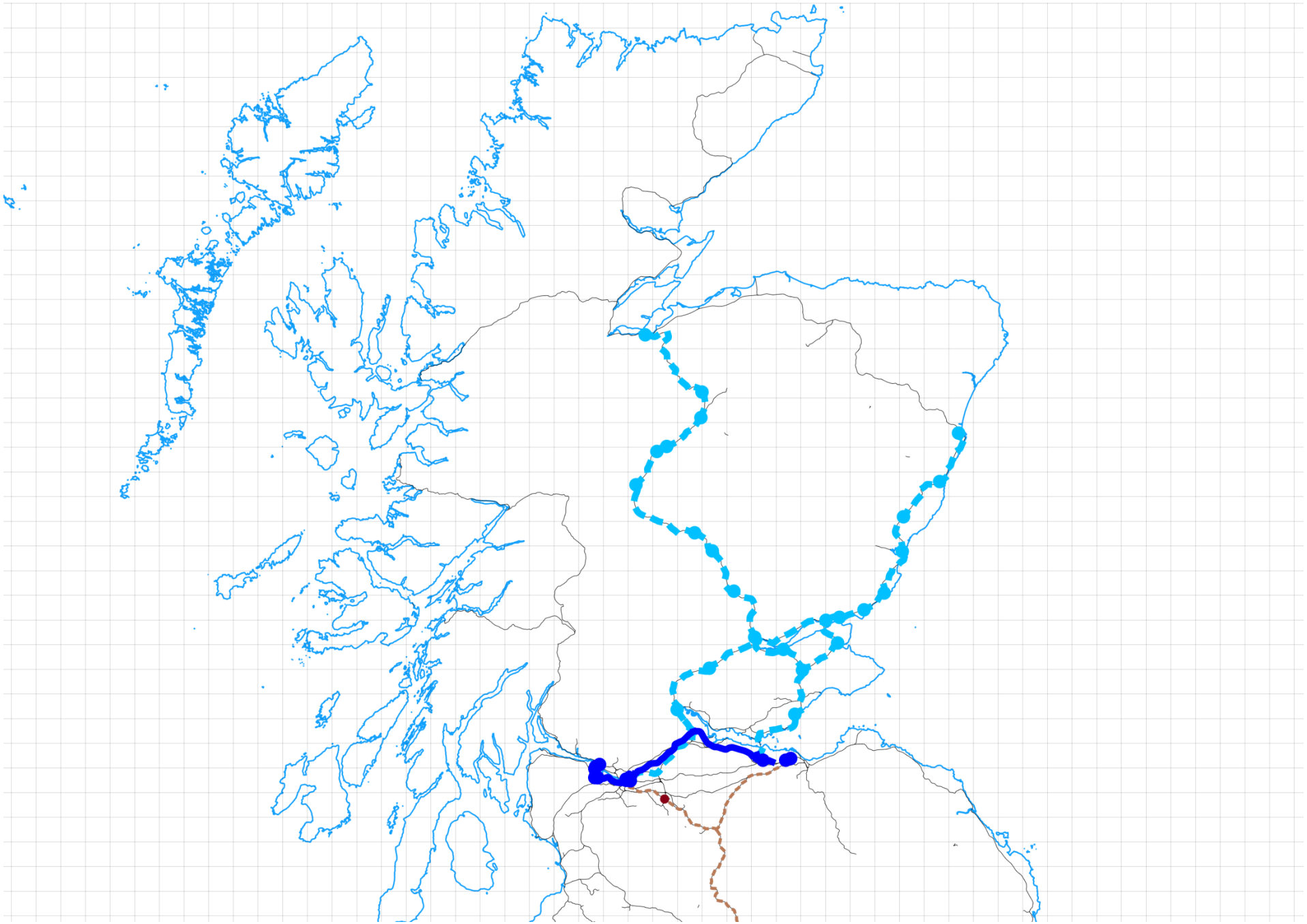
HS2 (and of course HS1) is now complete, with services passing between them via Euston Cross. This allows HS2 SP3 and HS1 SP1 to begin. There will be further SPs on both, but these involve new services but no new infrastructure unless and until the very speculative Coventry Variant and Scottish extensions to HS2, which would not be implemented until all other HS lines in England and Wales were complete. (Scotland of course already has some HS services, since WP-1, and will have full HS services when HS3 opens to Edinburgh, in WP-9.) There are indeed further service plans on HS2 and HS1, but these are a consequence of new (more usually changed / extended) services introduced following changes on other HS routes.

In Scotland:

- HS13-1 implements the HS route between Gyle Junction and Glasgow Bellgrove, then on to Glasgow Airport Parkway, by-passing the as yet incomplete Glasgow St. Enoch,, and travelling directly between Saltmarket and Clyde junctions. Note that services between Edinburgh Waverley and Gyle Junction are still over the classic tracks. This allows HS13 SP1 to begin.
- HS13-2 implements the various sections that bring the new Glasgow St. Enoch station into service, and also extends HS13 to connect with the North Clyde metro services at Dalmuir. These allow HS13 SP1A to begin. In addition, HS13-2 implements the section from Kirkliston Junction to Humbie. Although assigned to HS13, because of its location, it actually allows all the existing services between Edinburgh and Perth, Dundee and Aberdeen via Fife and the bridges (which are now integrated into HS14) to serve Edinburgh Airport additionally, approaching the Forth Bridge from the west. This thus allows HS14 SP1 to begin.







WP-4

HS4-2
HS4-3
HS4-4
HS7-3
HS11-2
HS11-3
HS11-4
HS11-5
HS12-2

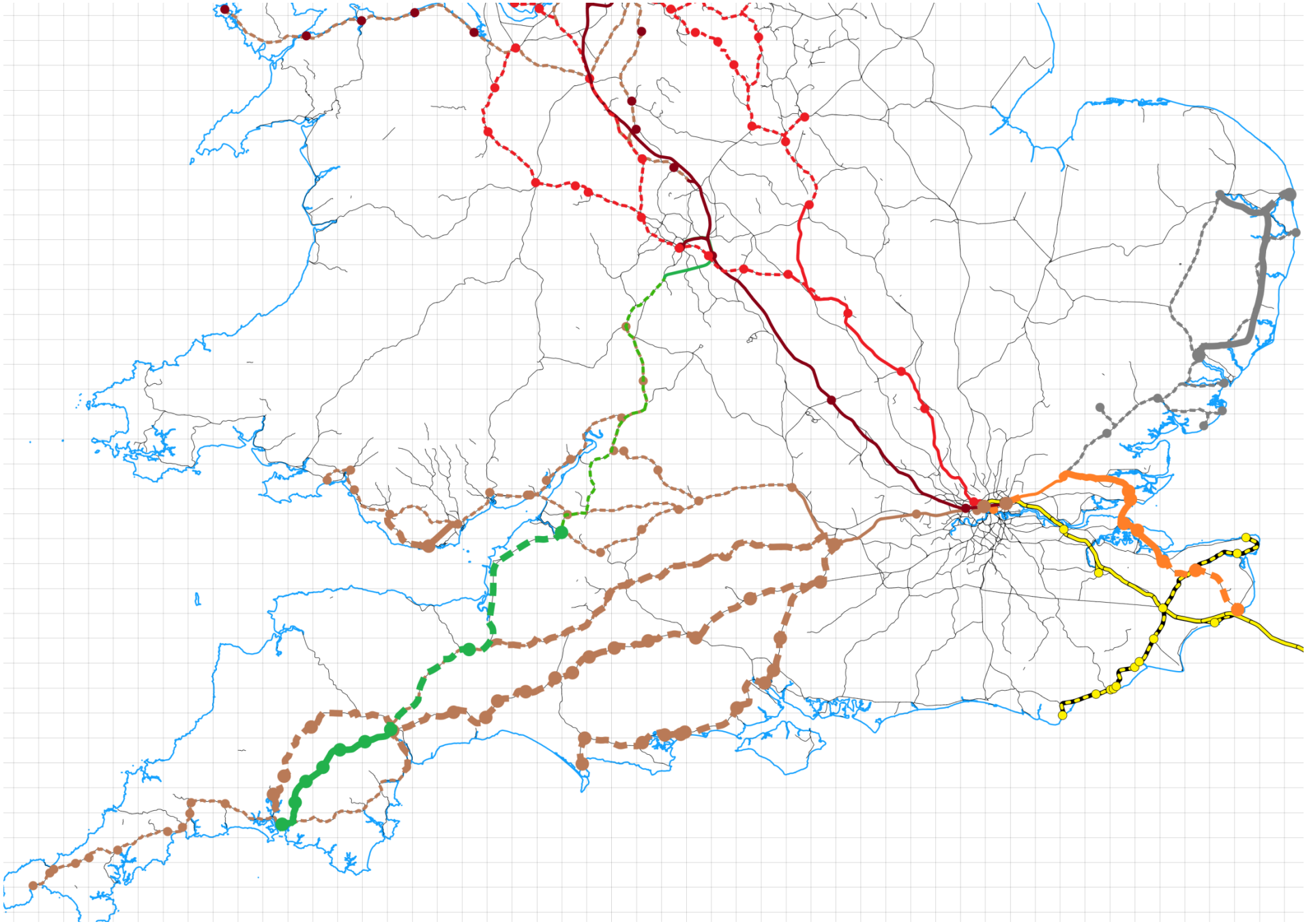
During WP-4:

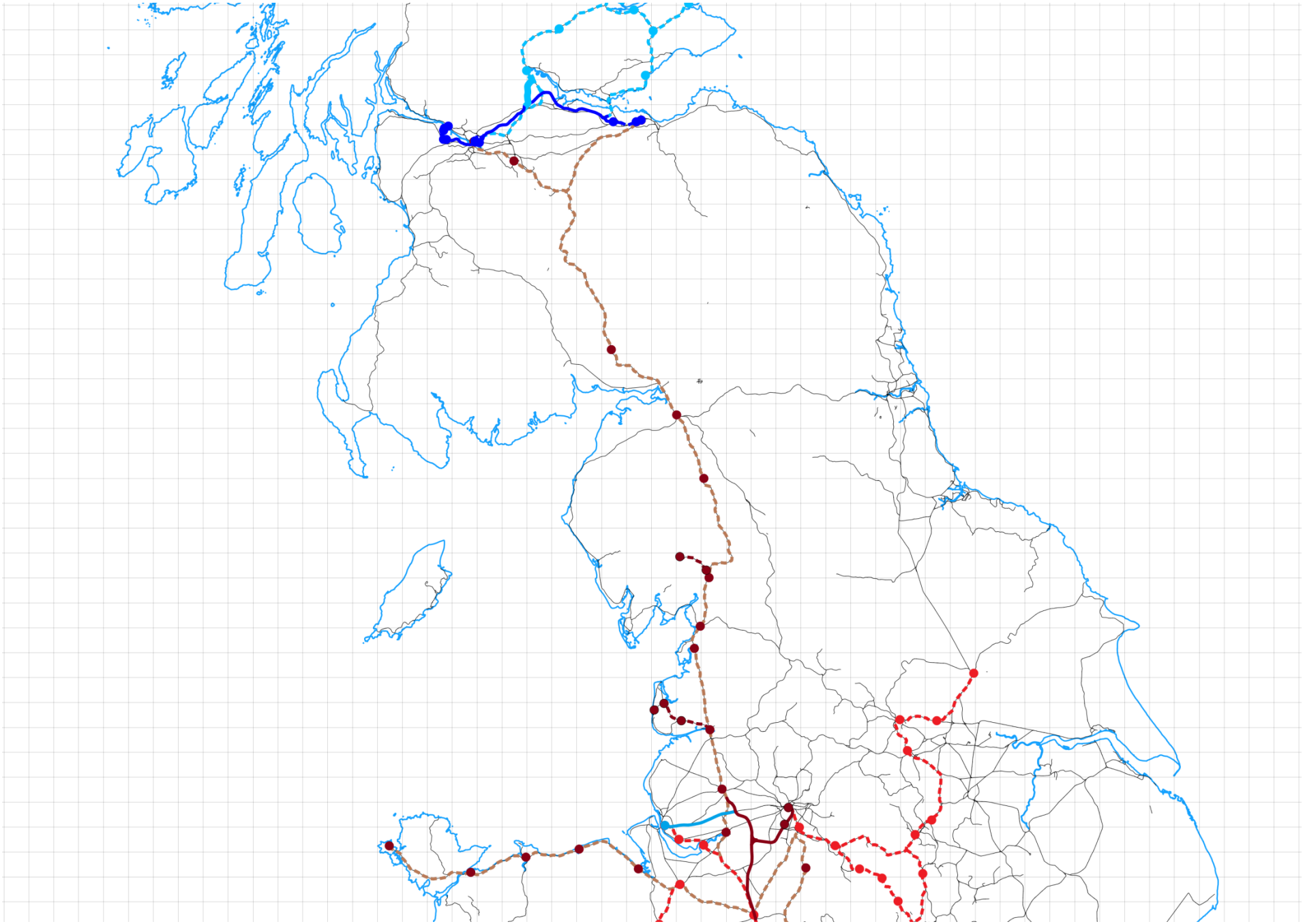
- HS4-2 connects from Old Oak Common to Euston Cross, and thence to Stratford HS South, where it links to and indeed becomes HS11. HS11-2 continues from Stratford HS South to Manor Park Junction, and HS11-3 extends HS11 from Shenfield HS Junction to Southend Airport over new, HS infrastructure.
- The connection between HS12 and HS4 via Euston Cross is thus now complete. Through services now commence between East Anglian origins on HS12 and South Wales and West Country destinations on HS4 and HS7. Apart from the switch to the Euston Cross route, there are no service changes on HS12 itself.
- HS4-3 opens a stretch of new HS infrastructure between Cardiff Central and Aberthaw Junction, via a new staton at Cardiff Airport. All Cardiff (but no further) services now terminate at the airport.
- HS4-4 opens the connections from HS4 at Reading Parkway to the HL platforms, on the Basingstoke line. This allows HS4 SP2A to begin. Services now travel between East Anglian origins on HS12 and destinations in Wiltshire, Dorset and the West Country. Beyond Reading Parkway HL, these travel on classic routes.
- The preceding four segments of HS4 together allow HS4 SP4 to begin.
- HS7-3 opens a new HS route between Exeter St. David's and Plymouth. Because of the inaccessibility of the area traversed, and also because of the relatively light loading at this end of the route, a local service is provided over this section. It may be wondered about the justification for this line – over (and under) Dartmoor – it can be guaranteed that it will never be in danger from the sea! Note that the section between Bristol and Exeter remains on classic track. This allows HS7 SP2 to begin, likewise HS4 SP3.
- HS11-4 is extended from Shenfield HS Junction to Faversham (HS infrastructure). Services run beyond Faversham on classic tracks. HS11 services run between Dover Priory and Cardiff Airport / Bristol Temple Meads (the Brunel Trainshed platforms). This allows HS11 SP2B to begin.
- HS12-2 opens a section of new HS infrastructure between Pinewood Junction and Norwich, via Ipswich and Beccles. It passes underneath Ipswich, vis the new Ipswich HS station, beneath the existing station – there being absolutely no room for expansion at surface level. (Ipswich has one of the most constricted sites of any major station.) The new infrastructure connects with the East Suffolk line at Westerfield Junction, thus allowing the Lowestoft service to use the new Ipswich HS station, and avoid the heavy freight traffic to and from Felixstowe. It takes over and upgrades the East Suffolk line for a few miles, diverging again at Woodbridge Junction. It then taks a high-

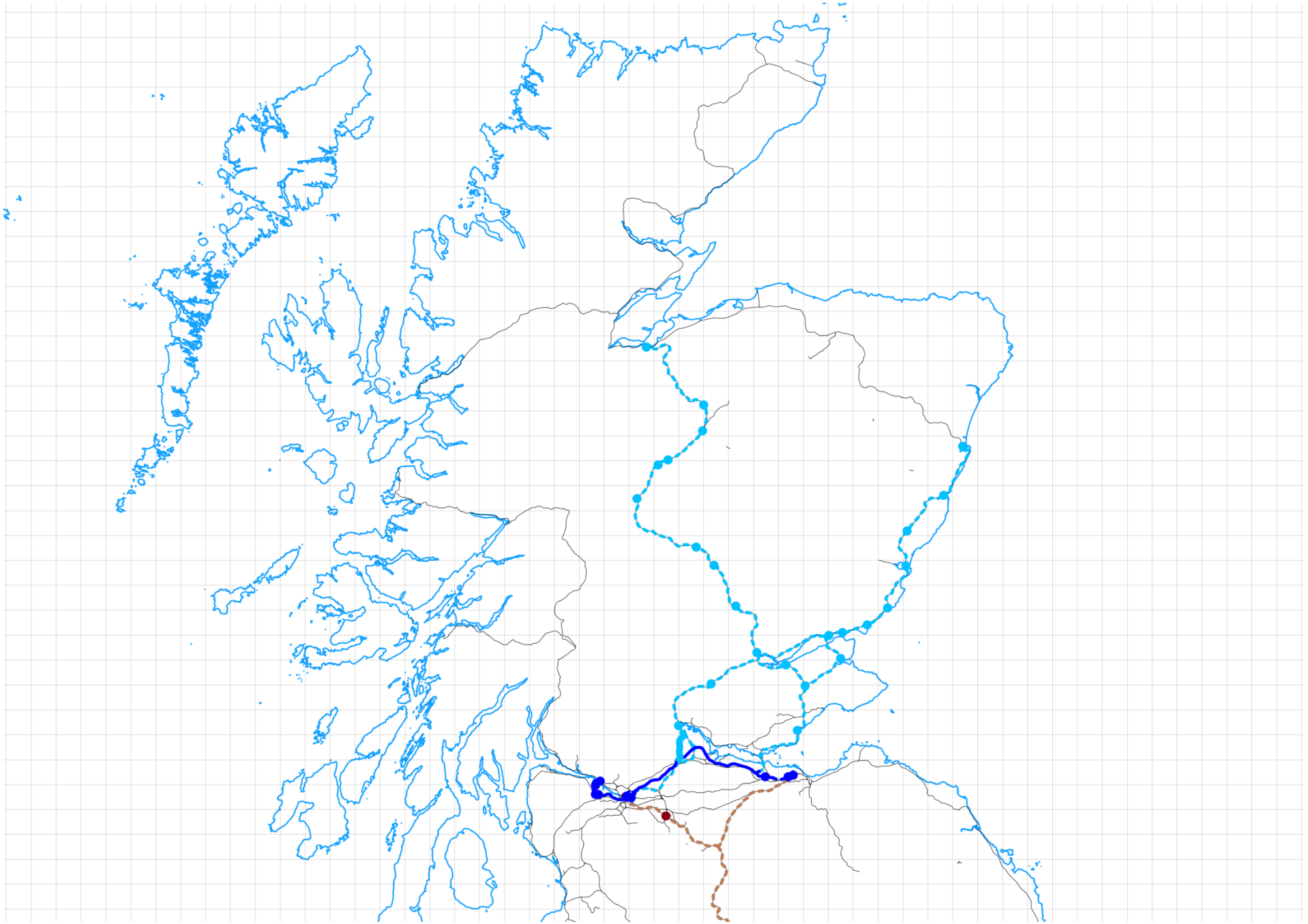
speed alignment before rejoining the East Suffolk line at Bell Grove Junction, taking it over and upgrading to Beccles.The HS section between Beccles and Norwich includes a connection to the classic route at Reedham South Junction, restoring a former connection from the south to Yarmouth. The East Suffolk line services are now able again to serve both Lowestoft and Yarmouth, splitting / joining at Beccles. This allows HS12 SP4 to begin.

In Scotland:

- HS14-1 opens HS links between Kinnaird and Alloa junctions, and between Bankhead and Bannockburn junctions. The effect of the former is that Edinburgh – Inverness services now use HS infrastructure between Gyle and Alloa junctions, and of the latter that Glasgow – Aberdeen services now use HS infrastructure between Robroyston and Bannockburn junctions. This allows HS13 and HS14 SP2 to begin







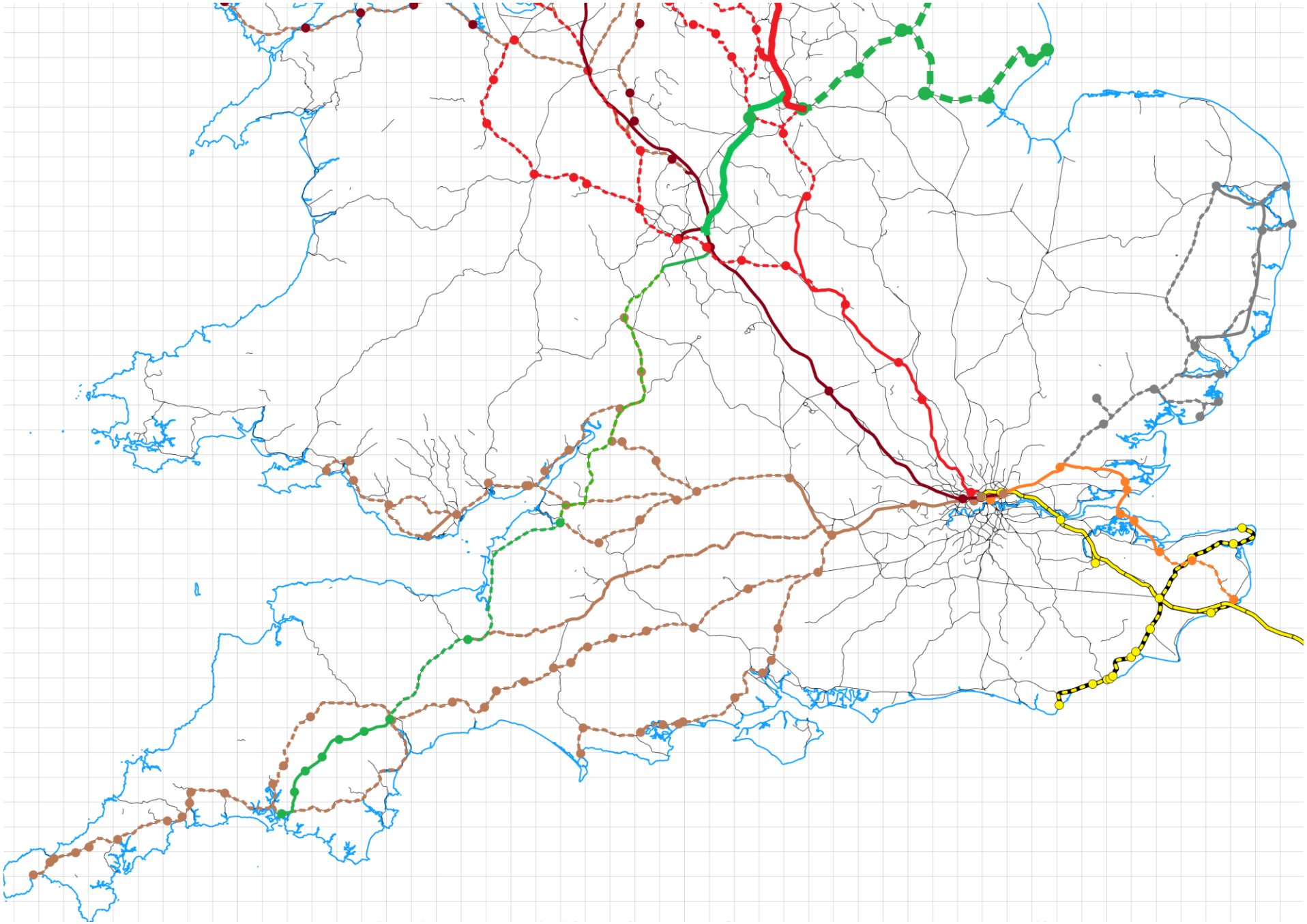
WP-5

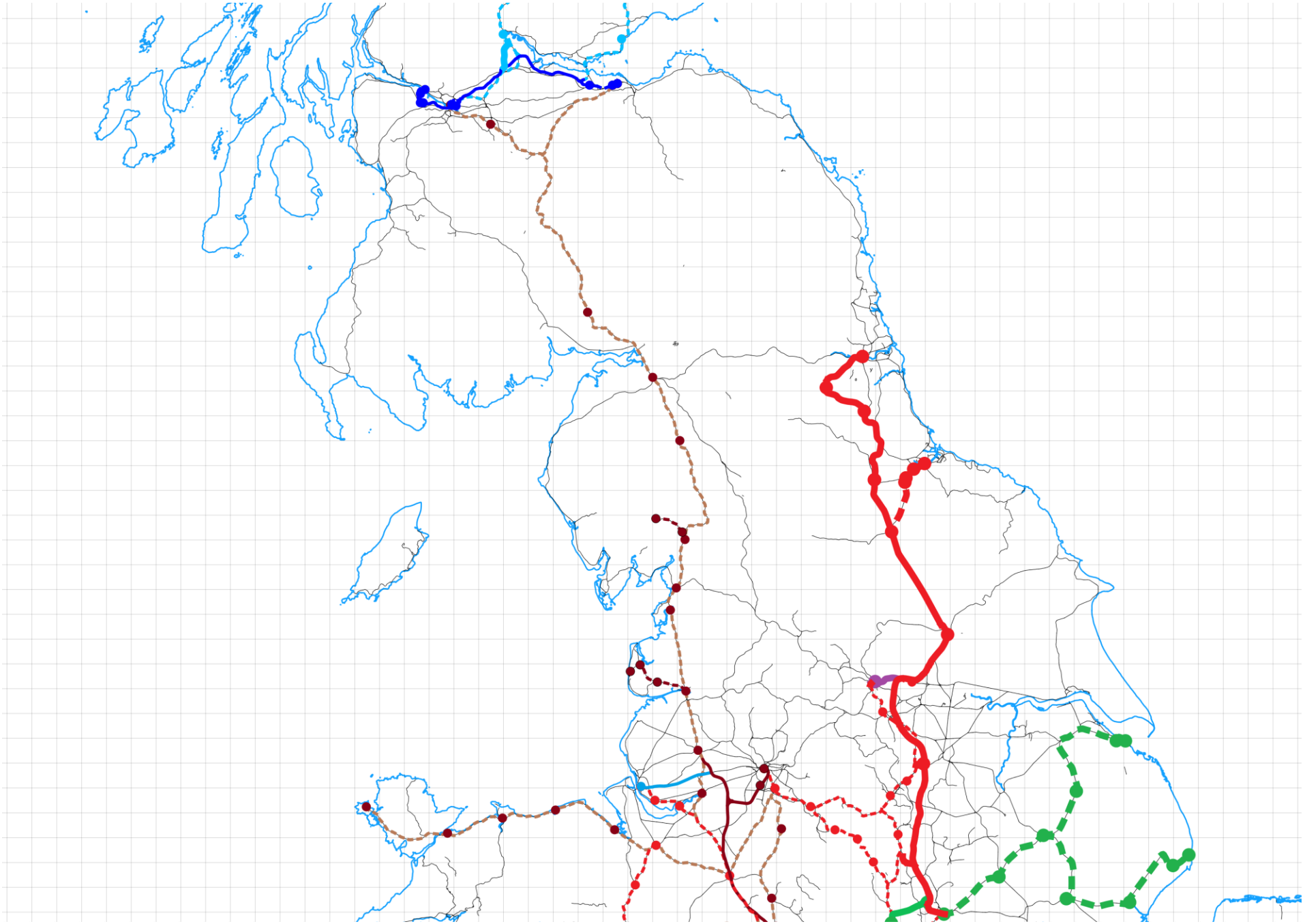
HS7-4
HS3-5
HS3-6
HS9-1
HS14-2

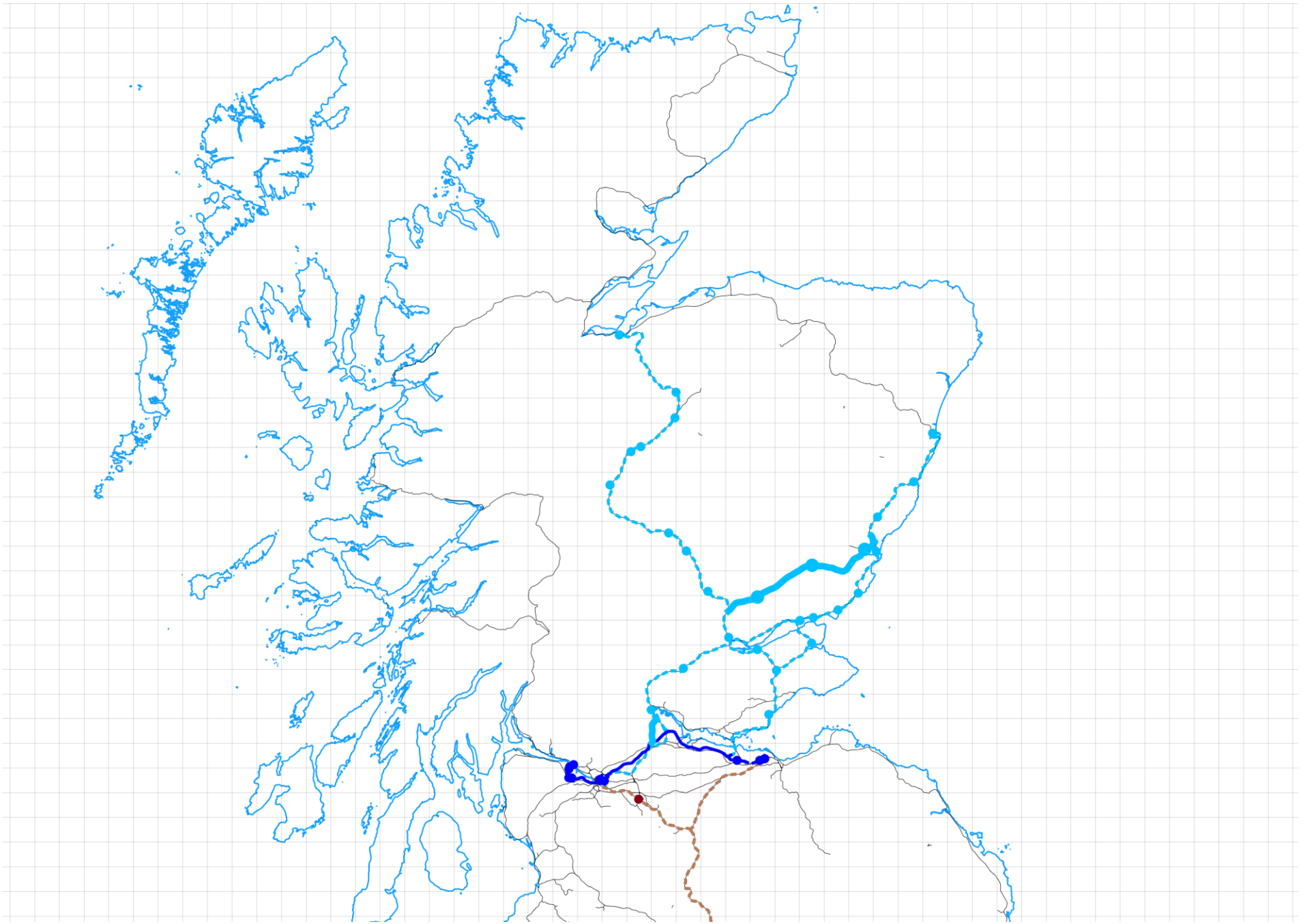
This is slightly strange in that although a large section of HS3 opens during this WP, no HS3 services actually use it immediately. The section between Nottingham and Newcastle is shared with HS7's services, and it is for these that it is opened in the present WP. Every section of new, HS infrastructure is assigned to / is part of a specific HS route. Every HS service is likewise assigned to a particular HS route. This is to a certain degree arbitrary, since almost every HS service travels over the tracks of more than one HS route: this is a network, after all. (The record is held by the notionally HS7 service between Swansea and Norwich via Birmingham, which actually travels over the tracks of no less than 5 HS routes: HS4, HS7, HS3, HS8 and HS6!)

During WP-5:

- HS7-4 extends from Birmingham (Marston Junction) to Awsworth Junction, where it divides into two short sections, one to Nuthall North Junction and the other to Strelley Junction, at both of which it merges with and in fact becomes HS3. Over HS3 tracks, HS7 services reach Nottingham and York.
- HS3-5 opens between Nottingham and York but, as noted above, only HS7 services use it initially. Connections are made between HS3 and the classic North Midland route at Stonebroom and Old Denaby junctions, which enable some HS7 (and, later, HS3) services to travel via Chesterfield and Sheffield Midland. Likewise, a connection between HS3 and the classic route via Ryhill and Crofton junctions allows HS7 (and, later, HS3) services to reach Wakefield and Leeds (the very last section of which, between Gelderd Road North Junction and Leeds New Lane is actually HS9)..
- HS3-6 opens between York and Newcastle, via Consett. This opens later than HS-5, above, but, similarly, is used initially only by HS7 (and HS9) services
- HS9-1 opens between Gelderd Road North Junction and Garfield East Junction and thus on to York. As a result, HS7 services have the option to reach York either directly or via Leeds.
- The extensions HS7-4, HS3-5 and HS9-1, above, together allow HS7 SP3 and HS3 SP2 to begin. (HS3 SP2 is not really a SP as far as HS3 is concerned, as in involves no (new) HS3 services, although there are changes to HS3's route loadings, by HS7 services.) The later HS3-6 opening to Newcastle allows HS7 SP3A (and, notionally, HS3 SP2A) to begin.
- In Scotland, HS14-2 reopens the erstwhile Great Glen Route between Stanley and Craigo junctions, rebuilt to full HS standards. This brings in a complete recast of Aberdeen services, effectively trebling them, and allows HS14 SP3 to begin.







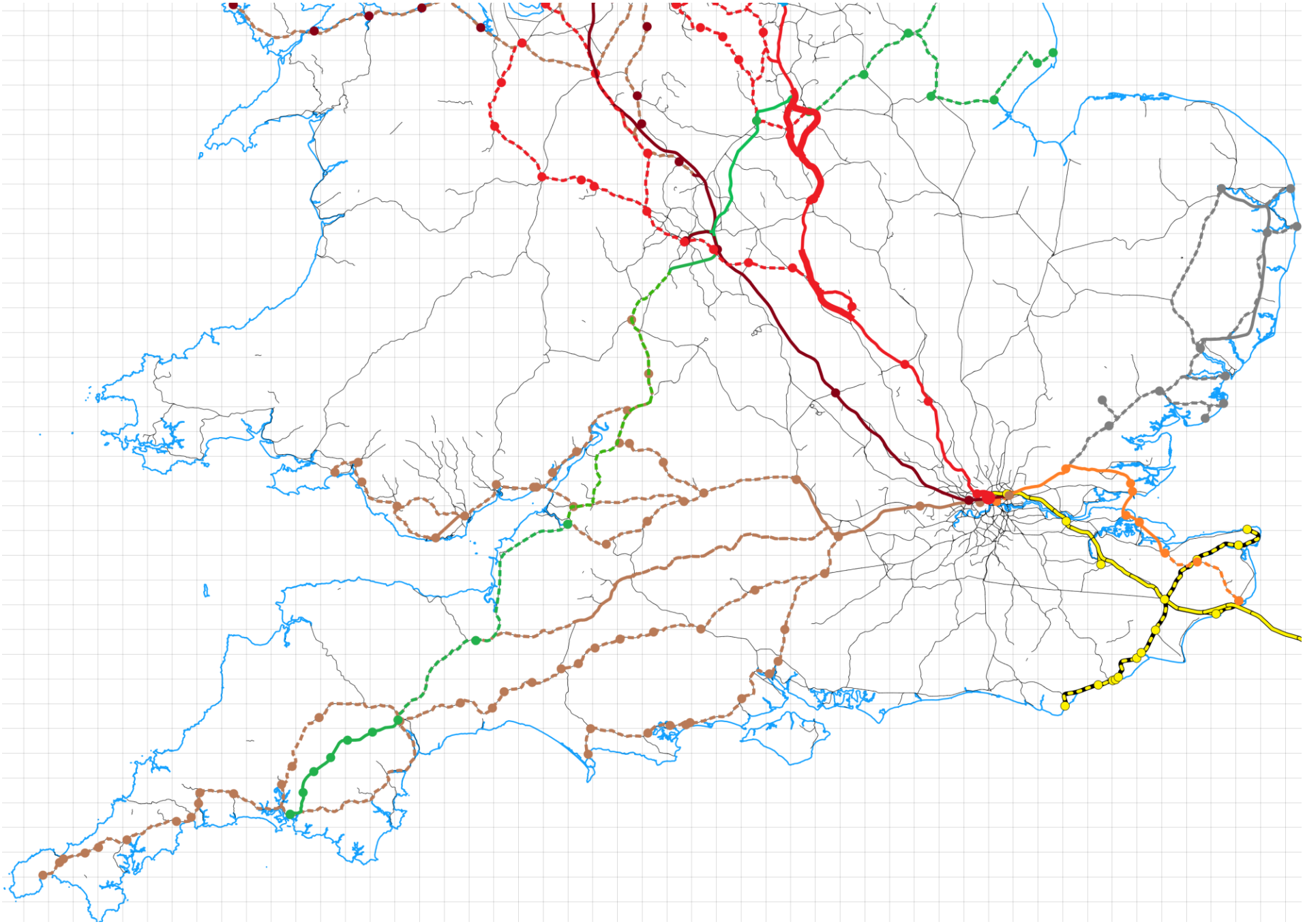
WP-6

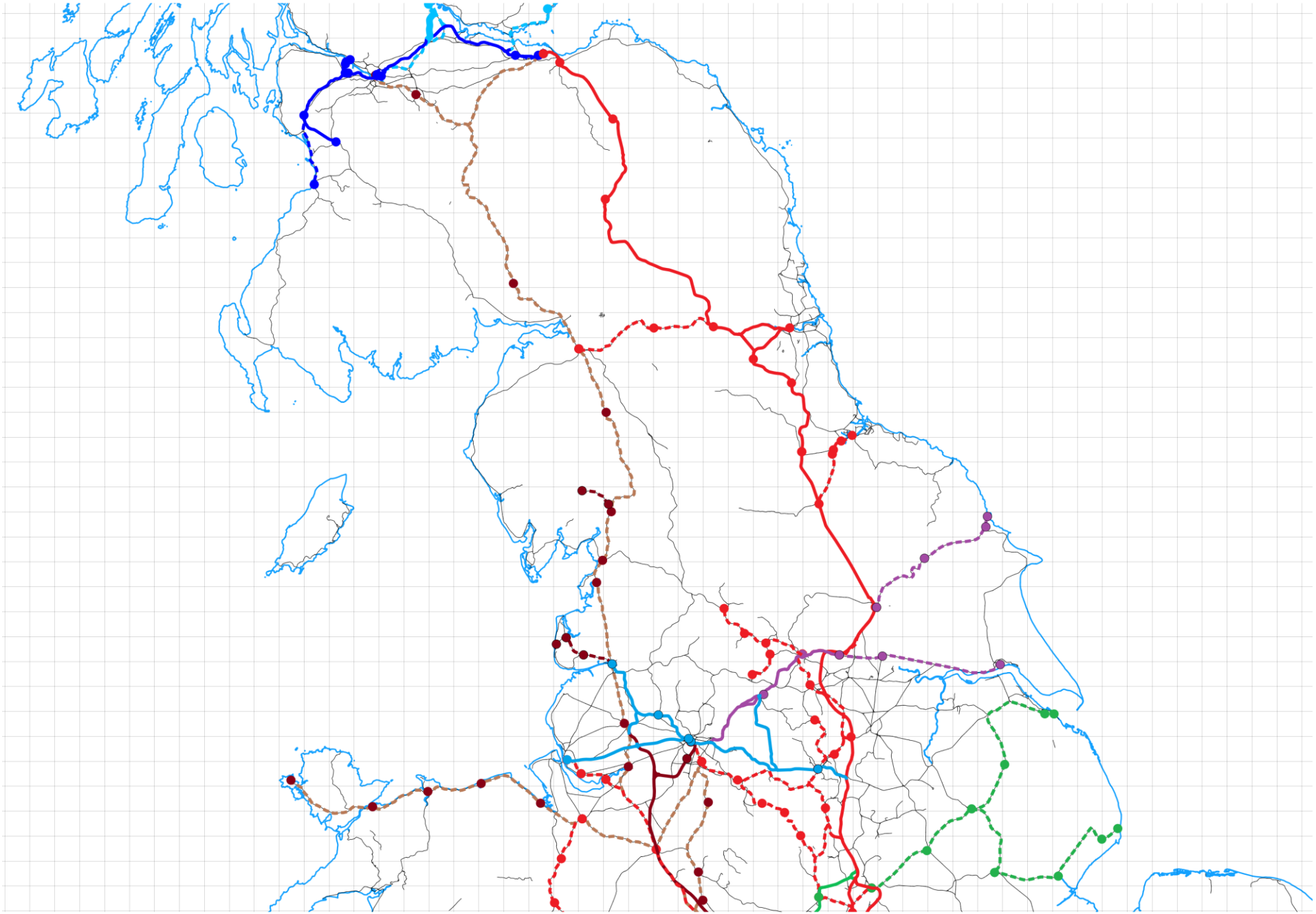
HS3-3
HS3-4
HS8-2
HS8-3
HS9-2
HS13-3

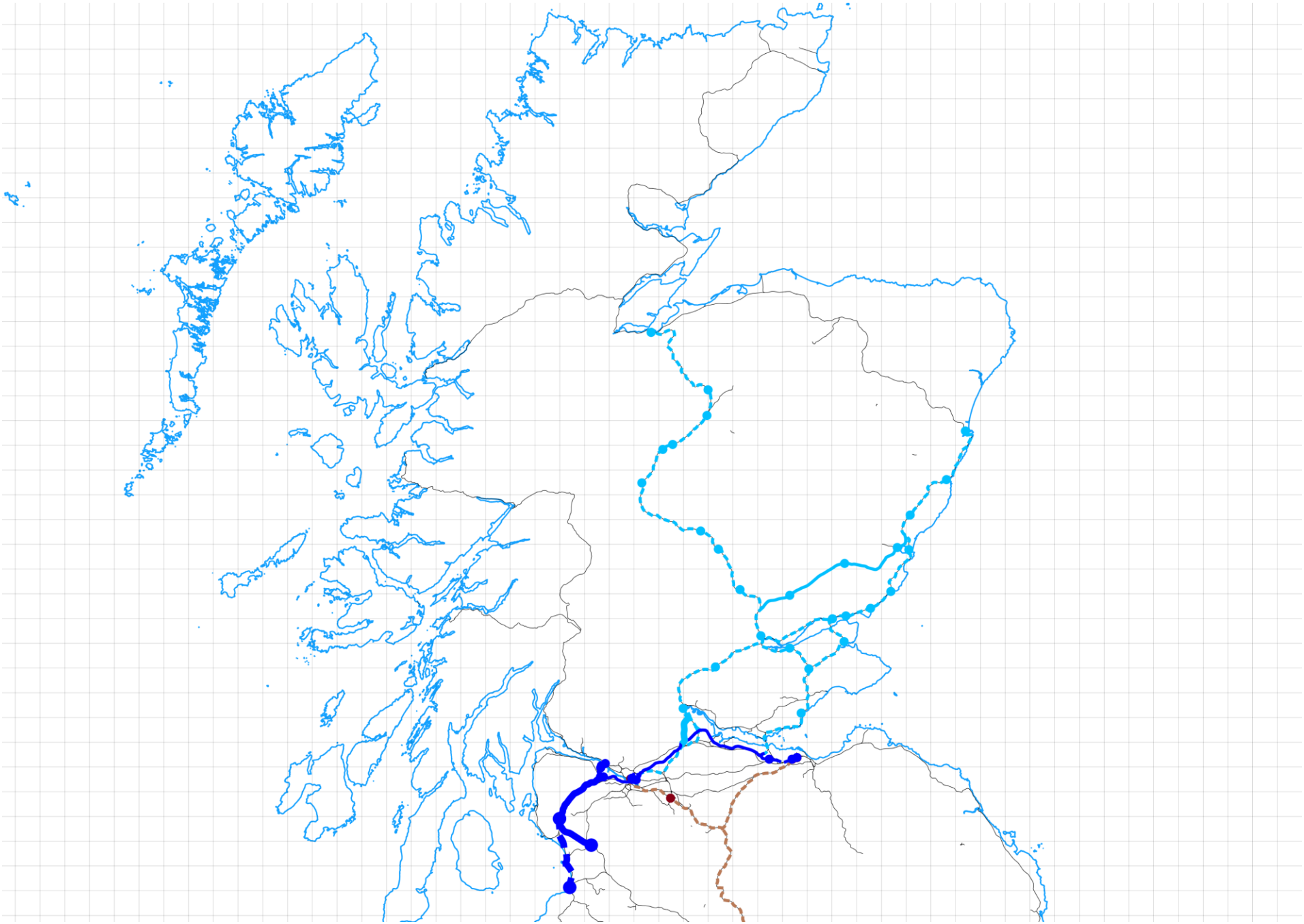
During WP-6, Pancras Cross is built (just the station and its approach, but not yet the route across London) and connected to the preceding segments at West Hampstead Junction. WP-6 completes HS3, except for the Scottish extension, and implements the Transpennne routes. These operate closely together.

During WP-6:

- Pancras Cross is opened, initially as a terminal station. HS3-3 opens from Pancras Cross to West Hampstead Junction, where it joins with the section to Leicester, opened way back in WP-2.
- HS3-4 opens beyond Leicester to Stanford Junction, where it splits, one route proceeding directly to Nuthall Junction South, and the other to Nottingham, at both of which locations it links to the section to Leeds and York, opened at WP-5, but initially used only by HS7 services. HS3-4 also opens the avoiding lines for Northampton and Leicester stations.
- HS8-2 opens from Kenyon West Junction to Broughton Junction, and from Preston and Bolton to Broughton Junction, thence on to Guide Bridge HS Junction via Manchester Victoria LL and Manchester HS, (The section from Liverpool to Kenyon West Junction was opened at WP-3, to give HS2 services access to Liverpool.) These sections of HS8 are also used by HS9.
- HS8-2 continues beyond Guide Bridge HS Junction to Sheffield HS and Wales Junction, where it joins HS3.
- HS8-3 opens a connection from Paddock Junction, Huddersfield to Ladybower Junction.
- All the preceding sections allow HS3 services to be introduced from Pancras Cross to Liverpool and Preston via Sheffield and Manchester, and allow HS3 SP3 to begin..
- HS9-2 continues beyond Guide.Bridge HS Junction to Huddersfield and on to Gelderd Road North Junction. where HS3's Leeds section joins it. The final section of HS9, thence to Garfield East Junction, on HS3's main line to York, was opened at WP-5. HS9 services are introduced from Liverpool and Preston to the North East, Scarborough and Hull. An HS3 service is introduced from Pancras Cross to York via Sheffield, Huddersfield and Leeds. In addition, the HS7 services to York and Newcastle ane switched to travel between Sheffield and Youk via Huddersfield and Leeds,
- HS8-4 also opens between Gibb Farm Junction and Bamfurlong Junction, where it makes an end-on connection with HS2. This makes available HS infrastructure for HS2 services as far as Preston. Initially, only a new HS2 service from Eastbourne to Preston, and the Scottish services from Euston use this route.
- In Scotland. HS13-3 opens between Glasgow Airport Junction and Kilmarnock. This allows HS13 SP4 to begin.





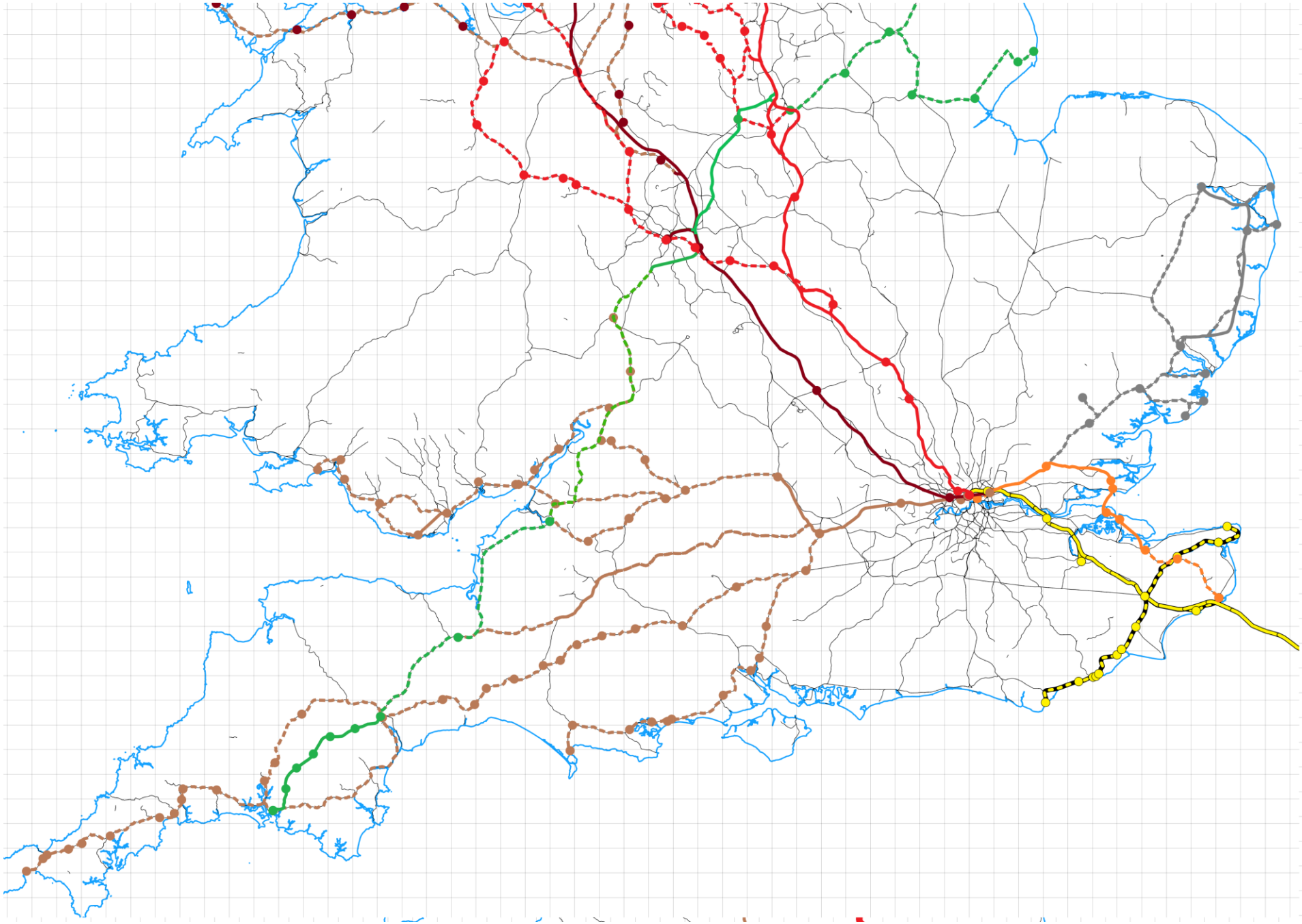


WP-7

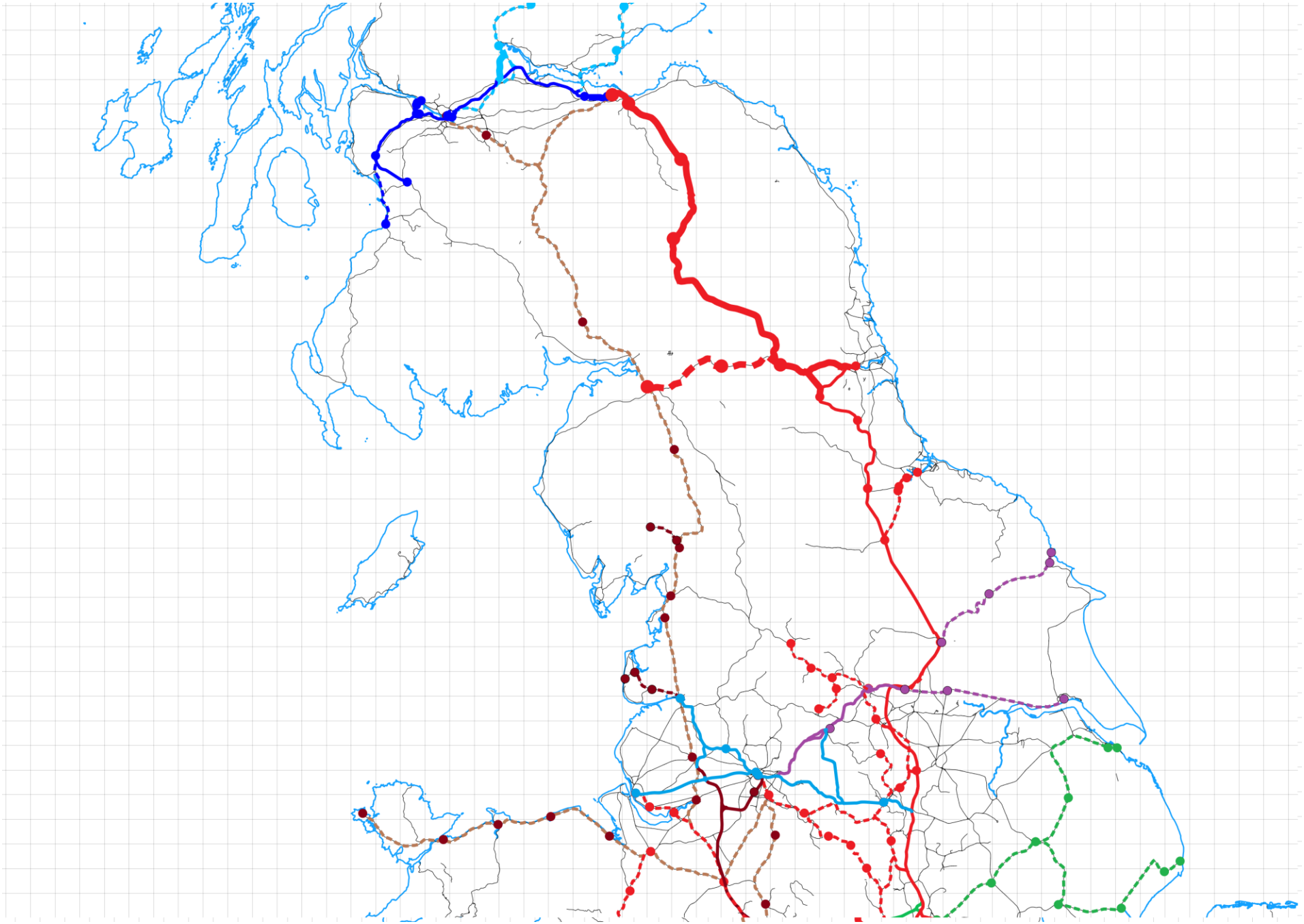
HS3-7
HS13-4

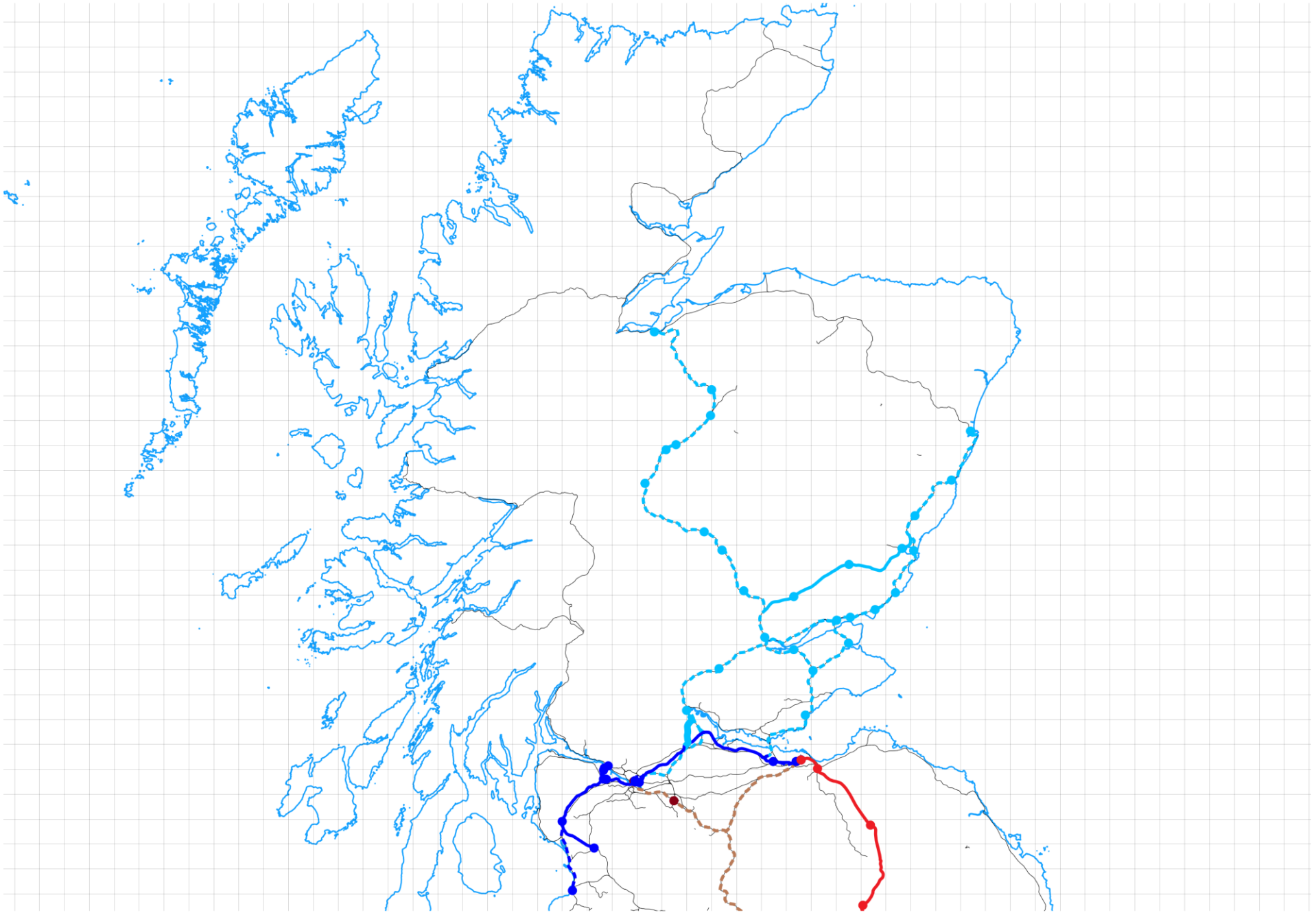
During WP-7:

- HS3-7 extends to Edinburgh, from Derwent Hill Junction, Consett, and from Paradise Junction, Newcastle. Services extend through to Glasgow on HS13. HS3 is now complete at Mk1A (HS3 SP3A).
- The long-term provision for HS services at both Edinburgh Waverley and Glasgow St. Enoch must have been decided and implemented; completion of implementation in WP-7.
- HS13-4 opens the direct route from Edinburgh Waverley to Kirkliston Junction. This takes over the trackbed of the former Corstorphine branch, and provides for 4 tracks between Gyle and Kirkliston junctions.
- Terminal platforms are provided at Newcraighall as the starting pointfor westbound services (no services start of finish at Waverley).



Work Package 7, South Sheet



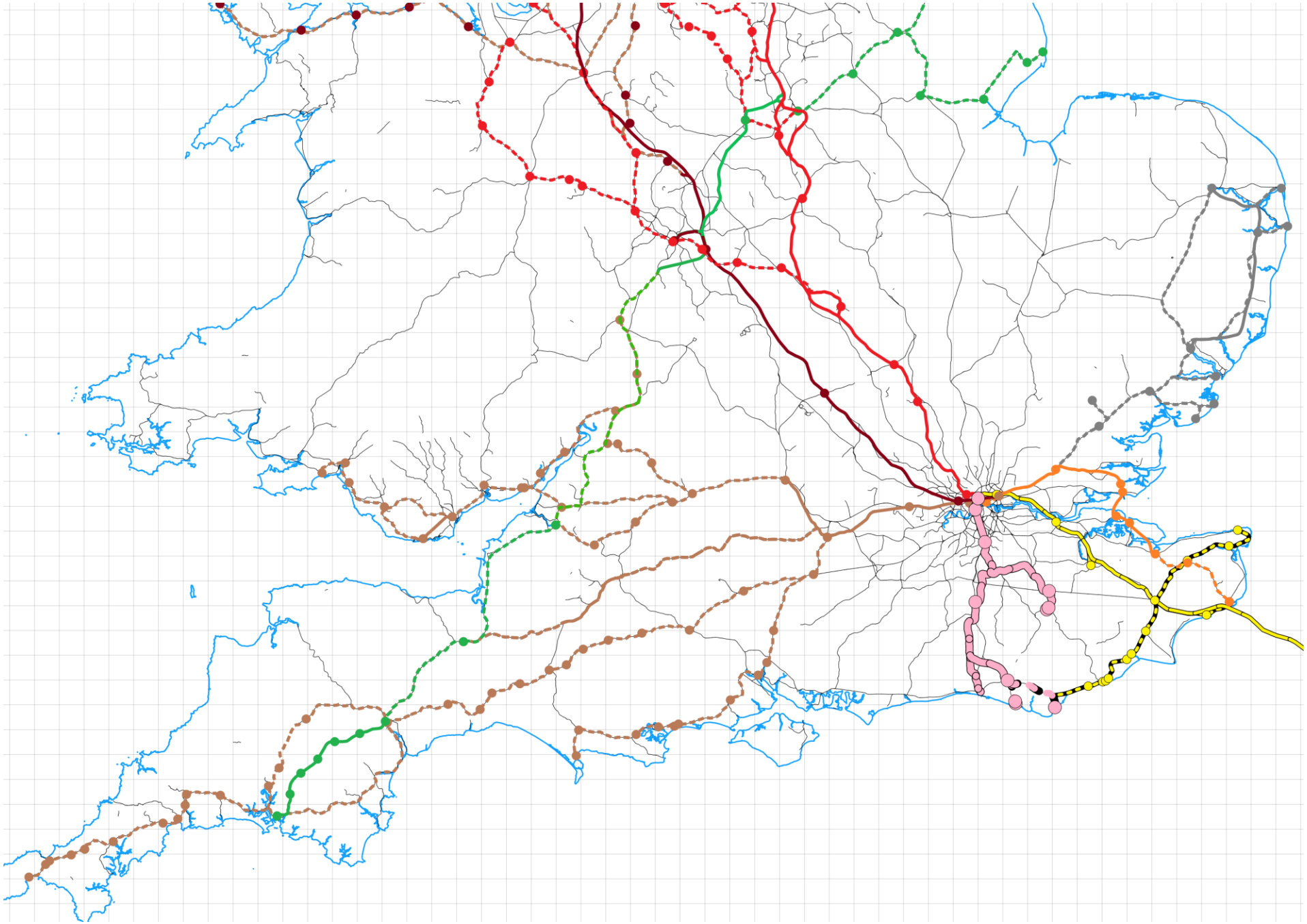


WP-8

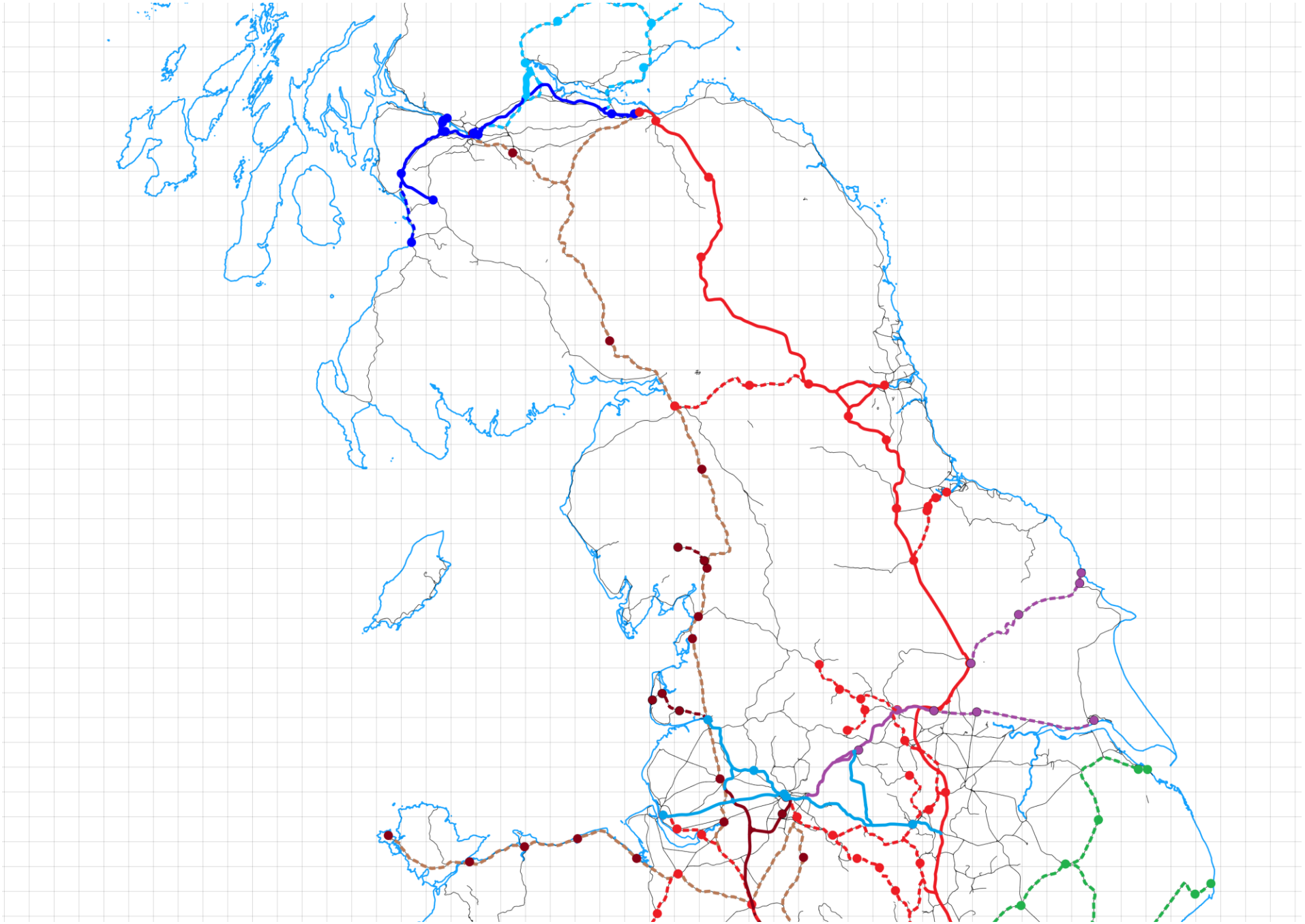
HS5-1
HS5-2

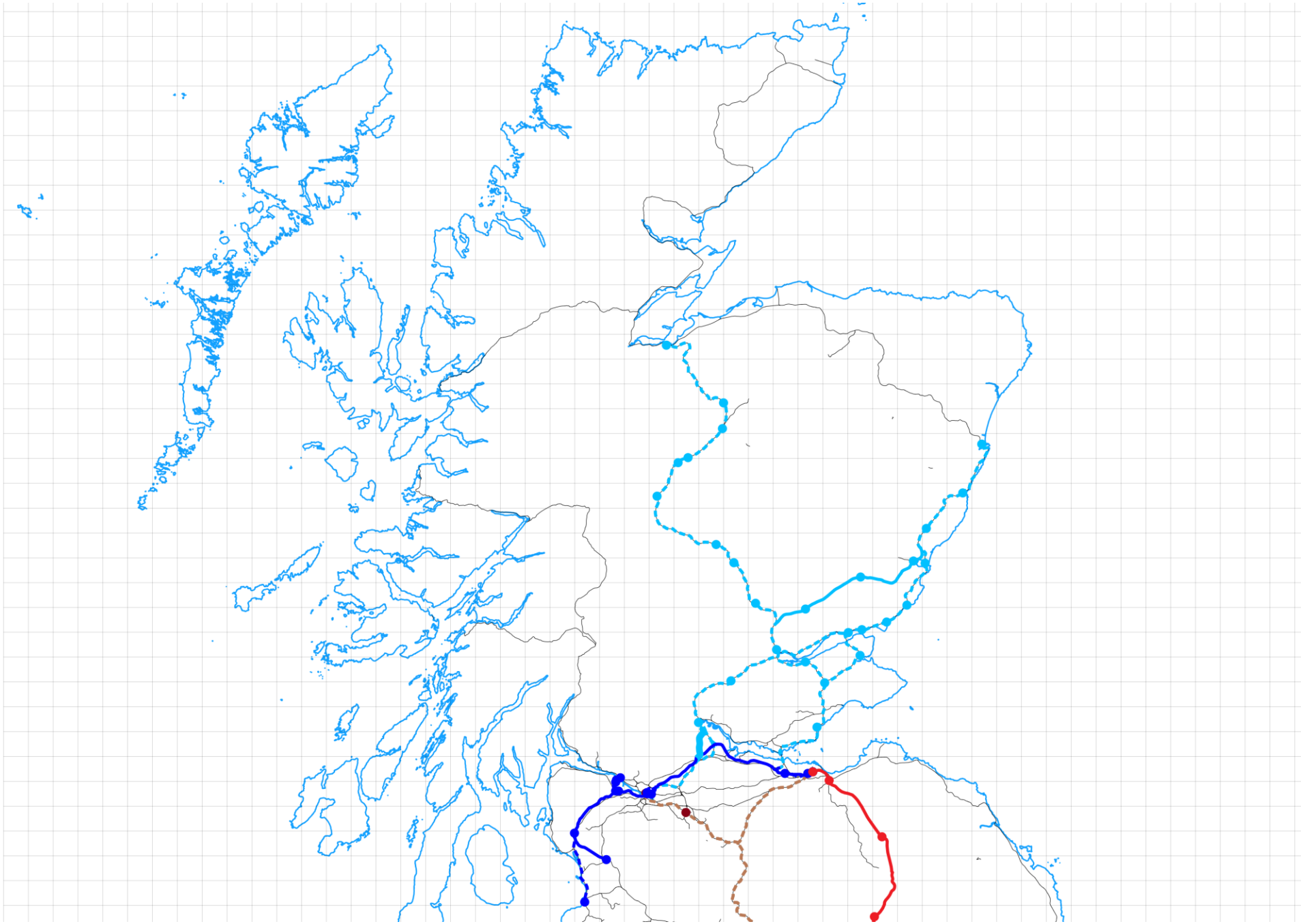
During WP-8:

- HS5-1 builds the HS Brighton Line. This extends from Pancras Cross across London via Victoria Low Level to East Croydon, all in tunnel, then on to Brighton, also from Hickstead Junction to Lewes. Services extend beyond Lewes over classic tracks to Newhaven and to Eastbourne. Certain trains initially terminate at East Croydon. This allows HS5 SP1 to begin. All of HS5's services extend as HS3 services north of Pancraqs Cross, and all of HS3's services extend south over HS5. No trains start or terminate at Pancras Cross; all are through trains.
- HS5-2 is built somewhat later, from Winders Hill Junction to Tunbridge Wells. All the trains formerly terminating at East Croydon now extend to Tunbridge Wells. This allows HS5 SP1A to begin.



Work Package 8, South Sheet





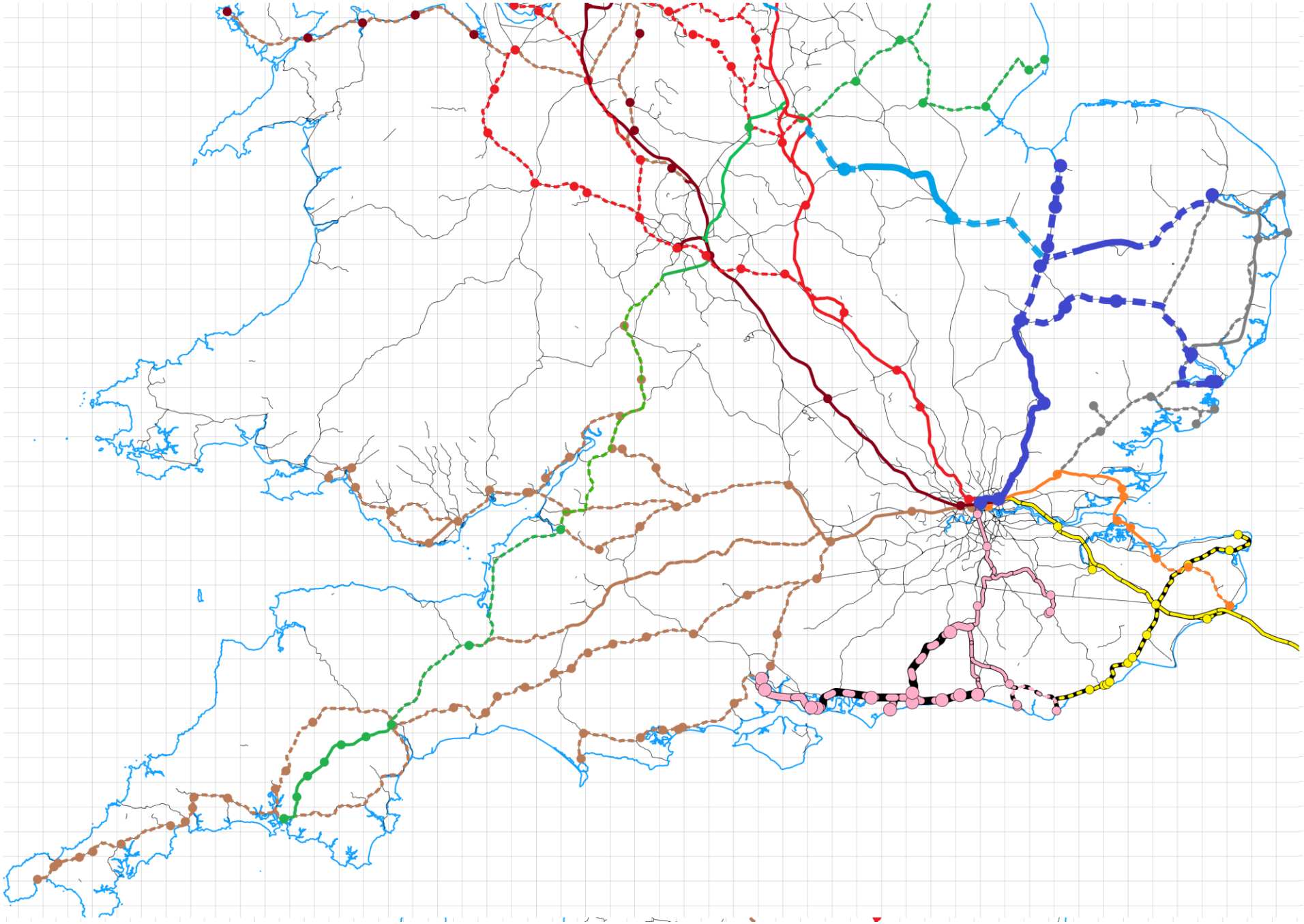
WP-9

HS5-3
HS6-1

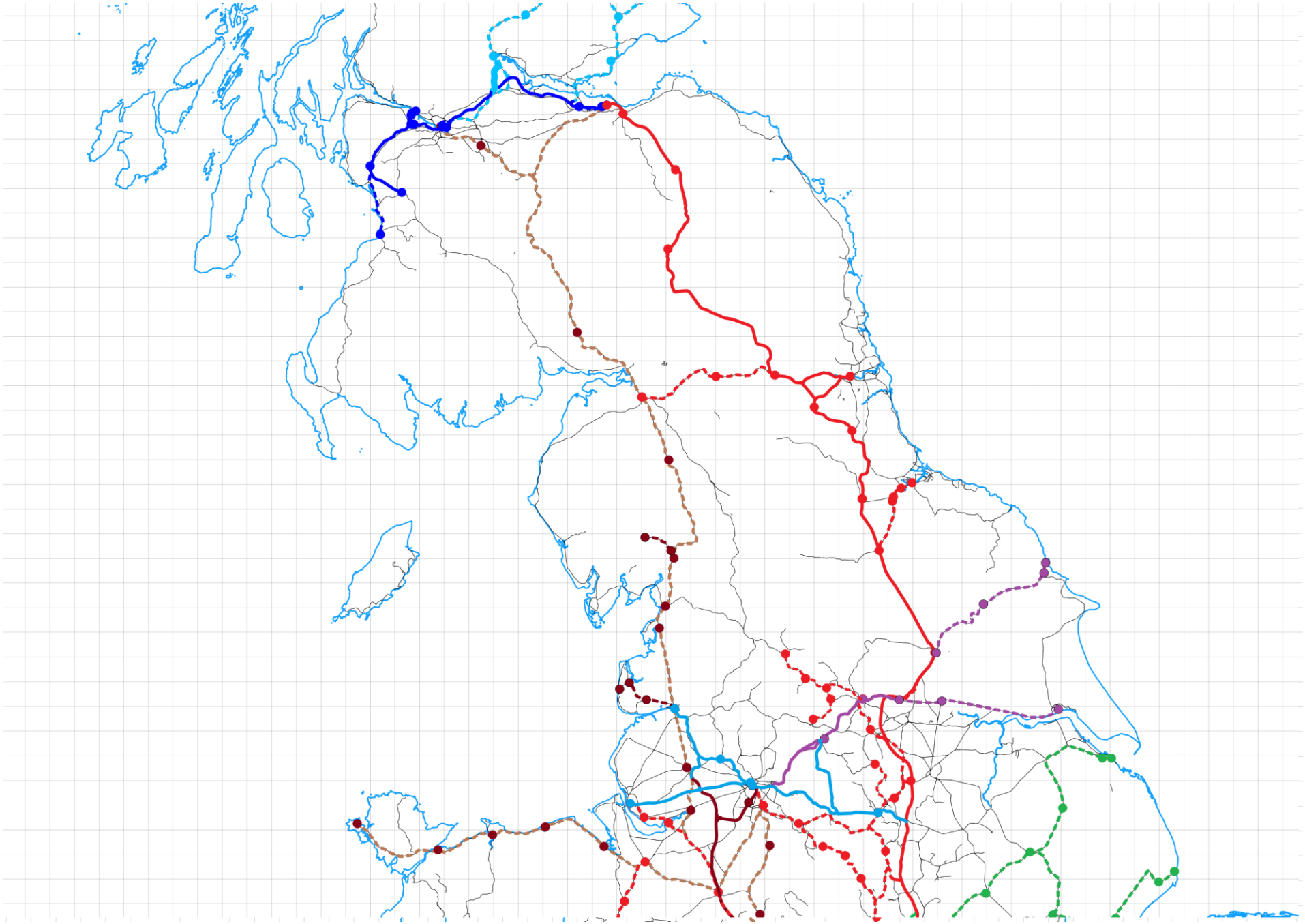
HS5-4
HS6-2
HS8-5

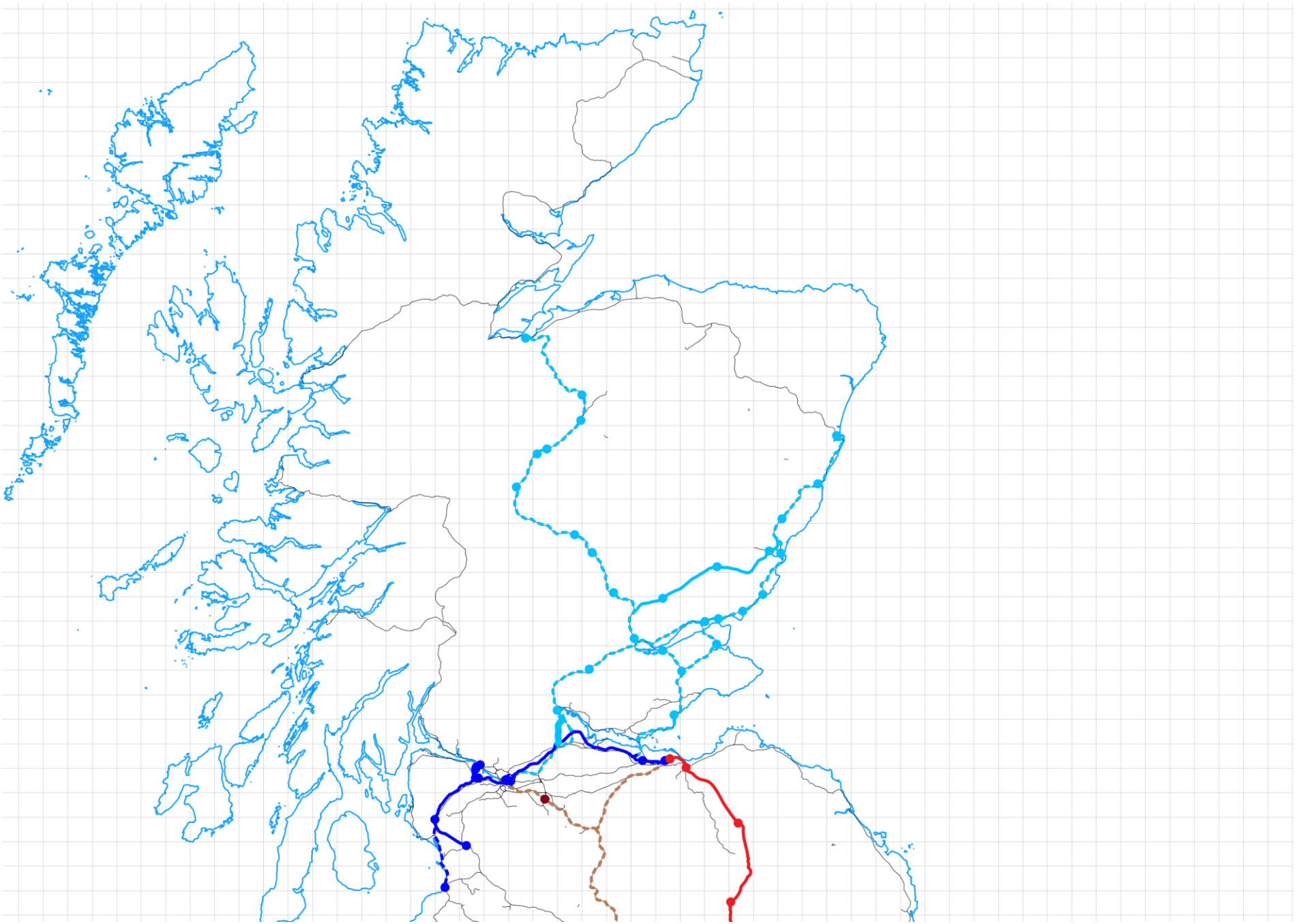
During WP-9:

- The Southampton branch of HS5 is built, as is the complete HS6. This occurs in two stages:
- HS5-3 opens from Finches Shaw Junction to Horsham as new HS infrastructure, thence over classic tracks to Portsmouth and Southsea. HS5 opens over classic tracks to Chichester via Hove, and on to Ford Junction. This allows HS5 SP2 to begin.
- HS6-1 opens from Pancras Cross to Cambridge as new HS infrastructure, thence over classic tracks to King's Lynn. At the same time, HS6 opens over classic tracks from Cambridge to Harwich via Newmarket and Bury St. Edmund's.
  This allows HS6 SP1 to begin.
- HS5-4 opens from Portsmouth and Southsea to Southampton, as new HS infrastructure. This allows HS5 SP3 to begin.
- HS6-2 opens as new HS infrastructure between Lakenheath and Roudham Heath junctions (cutting out the Thetford loop). HS6 opens from Ely to Lakenheath Junction and from Roudham Heath Junction to Norwich, over classic tracks. This allows HS6 SP2 to begin.
- HS8-5 opens from Wymondham West Junction to Peterborough as new HS infrastructure. HS8 opens between Edwalton Junction and Wymondham West Junction over mostly restored classic tracks to Melton Mowbray and Wymondham West Junction, and later from Peterborough to Ely. This allows HS8 SP2A to begin.



Work Package 9, South Sheet





Work Package 9, North Sheet

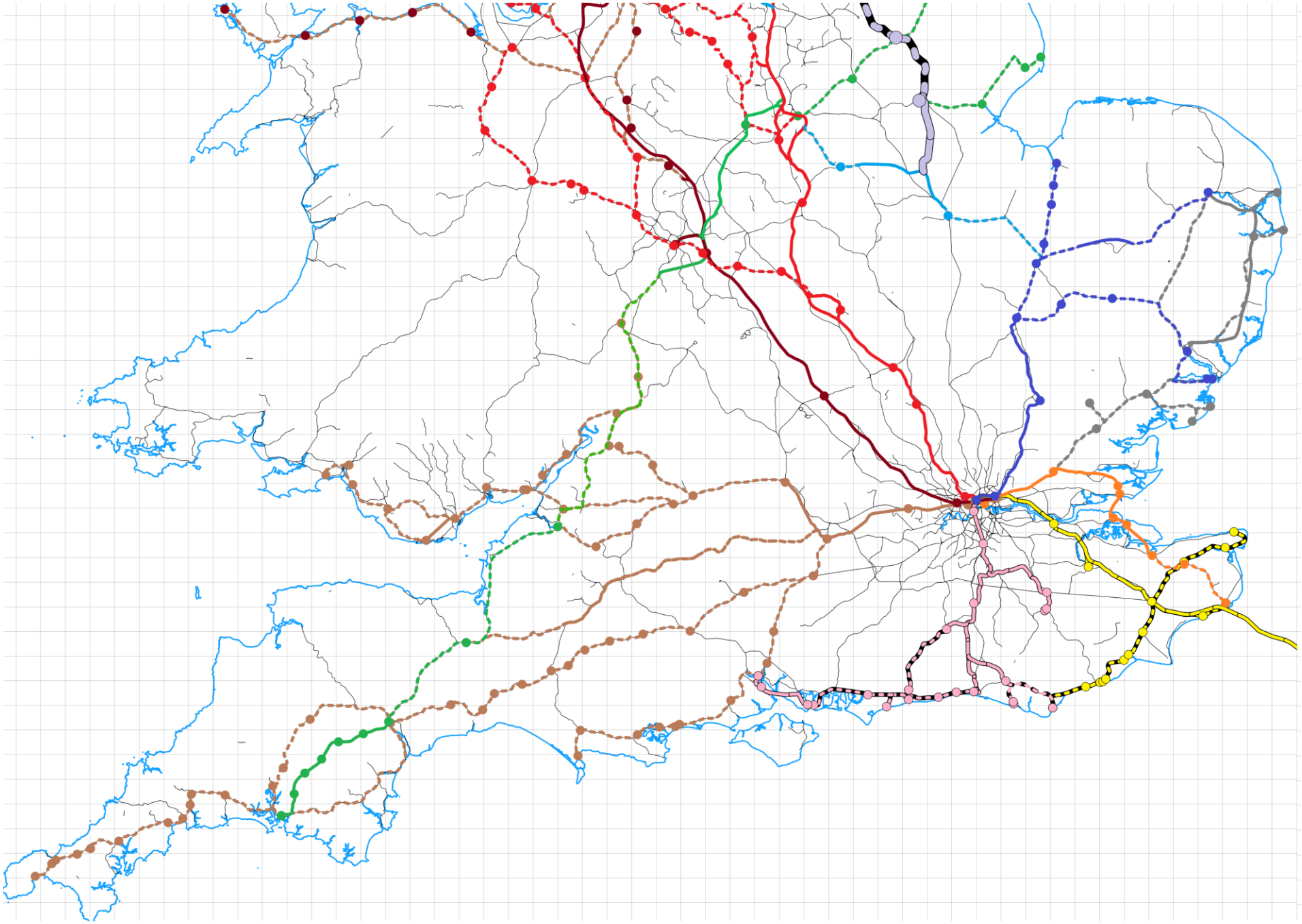
WP-10

HS10-1
HS10-2

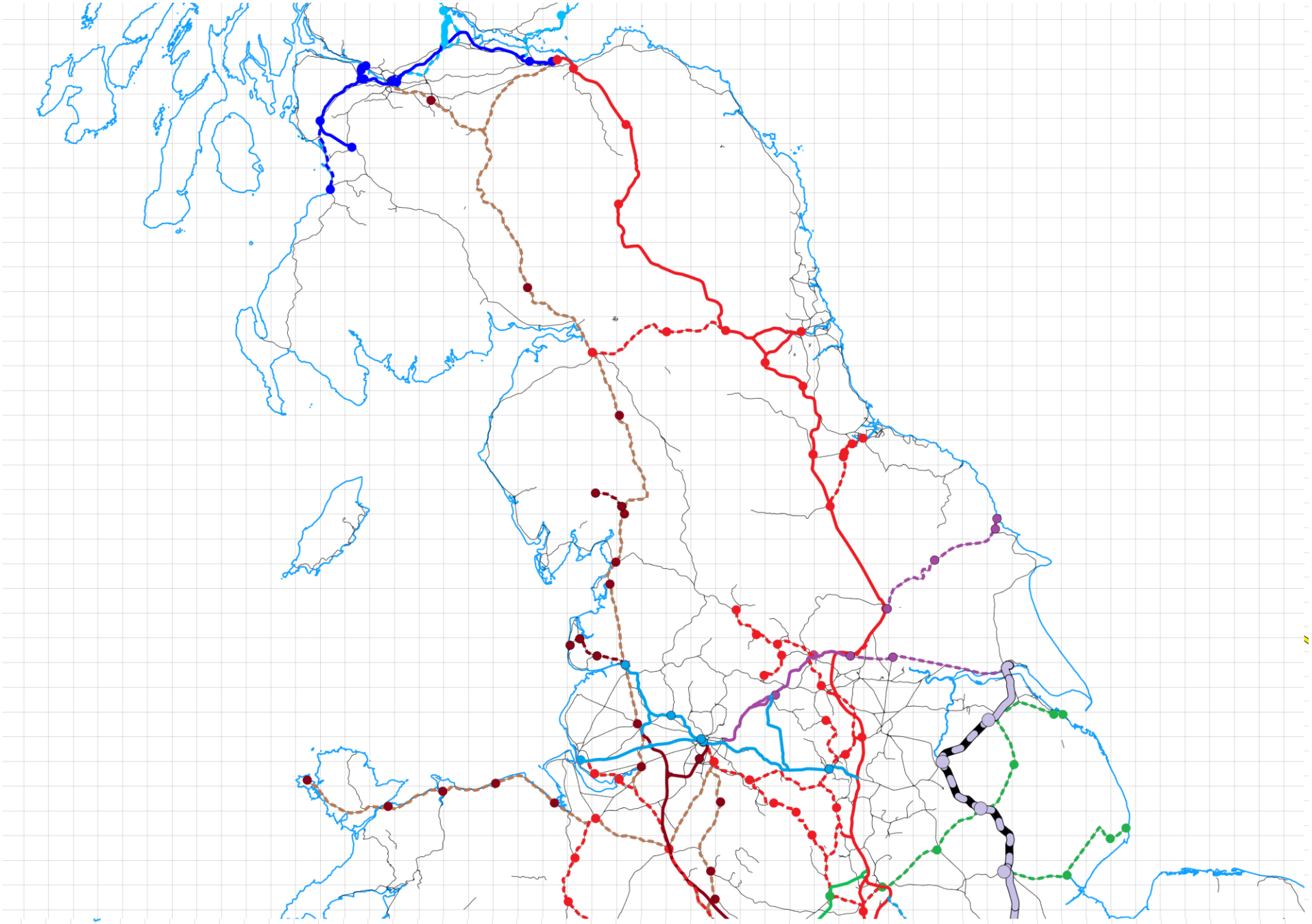
During WP-10:

- HS10-1 opens from Thurlby Junction to Sleaford South Junction as ne HS infrastructure.
- HS10-2 opens from Brigg East Junction to Hull Paragon as ne HS infrastructure..
- Between Sleaford South and Brigg East junctions, services run over classic tracks via Lincoln and Gainsborough. All this allows HS10 SP1 to begin.

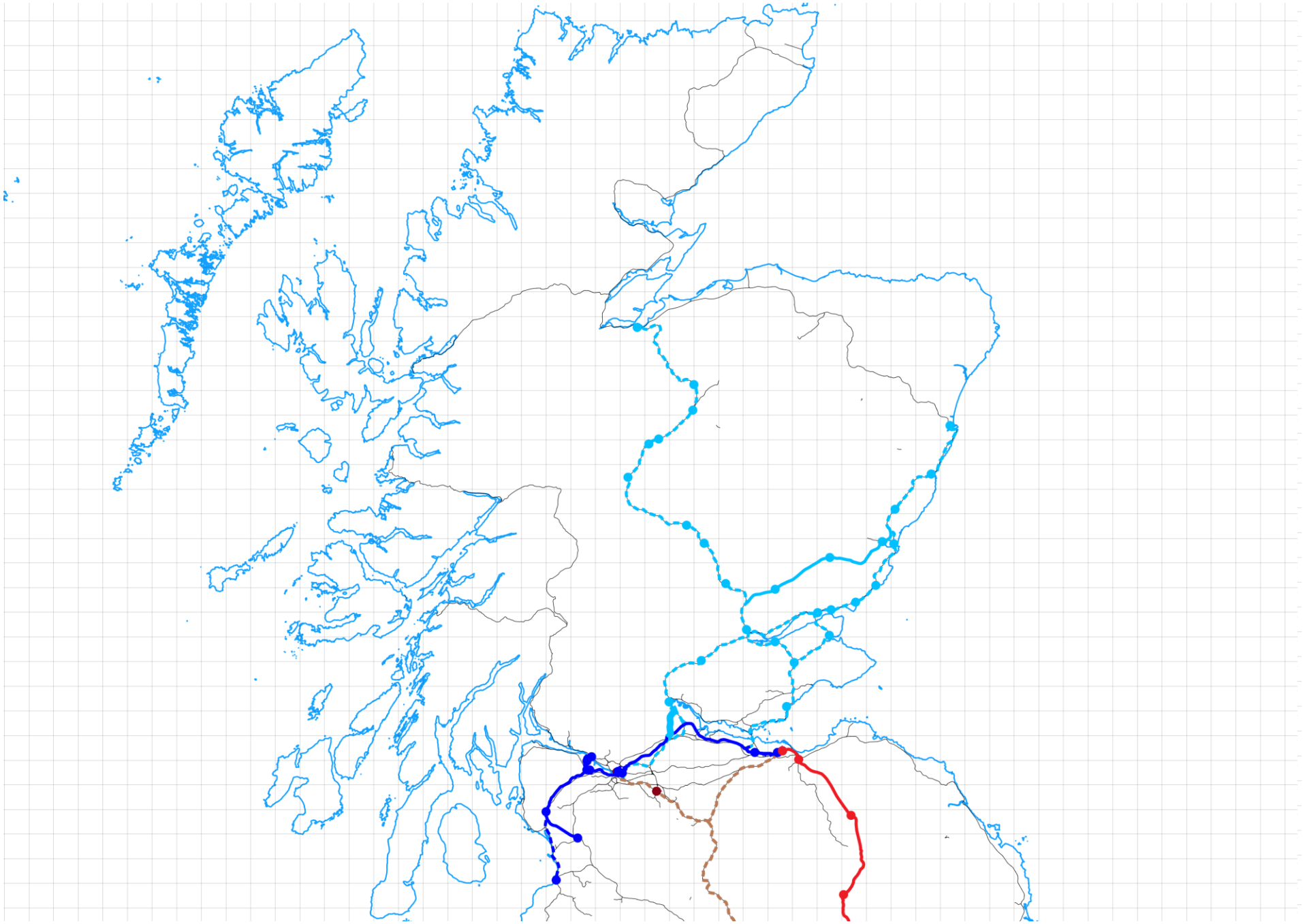
This completes Mk1A of the network



Work Package 10, South Sheet



Work Package 10, Central Sheet



Work Package 10, North Sheet

Note on Sheffield HS Station

In the main body of the text, I argued for the provision of a direct HS service to Sheffield Midland station, in addition to the service via Chesterfield. I leave the argument as stated, as it is valid in the context. But in practice, with the order of implementation recommended in this appendix, the problem simply disappears. Sheffield gets its full service to its central HS station as soon as HS3's HS services begin, on completion of WP-8. The only services then using South Yorkshire (the Meadowhall replacement) are the UHS services to York via Leeds, to West Yorkshire (Halifax / Skipton) and to the North East (Newcastle /Middlesborough). The Scottish service also travels this way, but non-stop to York. HS7's services use South Yorkshire temporarily, but switch to travel via Huddersfield as soon as the route via Ladybower Junction opens. However, the HS7 service from Birmingham to Halifax / Skipton via Sheffield Midland re-joins HS3 immediately before South Yorkshire, and also calls there. So South Yorkshire is still served long-term by four serviccs, thus 8tph, with a clock-face departure pattern.

Sheffield (Midland) already has services from the completion of WP-2, of course.