

*Delivering a better railway
for a better Britain
Network Specification 2016
South East Route*



Network Specification: South East Route

Incorporates Strategic Route A and Strategic Route B

March 2016

Network Rail – Network Specification: South East Route 02

In 2014, Network Rail merged the Kent and Sussex Routes into a single South East route.

The two former routes are now referred to as areas although within this document they remain as Strategic Routes A and B.

This document is therefore split into two sections:

[Pages 03-13](#) Strategic Route A: Kent & High Speed One

[Pages 14 -26](#) Strategic Route B: Sussex

Network Specification: Kent and High Speed One

March 2016

Network Rail – Network Specification: South East Route 03

Incorporates Strategic Route A

This Network Specification describes the South East Route: Kent Area and High Speed 1 (HS1) Area in its geographical context, outlining train service provision to meet current and future forecast demand for both passenger and freight services. The specification details infrastructure changes set out in the relevant Route Utilisation Strategies (RUSs) and Route Studies to meet future growth for the medium to long term over the next ten and thirty years.

This document refers to the Route Specifications, of which there is one for each Strategic Route Section (SRS). Route Specifications cover specific sections of the route and are published as appendices to the Network Specifications. They describe in greater detail the current and future requirements of each SRS to inform both internal and external stakeholders of our future strategy.

Each Network Specification draws upon the supporting evidence and recommendations from a geographical Route Study and previously the Route Utilisation Strategy (RUS) and the second generation RUSs which have been completed for each part of the national rail network. These strategies provide the strategic direction initially for a ten-year period within the overall context of the next 30 years. For the Kent Area the relevant strategies are:

- South London RUS - published March 2008 and describes a detailed strategy for managing growth on suburban routes to 2019
- Kent RUS - established in January 2010 and describes a detailed strategy for managing growth to 2020, with high level options considered to 2030
- The second generation London and South East RUS - published in July 2011 and re-states the conclusions reached in the Kent document.

There are also a number of other supporting documents that present specific national strategies with relevance to the Kent Area. These are principally: the Strategic Freight Network (SFN), which predicts freight growth to 2019 and 2030, and identifies a preferred SFN to transport this growth; and the Network RUS programme which incorporates a number of national work streams. The Network RUS programme consists of:

- Freight RUS - 2007

- Scenarios and Long Distance Forecasts – 2009
- Electrification Strategy – 2009
- Stations – 2011
- Passenger Rolling Stock – 2011
- Passenger Rolling Stock Depots Planning Guidance - 2011
- Alternative Solutions – June 2013.

In line with its licence obligation to establish and maintain RUSs, Network Rail has given consideration to how this process can most effectively be carried forward following the completion of the original RUS programme. In agreement with the Office of Rail and Road (ORR), a new **Long Term Planning Process (LTPP)** has been established, taking into account changing industry context and looking ahead to the next 10 and 30 years. The LTPP commenced in 2012 with the publication of four Market Studies published in 2013. The Market Studies articulated the following markets:

- Long Distance passenger
- Regional Urban passenger
- London & South East passenger
- Freight.

The Market Studies have been produced in conjunction with a number of key stakeholders and underwent a 'Draft for Consultation' process which captured feedback from the wider industry. Final versions of the studies were published in Autumn 2013 and these were then established by the ORR in January 2014.

The Market Studies look at the strategic goals of the transport sector as a whole and those circumstances where rail can contribute to those goals, before forecasting future passenger and freight demand over the next 30 years. The studies then articulate a series of service level conditional outputs to meet the strategic goals and accommodate the forecast demand. The Market Studies are informing a series of Route Studies disaggregated nationally by Network Rail's devolved routes. The Route Studies will seek to accommodate the conditional outputs from the Market Studies onto the network, firstly by making best use of existing capacity, and secondly, where this has been fully utilised, through

Long Term Planning Process: Long Distance Market Study



Long Term Planning Process: Regional Urban Market Study



Long Term Planning Process: London and South East Market Study



Long Term Planning Process: Freight Market Study



infrastructure intervention where there is an affordable and value for money business case for doing so.

The first tranche of geographical Route Studies were published in 2015. The initial stakeholder meetings for the South East Route: Kent Area Route Study commenced in the Autumn of 2015, with the objective of publishing a Draft for Consultation in the Autumn of 2016. The Route Studies present choices for funders and will be a key part of the evidence base for the Control Period 6 High Level Output Specifications (HLOS).

The Airports Commission led by Sir Howard Davies published its interim report in December 2013, making the case for airport expansion in the South East. Network Rail is assisting the Commission by considering the rail surface access implications, should any of the shortlisted options be developed.

The integration of each of these strategies is key to the development of each route, as between them they cover the needs and requirements of both passengers and freight going forwards.

The National Operating Strategy (NOS) is a new way of managing and controlling services on the network. The strategy will integrate traffic management and control systems to improve performance and potentially improve the Public Performance Measure (PPM) by two per cent. It will result in cost savings by moving rail operation from over 800 signal boxes to 14 rail operating centres over a timescale of around 30 years. Network Rail plan that over 80 per cent of the network will be controlled by the new centres by 2029, with most of that delivered in Control Periods 5 and 6 (2014 – 2024). Network Rail has been working collaboratively with the industry to develop the proposals and is in discussion with senior industry leaders to develop the plan further.

For the Kent area, a phased introduction of the Operating Strategy is currently being developed to align and integrate with asset renewals programmes to transfer signalling control of the network to regional control centres.

Please refer to the Route Specification: South East Route for more detailed information on each of the Strategic Route Sections.

Route context

The South East Route: Kent Area is a complex network of

interconnected lines linking central London and its south-eastern suburbs with the Kent coast, parts of East Sussex and the Channel Tunnel. The area has benefited from a major enhancement to services associated with the introduction of domestic trains on High Speed One (HS1). Services from the network run to London Victoria, through London Bridge to London Charing Cross and London Cannon Street; through central London Thameslink stations to London St Pancras International (low level) and beyond; and also to London St Pancras International via HS1. Most passenger journeys involve one of these busy central London stations. The Kent lines are an important part of the national rail freight network, with the Channel Tunnel routes connecting the UK to railways in mainland Europe. There are also important freight links to Thamesport on the Isle of Grain and many smaller terminals.

Tonbridge Main Line and branches

The Tonbridge Main Line forms the central spine of the Kent network, linking terminals at London Charing Cross and London Cannon Street to east Kent and East Sussex via Tonbridge. The line carries a large and diverse combination of suburban, main line, high speed and freight traffic along its length.

The suburban lines connect into the Tonbridge Main Line at various junctions within south east London. The main line splits at Tonbridge providing connection to the Hastings line via Tunbridge Wells and towards Ashford International. At Ashford the line splits again, with each branch reaching Ramsgate via Dover Priory or Canterbury West. There is a direct connection with the Channel Tunnel via Dollands Moor Freight Yard at Saltwood Junction, which sees regular traffic to/from the continent.

Chatham Main Line and branches

The Chatham Main Line connects towns across south London and north Kent with the London terminals. The principal route runs from London Victoria to Margate via Swanley and also carries a variety of suburban, main line, high speed and freight traffic.

The line is connected into the dense network of suburban routes in south London. The principal route runs via Bromley South, adjacent to which there are multiple junctions joining the Tonbridge Main Line at Bickley/St Mary Cray. The North Kent line via Dartford and Gravesend converges at Rochester Bridge Junction. From there the



Chatham Main Line serves the Medway Towns, Sittingbourne and Faversham through to Margate and Ramsgate.

The Maidstone East line diverges from the main alignment at Swanley and provides a connection with the Tonbridge Main Line at Ashford via Maidstone. The Canterbury East branch runs from Faversham to Dover.

Suburban lines - Dartford routes and Hayes branch

There are three routes from the London Bridge corridor to Dartford and Gravesend – via Sidcup, Bexleyheath and Woolwich. Each caters for the suburban market in south east London and north west Kent. There is a connection with HS1 at Springhead Junction at Gravesend.

There are extensive freight facilities at Angerstein Wharf, near Charlton and at Hoo Junction, which provides access to the freight-only branch at Grain.

The Hayes branch connects the town of Hayes in south east London to the London Bridge corridor. The branch connects with the Tonbridge Main Line at Parks Bridge Junction near Lewisham.

Regional and local network – Sheerness branch and Medway Valley line

The Sheerness branch connects with the Chatham Main Line at Sittingbourne and accommodates a regular shuttle service between there and the Isle of Sheppey. The line also caters for freight traffic via various facilities at Sheerness, Queenborough and Ridham Dock.

The Medway Valley Line runs north to south connecting Chatham and Tonbridge Main Lines via Maidstone. Freight facilities exist at Allington (near Maidstone) for aggregates traffic.

Regional and local network – Marshlink line

The Marshlink Line connects Ashford International with Hastings and beyond towards Eastbourne and Brighton. The section between Ashford and Ore is the only non-electrified passenger line on the Kent Route. The freight-only Dungeness branch connects with the line at Appledore.

High Speed One

Although not part of Network Rail-owned infrastructure, HS1 forms an integral part of the rail network in Kent. Network Rail undertakes operations and maintenance on this route under contract to HS1 Ltd. In addition to services to/from mainland Europe via the Channel Tunnel, domestic high speed services operate on this infrastructure. These services operate to/from various locations in Kent to London St Pancras International via Springhead Junction, near Gravesend, and at Ashford International. A connection exists at Fawkham Junction near Swanley to the Chatham Main Line which has seen no timetabled passenger services since the completion of HS1.

Interface with the Sussex Route

The lines to London Bridge via the Peckham Rye and Sydenham corridors and the Thameslink route between Herne Hill and Farringdon are covered in the Sussex Route Network and Route Specifications, but interface with the Kent Route on the approach to London Bridge and via London Blackfriars respectively. The section between Tonbridge and Godstone, which is utilised by services between Tonbridge and London Bridge via Redhill, is also covered in the Sussex specifications. The regional services that operate on the Marshlink route cross route boundaries between Hastings and access to at least Bexhill.

Key markets and traffic flows

The passenger market for Kent is divided between high frequency suburban services, longer distance main line and domestic high speed services. Each is focussed on journeys to/from the capital, but they also cater for local journeys between locations within Kent and East Sussex and beyond.

Suburban services operate on a complex network of routes emanating from the London terminals. They serve both the outer suburban market, which approximates to those towns on the fringe of the M25 motorway, and the inner suburban area. Due to the relative absence of the London Underground network in south London, the rail network fulfils the requirement for high capacity high frequency transport.

The majority of the suburban network is shared with main line services which provide links between London and the major towns in Kent and parts of East Sussex. These services have been supplemented since 2009 by the introduction of the domestic high speed service, which connect towns in east and mid Kent with London St Pancras International via HS1. The Kent market is characterised by the number of alternative routes and destinations that are available between the capital and towns in Kent and East Sussex. Most towns and cities on the route have one London terminal and an alternative route.

Other local journeys are available via the local lines on the Sheerness branch, Medway Valley and Marshlink lines, each of which offers connections to main line or high speed services to/from London.

The principal passenger operator on the Kent route is Southeastern. Other train operators with limited operations on this route are GTR operating as Thameslink and Southern Railway. Eurostar operate over HS1. There are also occasional charter train operations.

There is a large and diverse freight market in Kent, which is dominated by the import and export of goods as well as bulk aggregates for rail and construction industries. The Channel Tunnel handles a range of imported and exported goods, which traverse the Kent network via the freight yard at Dollands Moor. Port facilities on the Grain and Sheerness branches handle a similar variety of traffic. Additionally, there are other dedicated freight facilities across the network such as Mountfield and Dungeness. In each case, the freight traffic shares capacity with passenger services on the main line and suburban network.

The Freight Market Study base year is 2011/12 and forecasts are available for 2023, 2033 and 2043 which in summary show:

- substantial growth in intermodal freight from ports and, in the longer term, between domestic intermodal terminals (many of which do not currently exist but are expected to be developed in future)
- a decline in coal traffic over the long term, partly offset by a growth in biomass as coal forms a smaller part of the UK's power generation mix; and

- modest growth in other commodities, in particular aggregates for the construction industry.

The Freight Market Study forecast freight growth is unconstrained by rail capacity and the extent of future new terminal developments. The unconstrained forecasts form the conditional outputs which are being assessed in the Route Studies to present choices for funders for Control Period 6 and beyond.

Performance

Please refer to the Kent Route Plan, which presents for the Train Operating Companies that operate across the route, their individual planned forecast Public Performance Measure (PPM) and Moving Annual Average (MAA) for Control Period 5 (CP5).

Infrastructure investment in Control Period 5 (2014 – 2019)

CP5 is seeing major construction works at London Bridge Station and its approaches through the Thameslink Programme. The final stage of the works involves extensive redevelopment of London Bridge station to provide nine through and six terminating platforms for Kent and Sussex services respectively. Major remodelling of the approaches, including provision of a dive-under at South Bermondsey, will support the provision of the 24tph capacity through the Thameslink core. The timetable specification for Thameslink and Southeastern franchise services will be defined through both franchises on completion of this programme.

The South London RUS recommended a major programme of train lengthening to fulfil anticipated peak demand in the suburban area. The infrastructure to support this programme, including longer platforms and signalling changes is largely complete, with enhancements to traction power supply due to be completed during CP5. Delivery is being phased in line with Thameslink construction timescales and rolling stock procurement programmes.

The deployment of new rolling stock on the Thameslink routes will allow a further cascade of stock for use elsewhere on the network. This should allow for the updating of operational plans to make sure remaining peak services operate at maximum length for their respective routes.

The additional and longer rolling stock will require enhancements to

the depots and stabling facilities throughout the Kent Area. This workstream will be developed and delivered during CP5.

CP5 will also see the completion of the Crossrail project, which will enable a service of 12 trains per hour from Abbey Wood across central London via the new infrastructure. This will provide significant new journey opportunities and congestion relief on the rail network and interchanges.

The next phase of East Kent Resignalling between Faversham and Strood has been delivered over Easter 2016. The project has renewed existing signalling, with control having been moved from the individual signal boxes to Gillingham IECC in line with the Operating Strategy. Opportunities to enhance the existing layout to provide capacity to meet future requirements have been delivered, including:

- the new station at Rochester to replace the existing facility
- an additional bay platform at Rainham.

Improving rail journey times is seen as a key driver for regeneration by local authorities and stakeholders. Hence, increasing linespeeds and reducing the impact of Permanent Speed Restrictions (PSRs) is a key aim during the control period. Among the schemes under development, Network Rail plan to reduce the journey time between Ramsgate and Ashford (and onwards to London St Pancras via HS1) by around six minutes. This work is jointly funded by the Passenger Journey Time Improvement Fund (PJIF) and the Regional Growth Fund.

Strategy beyond CP5

Following the completion of the major programmes in Control Periods 4 and 5, it may be considered that peak capacity to/from the capital will be close to maximum. However demand is expected to continue to grow as a result of major housing developments in south east London, Thames Gateway and Ashford.

The Kent RUS identified a strong case for growing the high speed market in Kent to meet this anticipated demand. Peak services to/from Ashford are already at capacity and with the anticipated growth in housing and workforce in this area, it is clear that further investment in high speed rail capacity will be required to serve this market.

The requirement to provide additional capacity on domestic high speed services has been identified, this could align with local

aspirations to extend the benefits of high speed services to Hastings and Bexhill. The provision of this service would then potentially trigger regenerative benefits to the East Sussex coastal area.

However, the development of high speed services to the south coast would require significant investment in rolling stock and the remodelling of the track layout and platform capacity at Ashford International. Alternative solutions to improving the journey time from Hastings and Bexhill to London could also be investigated.

In addition to Ashford, passenger demand is expected to significantly increase in south east London and the Thames Gateway. Most notably, the Chancellor announced the creation of a new 'Garden City' at Ebbsfleet in his 2014 Budget. Further capacity will be required on these corridors to meet the growth in demand. As capacity via London Bridge will continue to be at a premium, potential solutions may include an extension of Crossrail to Dartford and beyond.

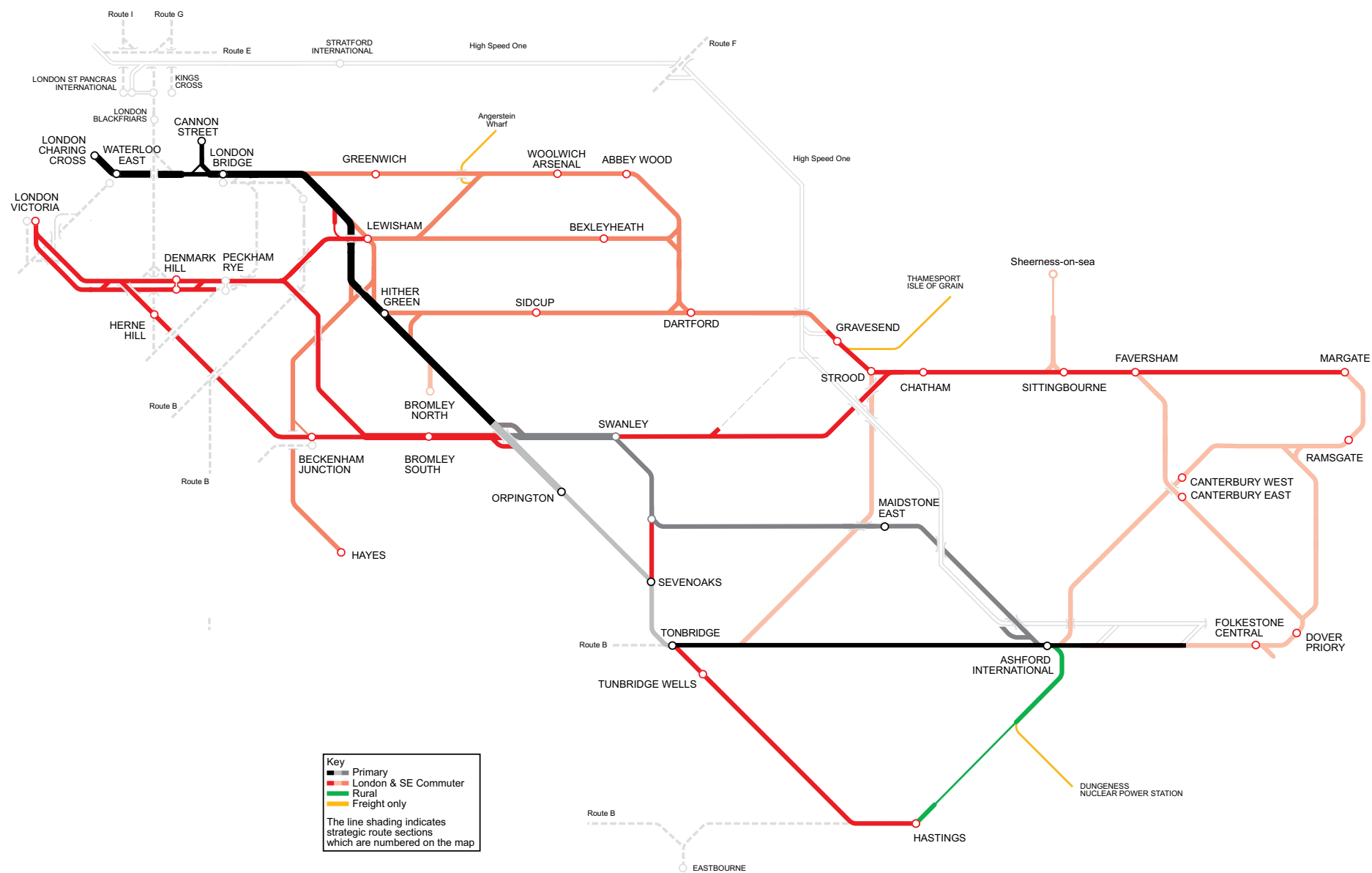
The European Rail Traffic Management System (ERTMS) forms part of an industry-wide programme entitled the Digital Railway designed to benefit Great Britain's economy by accelerating the digital enablement of the railway. The scope of the Digital Railway is being developed in CP5 but will include train operation, capacity allocation, passenger experience, infrastructure management and stations/interchanges management. The output of the programme will be a business case to Government, presented through the Initial Industry Plan (IIP) in September 2016.

As part of the LTPP, the South East Route: Kent Route Study will seek to accommodate the conditional outputs from the London and South East Market Study onto the Network. This will define a strategy for 2043 and present choices for funders for CP6 and beyond.

The South East Route: Kent Area Route Study is currently under development and this document will be updated following the completion of the Route Study to align with the outputs from the strategy.

Kent

Route map



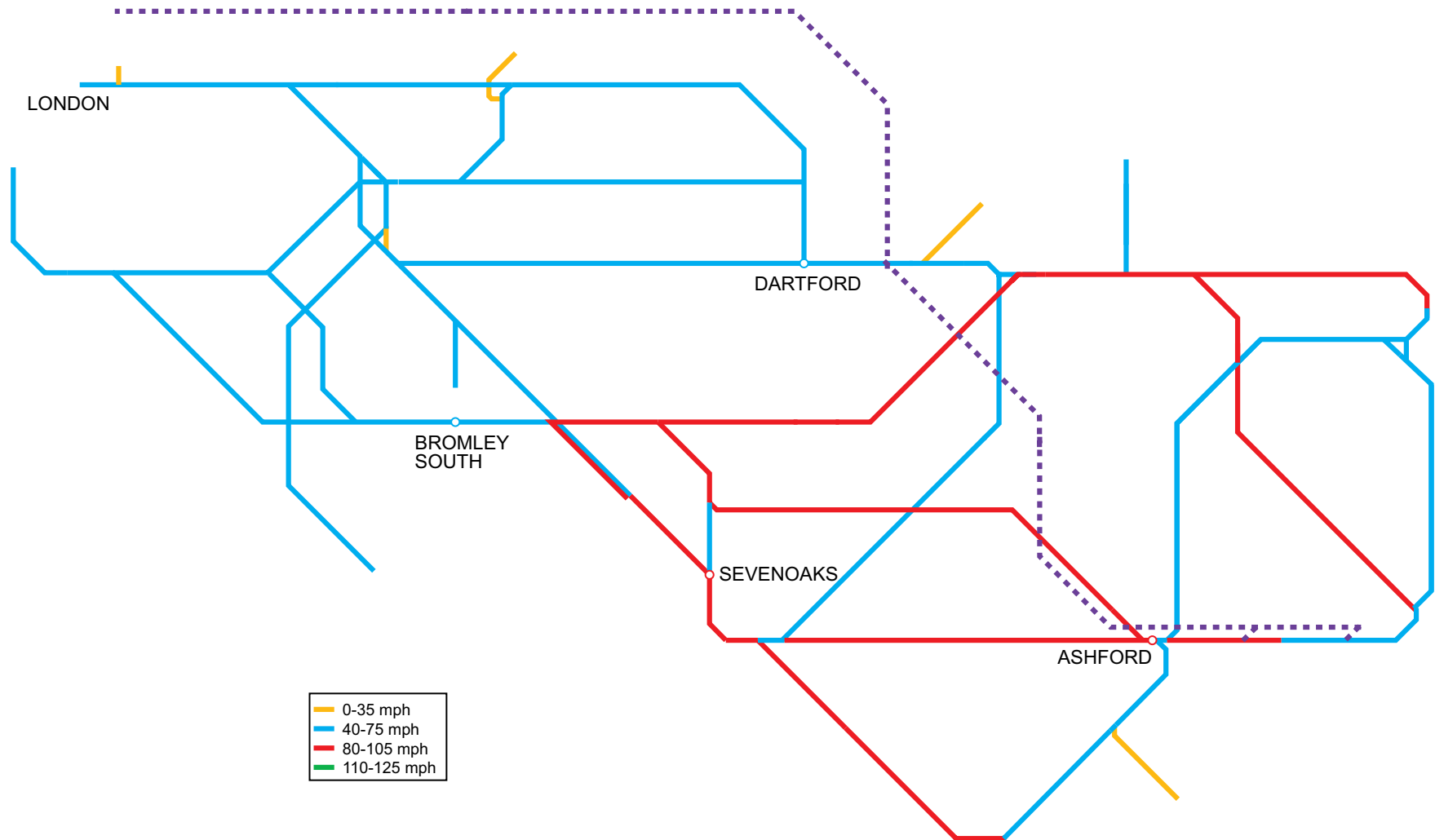
Kent

Capability maps

March 2016

Network Rail – Network Specification: South East Route 09

Linespeed



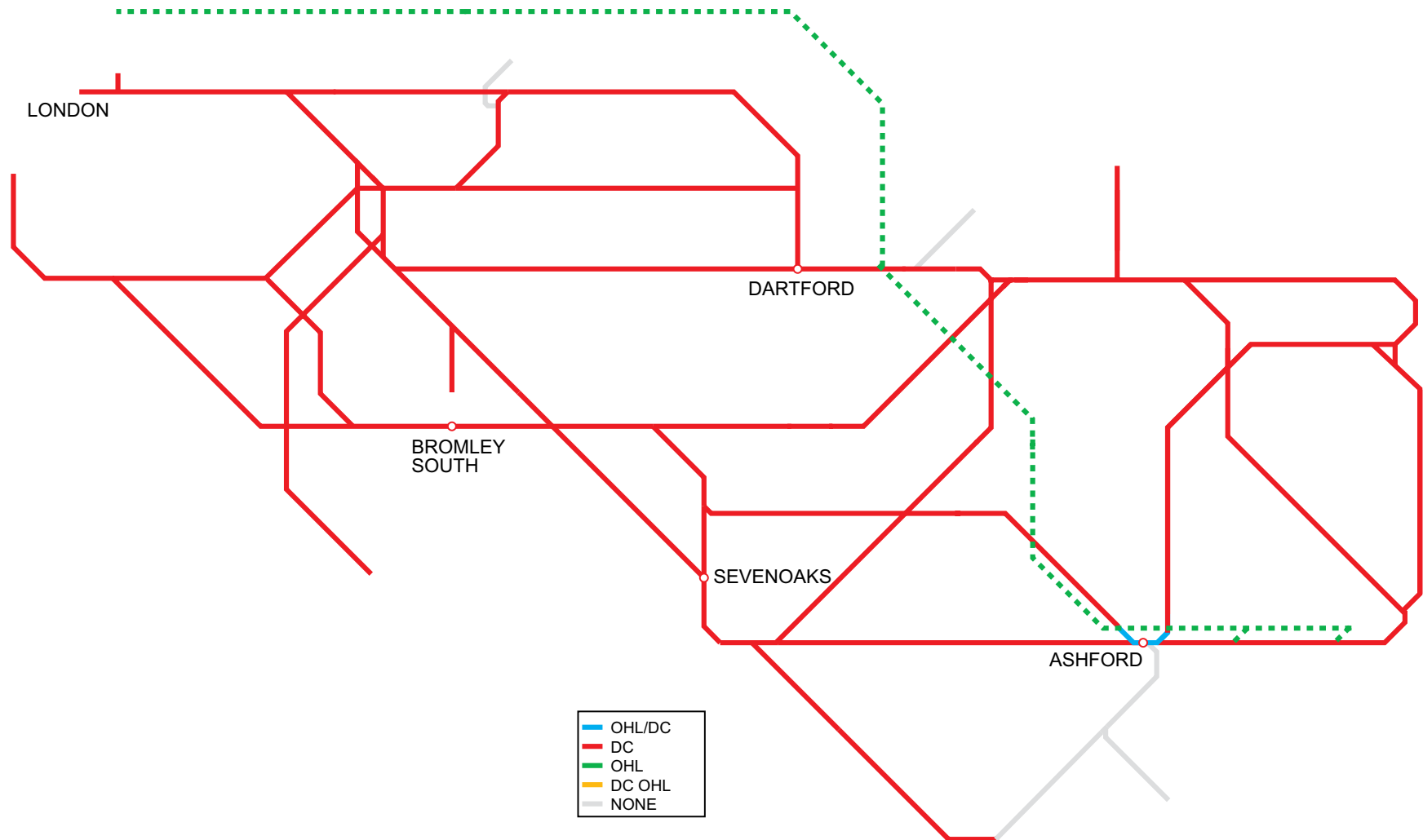
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Capability maps

March 2016

Network Rail – Network Specification: South East Route 10

Electrification



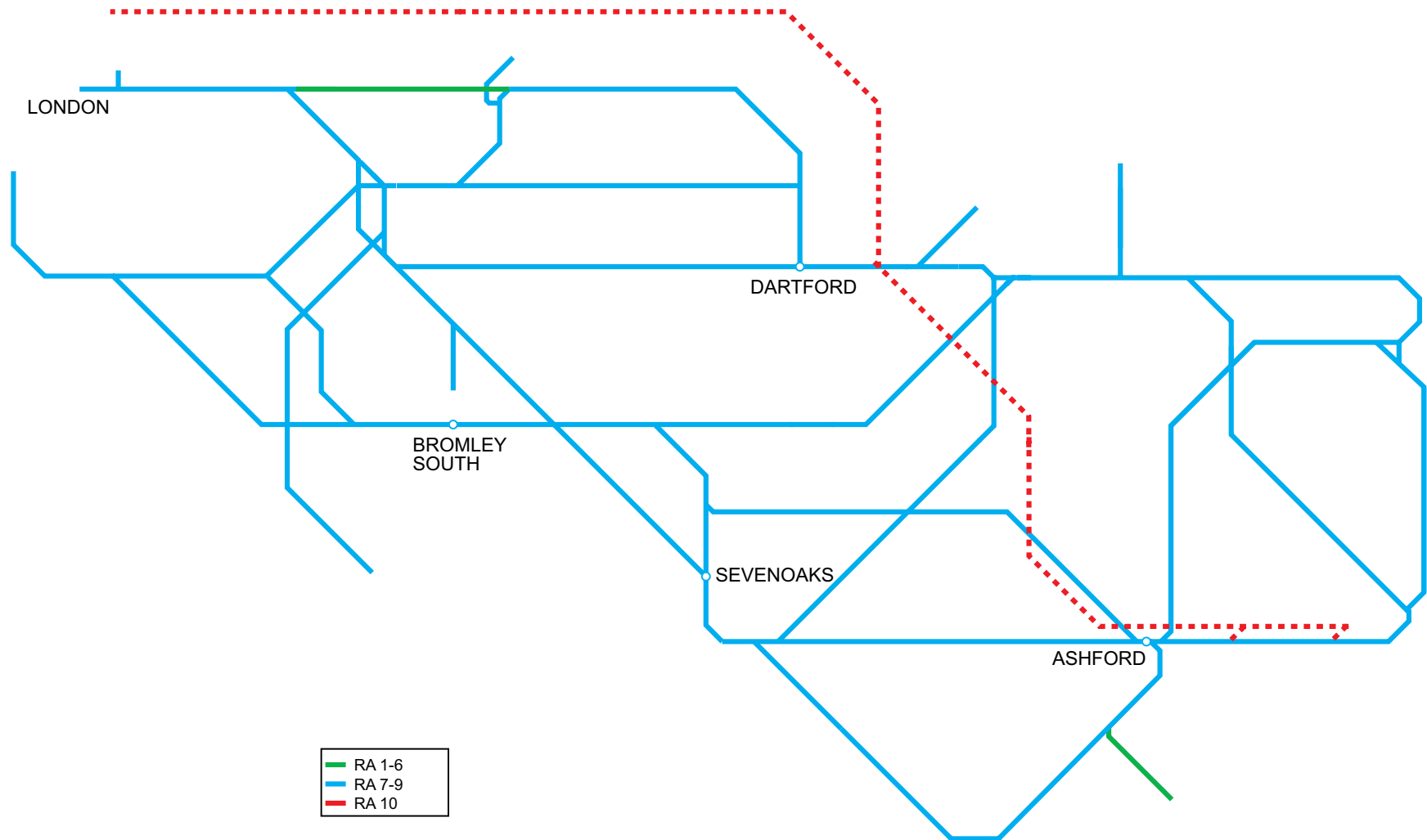
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Capability maps

March 2016

Network Rail – Network Specification: South East Route 11

Route Availability



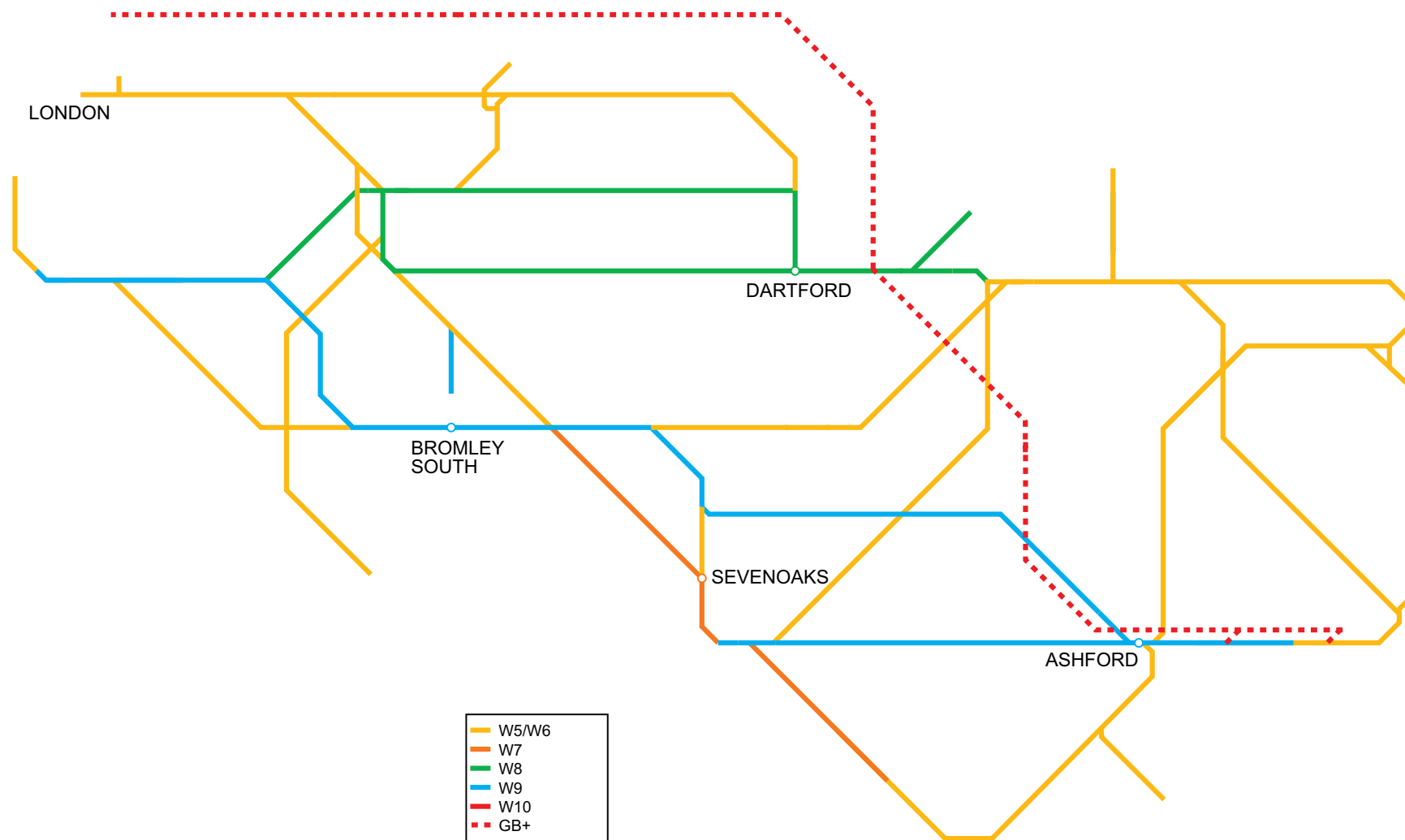
Kent

Capability maps

March 2016

Network Rail – Network Specification: South East Route 12

Gauge



SRS	Name
Route A : Kent	
A.01	Victoria Lines
A.02	Otford – Sevenoaks
A.03	London – Chislehurst
A.04	Chislehurst – Tonbridge
A.05	Chislehurst – Ashford
A.06	Tonbridge – Hastings
A.07	Dartford Lines to Gravesend and Hayes Branch
A.08	Bromley North Branch
A.09	Gravesend/Swanley – Margate
A.10	Sheerness Branch
A.11	Strood – Paddock Wood
A.12	East Kent Routes
A.13	Hastings – Ashford
A.14	Tonbridge – Continental Junction
A.99	Other Freight lines
Interface with non-Network Rail owned infrastructure	
HS1	London St Pancras – CTRL/ET Boundary

Network Specification: Sussex

Incorporates Strategic Route B



March 2016

Network Rail – Network Specification: South East Route 14

This Network Specification describes the South East Route: Sussex Area in its geographical context, outlining train service and infrastructure provision to meet current and forecast future demand for both passenger and freight services. The specification details infrastructure changes set out in the relevant Route Utilisation Strategies (RUSs) and Route Studies to meet future growth for the medium to long term over the next ten and thirty years.

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There are also a number of other supporting documents that present specific national strategies with relevance to the Sussex Area. These are principally: the Strategic Freight Network (SFN), which predicts freight growth to 2019 and 2030, and identifies a preferred SFN to transport this growth; and the Network RUS programme which incorporates a number of national work streams. The Network RUS programme consists of:

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onto the network, firstly by making best use of existing capacity and secondly, where this has been fully utilised, through infrastructure intervention where there is an affordable and value for money business case for doing so.

The first tranche of geographical Route Studies were published in 2015, including the South East Route: Sussex Area Route Study. The Route Studies present choices for funders and will be a key part of the evidence base for the Control Period 6 High Level Output Specification (HLOS).

The Airports Commission led by Sir Howard Davies published its Interim report in December 2013, making the case for airport expansion in the South East. Network Rail is assisting the Commission by considering the rail surface access implications, should any of the shortlisted options be developed.

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For the Sussex Area, the Operating Strategy will integrate the signalling renewals programme across the route, transferring signalling control to Three Bridges Route Operating Centre (ROC). London Bridge (Penge West to London Bridge Low Level) and the East Coastway (Glynde to Bexhill) are already being controlled from the ROC.

Please refer to the Route Specification: South East Route for more detailed information on each of the Strategic Route Sections.

Route context

The Sussex Route does not just cover the counties of East and West Sussex but also parts of London, Surrey and Kent and reflects the core routes of train operator Southern although other operators also share the use of the infrastructure. The route is split into 16 Strategic Route Sections (SRSs) from the north-south Brighton Main Line to east-west routes of the East and West Coastways. The Arun Valley Line provides a diagonal link from the West Coastway to the Brighton Main Line.

The South London suburban services are split into five SRSs from the outer suburban East Grinstead/Uckfield lines to the South Central Inner Suburban commuter lines. The West London Line also falls into the suburban area supporting orbital services from the Croydon and Clapham Junction area. Likewise to the east of the route, direct suburban services from West Croydon and Crystal Palace provide orbital services to the East and North London Lines avoiding London termini.

The Brighton Main Line

The Brighton Main Line (BML) links Brighton, Gatwick Airport and East Croydon with Clapham Junction, London Victoria and London Bridge. The line is principally a commuter railway serving a range of commuter towns between these locations including Haywards Heath and Redhill. At the southern end of the route, as well as serving Brighton, routes connect from the West and East Coastways providing direct services from coastal towns such as Littlehampton, Worthing, Hove, Lewes, Newhaven and Eastbourne to London. Airport traffic to/from Gatwick Airport and leisure traffic to/from coastal locations provide the other key flows on the BML.

The main train operator operating services on the BML is Southern, who operate services to/from London Victoria as well as all services in and out of London Bridge low level. Thameslink operate services between the BML and the Thameslink core via London Bridge and via Tulse Hill. Great Western Railway (GWR) also operate a small number of services into the route, including the half-hourly Reading to Redhill/Gatwick services.

In July 2015, the new Thameslink, Southern, Great Northern franchise, Govia Thameslink Railway (GTR), took over the Southern franchise and consists of four brands: Southern, Gatwick Express,



A Class 313 unit departing Moulsecoomb

Thameslink and Great Northern. This is the UK's largest train operating company franchise.

The line is an important freight route for the delivery of aggregates into the south east of England with heavily used terminals at Purley, Crawley and Ardingly. DB Schenker, Freightliner Heavy Haul and GB Railfreight all operate services on the BML at present.

The BML is a four-track railway from Three Bridges northwards, where the routes from Horsham and the Arun Valley converge. Slow lines diverge via Redhill and rejoin the fast lines south of Purley. Between East Croydon and both London Victoria and London Bridge, four track railways exist to support the additional suburban traffic on these sections.

The Sussex suburban network

The Sussex suburban network provides a metro frequency service between London Victoria/London Bridge and the inner and outer suburban areas of south London that in most cases do not have tube links.

On the London Victoria side the key inner suburban routes diverge at Balham, with services operating toward Sutton, Epsom & Dorking, Streatham Hill and Crystal Palace and West Croydon/East Croydon. From London Bridge inner suburban services operate stopping services to Sydenham & Crystal Palace, and to the Croydon area, Beckenham Junction and the Wimbledon Loop via Tulse Hill.

East London Line services operate to West Croydon and Crystal Palace via New Cross Gate and to Clapham Junction via Peckham Rye.

The outer suburban network provides services (usually at a lower frequency) between London Victoria/London Bridge and branches to East Grinstead, Tattenham Corner, Caterham, Redhill, Reigate, Tonbridge, Oxted and Uckfield (from London Bridge only).

The Sussex suburban network is predominantly operated by Southern with London Overground Rail Operations Limited (London Overground) operating the East London Line services and Thameslink services that operate to/from the Wimbledon Loop and the BML via Tulse Hill into the Thameslink Core.

The Arun Valley Line

The Arun Valley Line provides a direct link from the West Coastway

towns of Portsmouth, Southampton, Havant, Chichester, Barnham and Bognor Regis to London Victoria and London Bridge via Horsham.

The line diverges from the West Coastway at Arundel and serves a number of small to medium sized towns along the route to Horsham. From Horsham two routes into London are available, Arun Valley services take the Sussex Route via Crawley and Three Bridges. There are also routes via Epsom and Sutton which join the busy suburban routes to London.

The line is an important long distance commuter railway as well as attracting leisure and diversionary traffic.

All services on the Arun Valley Line are operated by Southern.

The West Coastway

The West Coastway line serves the highly populated coastline from Brighton, serving major towns such as Hove, Worthing, Littlehampton, Bognor Regis (by way of a branch from Barnham), Chichester and Havant (where the boundary with the Wessex Route is met). Services extend beyond this point to Portsmouth Harbour and Southampton Central.

The route is characterised by short hop journeys between the towns along the line of route rather than long distance trips and the service patterns reflect this demand with even the fastest services between Southampton Central/Portsmouth Harbour and Brighton calling at many locations in between.

All services on the West Coastway (within Sussex Route boundaries) are operated by Southern, with the exception of a small number of trains per day operated by GWR between Brighton and the West of England.

The East Coastway

The East Coastway Line service links Brighton with Lewes, Eastbourne, Newhaven and Bexhill. The boundary with the Kent Route is reached at Collington but services continue to Hastings, Ore and in some cases Ashford International. Southern operate all services on the route.

The Coastway route caters for two key commuter flows; passengers from Eastbourne, Lewes and other smaller stations on the line travelling to/from London via Keymer Junction, and more local



commuters travelling to/from Brighton.

Leisure traffic is substantial, particularly in the summer months, and the opening of the Brighton and Hove Albion football stadium at Falmer has generated significant additional patronage on the western section of the route at weekends.

The West London Line

The West London Line runs from Clapham Junction (with connections from the suburban lines to/from East Croydon) via a number of stations in West London to Shepherd's Bush and thence to the West Coast Main Line or the North London Line via Willesden Junction.

Through services from the South East Route: Sussex Area to the West Coast Main Line operate on this route in the guise of East Croydon to Watford Junction and Milton Keynes Central services operated by Southern. Southern also operate a number of peak only shuttle services between Clapham Junction and Shepherd's Bush. The rest of the service on the West London Line is provided by London Overground, who operate a metro frequency service between Clapham Junction and the North London Line at Willesden Junction.

The West London Line is also the busiest freight line within the Sussex Route area, being the only line that is both W9 gauge cleared and electrified between the South East of England and the rest of the UK. DB Schenker, Freightliner, GB Railfreight, DRS and Colas all use the line.

Key markets and traffic flows

The key market served by the Sussex Area is the movement of commuters in and out of London Victoria and London Bridge.

This market can be split into two general segments. The first is long distance commuters from the outer main line and outer suburban areas using the fast lines of the BML. The former from beyond East Croydon, the latter services use the fast lines predominantly from East Croydon inwards.

The second group are inner suburban commuters travelling on the slow lines of the BML from Croydon and Balham inwards to London Bridge and London Victoria. This group cover the whole of South

London suburbia, a densely populated area – with no tube network in most cases.

The South East Route: Sussex Area Route Study projects demand growth of:

- 115 percent on Thameslink and fast Sussex services to London Bridge
- 39 per cent on Sussex stopping services to London Bridge
- 34 per cent on Sussex fast services to London Victoria
- 44 per cent on Sussex stopping services to London Victoria
- 21 per cent on services to London Blackfriars.

These rates reflect a number of key factors, most important is the expectation that further significant increases in population density in the inner suburban area is unlikely, whereas in the outer suburban and main line outer areas of the route the scope for population density growth remains substantial.

Despite this, inner suburban services saw rapid growth from the early 2000s until the recession and lengthening of trains from 8 to 10-car was successfully completed on time by Network Rail and Southern in December 2013, to alleviate crowding that had built up on these routes.

The West London Line is a unique sub-market within the inner suburban area, where growth is expected to rapidly outstrip other services. The South East Route: Sussex Area Route Study forecasts growth of between 21 percent and 115 percent to 2043. Southern services from East Croydon and Clapham Junction onto the West London Line are already very overcrowded during the peaks.

Aside from the key commuter flows into London, a number of other important markets exist. There are a number of commuter flows into other urban centres on the route, the most important of these are Croydon and Brighton. There are also substantial flows to and from Gatwick Airport which benefit from a four trains per hour service non-stop to/from London Victoria, and high frequency links to London Bridge and Brighton.

Leisure traffic on the route has also seen an upturn in recent years with late evening but also weekend flows growing substantially. In



particular summer weekend traffic to/from the coastal areas but also within the suburban areas is sizeable. Southern and Network Rail were proactive during CP4 in reducing the number of weekend closures of the BML for engineering works, in particular in the summer, to support this important business for the railway.

The Sussex Area has the lowest levels of freight traffic of any of the Network Rail operating routes. Despite this a number of important traffic flows exist.

Foremost is the movement of aggregates (predominantly stone and sand) from the Mendips/Leicestershire/North Kent into terminals at Purley, Crawley and Ardingly. Between one and three trains per day operate for each terminal. In addition, occasional aggregates trains use the terminal at Salfords north of Gatwick and a train of aggregates is unloaded and reloaded with ash from the incinerator at Newhaven.

Aside from these flows that operate to/from destinations on the area, there are a number of key flows that transit the route. Foremost of these is Channel Tunnel traffic to/from the Midlands/ North West/Great Western which regularly use the West London Line or the diversionary route via Tonbridge to Redhill and the BML slow lines to reach the West London Line at Clapham Junction. The West London Line is the most easterly freight-route capable of crossing the River Thames.

The rail industry's accepted freight forecasts were published in the Freight Market Study in 2013. The Market Study is part of the LTTP and these forecasts were developed in collaboration with a Working Group which included freight operators and stakeholders. The Market Study has been established by the ORR. The base year is 2011-12 and forecasts are available for 2023, 2033 and 2043 which in summary show:

- substantial growth in intermodal freight from ports and, in the longer-term, between domestic intermodal terminals (many of which do not currently exist but are expected to be developed in future)
- a decline in coal traffic over the long term, partly offset by a growth in biomass as coal forms a smaller part of the UK's power generation mix
- modest growth in other commodities, in particular aggregates

for the construction industry.

The Freight Market Study forecast freight growth is unconstrained by rail capacity and the extent of future new terminal developments. The unconstrained forecasts form the conditional outputs which are being assessed in the Route Studies to present choices for funders for Control Period 6 and beyond.

Infrastructure investment in Control Period 5 (2014-2019)

With the support of train operators on the Sussex area, a number of schemes have been developed as potential specified schemes, for implementation in this control period. These are listed in detail in the individual Route Specification documents that follow. The cross-Control Period Thameslink Programme dominates the work currently underway on the Sussex route.

The complete reconstruction of London Bridge is already underway and has seen the low level platforms reduced to six, whilst through platforms will be increased to eight. A dive-under is also under construction, this will allow Thameslink services from Croydon to pass under the Kent to Charing Cross lines and call at dedicated platforms at London Bridge before taking a direct double-track route to Blackfriars.

Some schemes that were previously published for Control Period 5 (CP5) delivery have already been completed: the West London Platform Extension Scheme, proposed by the Cross-London RUS in 2006, was delivered in 2014; Tattenham Corner/Caterham train lengthening was completed in CP4; and 10-car services are already running on this route north of Purley.

The long-anticipated Redhill Platform 0 is due to be constructed by the middle of the control period. This will improve the operational flexibility and capacity of the station and is key to the extension of the Reading to Redhill service being extended to Gatwick Airport, although further timetable development is required.

GTR is expected to run 10-car trains on the Uckfield line during the peak periods and platform lengthening to enable this is currently underway. The platforms are being extended to accommodate 12-car 20m vehicles to provide passive provision for an electrified network in this area or the potential for battery train operation.

In addition to the schemes above, some key renewals are planned



for CP5. These include planned works as part of the National Operating Strategy to consolidate signalling control to Three Bridges ROC. This was the first to be constructed and already houses the Route Control Teams.

The first sections resignalled to Three Bridges ROC were Penge West to London Bridge Low Level (previously controlled by London Bridge Area Signalling Centre) and the East Sussex Coastway resignalling area between Glynde and Bo-Peep Junction. This resulted in the closure of Berwick, Polegate, Hampden Park, Eastbourne & Bexhill signal boxes and Penesey & Westham crossing box. These have been joined by the Thameslink core and migration of control from Victoria ASC is currently underway.

Further resignalling and recontrol schemes during CP5 will see more of the network being operated from the ROC.

The European Rail Traffic Management System (ERTMS) forms part of an industry-wide programme entitled the Digital Railway, designed to benefit Great Britain's economy by accelerating the digital enablement of the railway. The scope of the Digital Railway is being developed in CP5 but will include train operation, capacity allocation, passenger experience, infrastructure management and stations/interchanges management. The output of the programme will be a business case to Government, presented through the Initial Industry Plan (IIP) in September 2016.

Electrification Strategy

There is currently an electrification programme being delivered in Great Britain which includes the Great Western. The Department for Transport, in its HLOS July 2012, indicated that there would be a 'rolling programme' of electrification into the future to provide electric traction to a significant proportion of the national network.

Expansion of the electrified network will bring many benefits, including faster journey times for passenger and freight trains. Where journey time savings are sufficiently significant (and capacity is available) there is the potential to run additional services on electrified routes. The simpler design of electric trains means greater reliability, lower maintenance costs and a requirement for fewer spare vehicles. Operators also benefit from lower lease costs for electric trains, and lower variable track access charges given the reduced weight of electric vehicles and consequent reduction in

track wear and tear. Average carbon dioxide emissions per vehicle mile are less for electric trains compared to those that use diesel, which can improve station air quality for both passengers and staff.

Network Rail, on behalf of the rail industry, will be publishing during CP5 a 'refreshed' Network Route Utilisation Strategy (RUS) for Electrification to outline the priorities for future electrification. The strategy will prioritise routes for further development based primarily on the density of diesel-operated traffic which could be converted to electric operation through the provision of electrification. The RUS also considers options which do not perform as well in terms of the conversion ratio, but may be worthy of further investigation in light of other factors, for example whether an option would allow more efficient usage of the existing electrified network by reducing diesel traffic or by providing a diversionary route; or where there are synergies with rolling stock replacement, or other enhancement schemes.

Freight operators may not be able to effectively utilise any additional electrification without the ability to access terminals they serve. This might involve electrifying all or part of a terminal, modifying the terminal layout to enable the use of electric traction, or facilities for bi-mode locomotives to change to/from diesel and electric power. Given that many terminals are privately owned, joint development with terminal owners and freight operators of options for electrifying terminal connections would be beneficial to enable greater usage of electric traction. This also includes any terminals, sidings and maintenance facilities that are required by freight operators to transfer an existing service from diesel to electric traction.

The selection of routes for further development includes the options currently expected to have the strongest business cases from a national perspective. Other schemes are being developed in conjunction with regional bodies, and as demand and service patterns continue to evolve in the longer term, electrification may present an appropriate solution for other routes. For routes for which it is unlikely that a case can be made for conventional electrification, there could be an opportunity for alternative solutions to be considered in place of diesel traction, for example battery train operation through an Independently Powered Electric Multiple Unit (IPEMU).

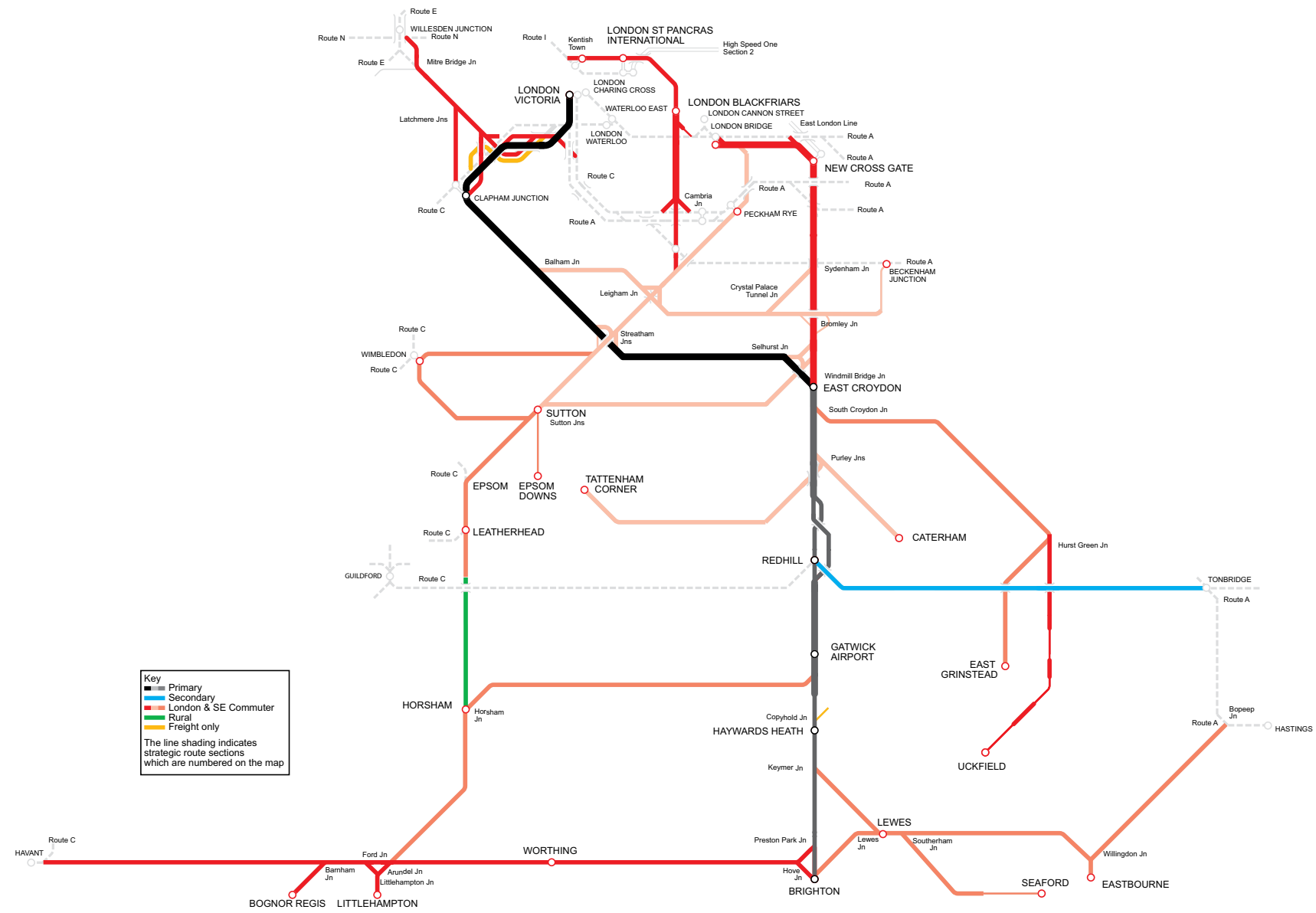
Longer-term Strategy

The South East Route: Sussex Area Route Study final document was published and established by the ORR in 2015. The Route Study has identified choices for funders and sets out the foundations for accommodating future growth and improving capacity on the Sussex Area and can be found at: <http://www.networkrail.co.uk/long-term-planning-process/south-east-route-sussex-area-route-study/>.

Sussex

Route map

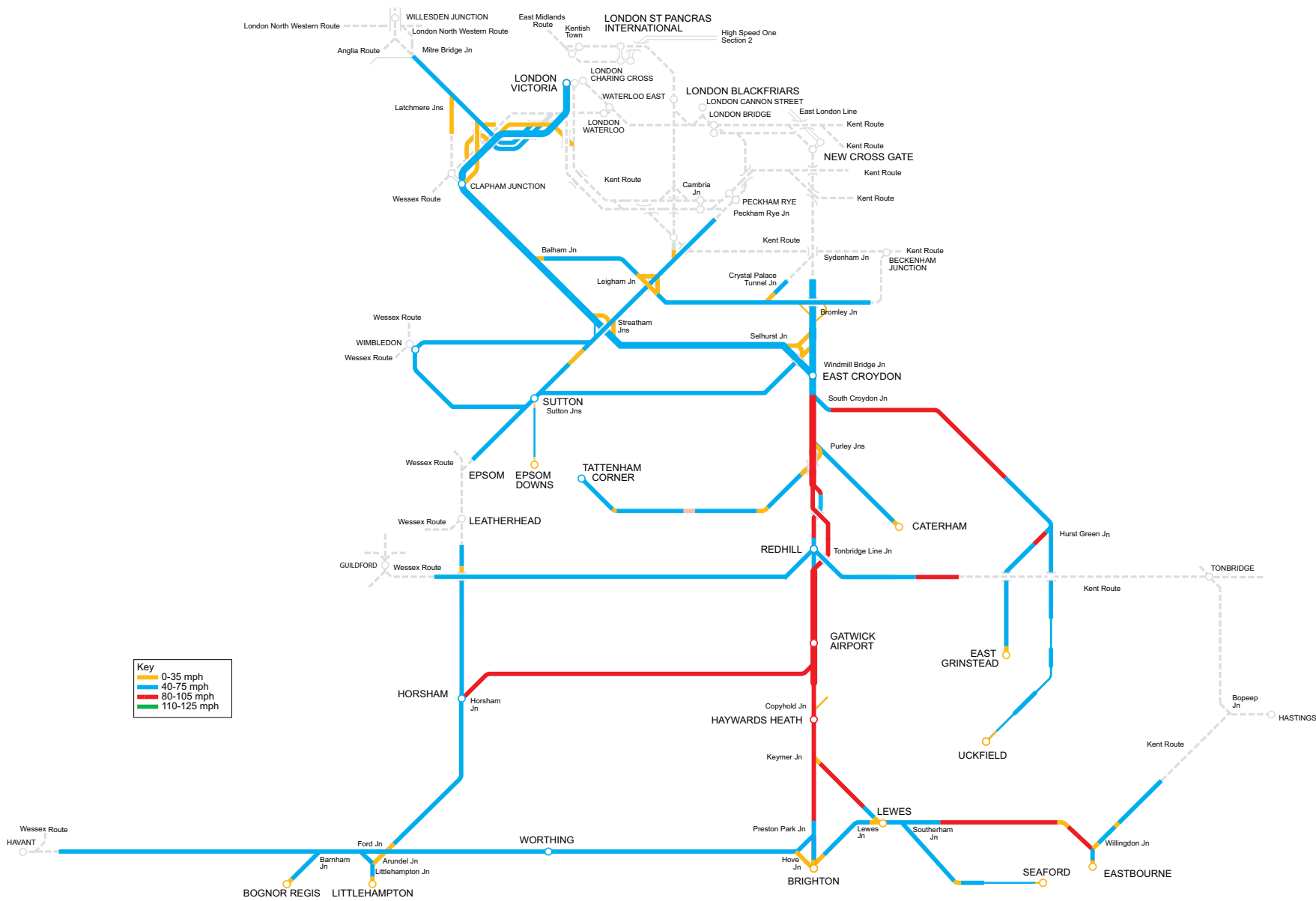
Geographic Map



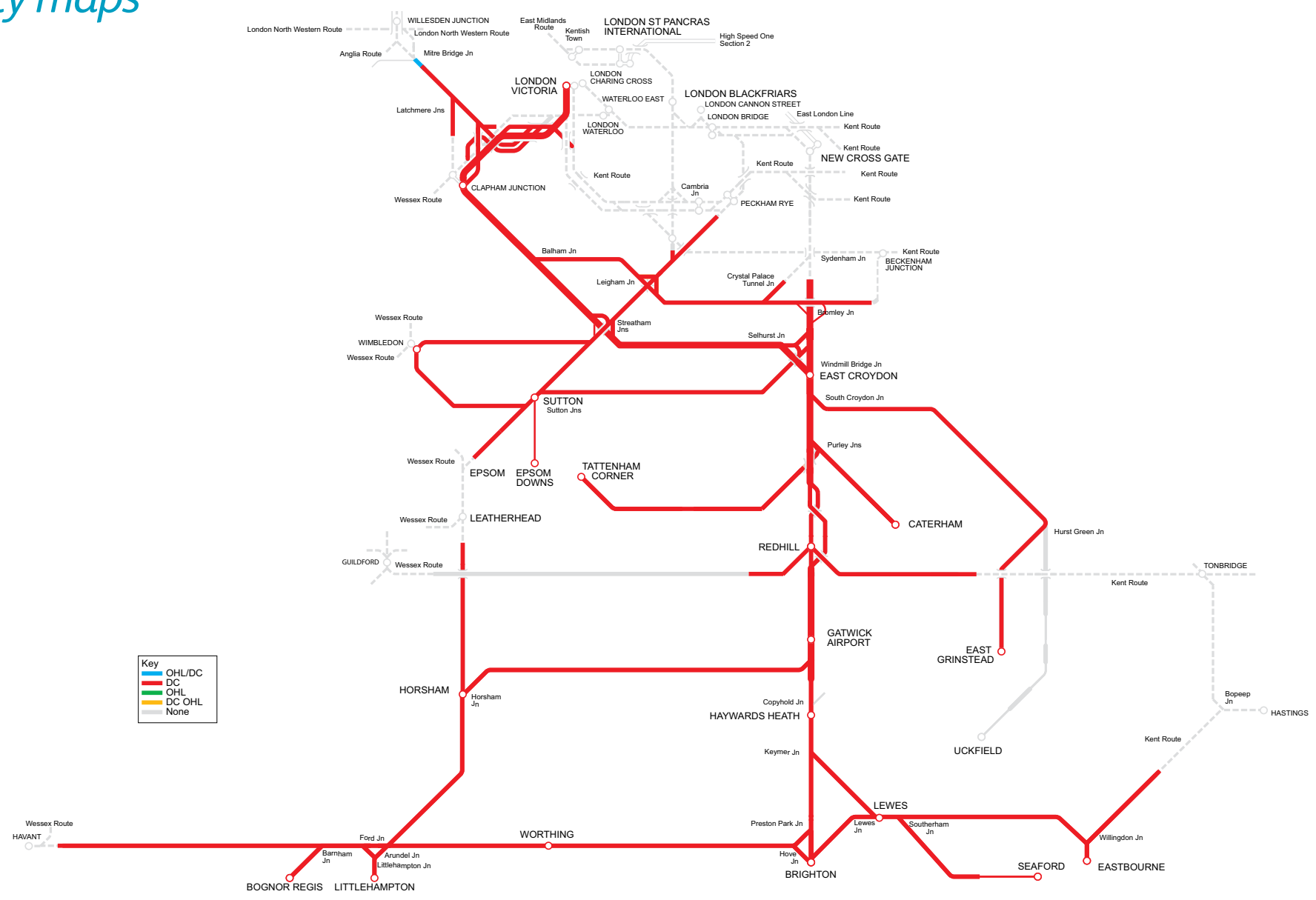
Sussex

Capability maps

Linespeed



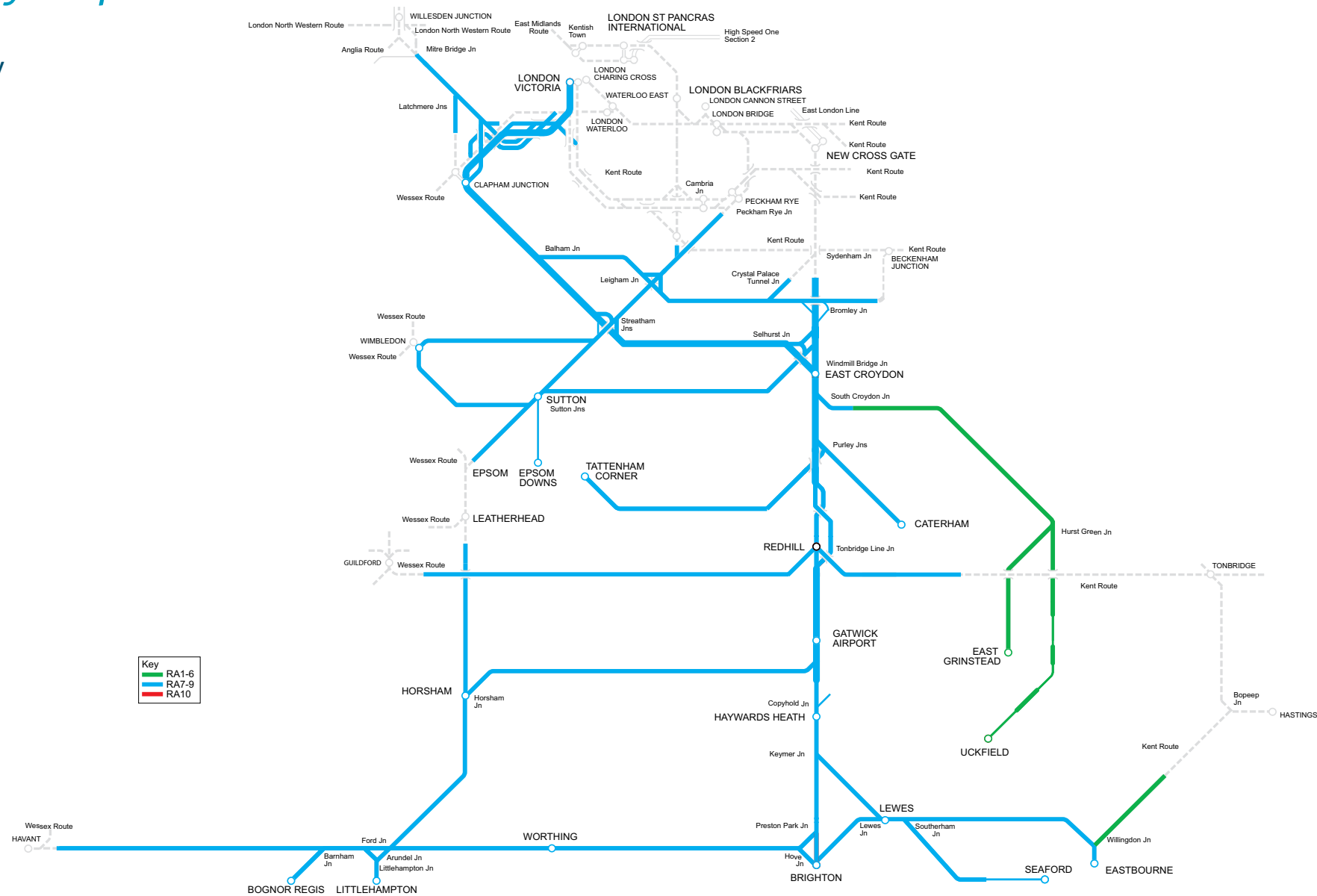
Electrification



Sussex

Capability maps

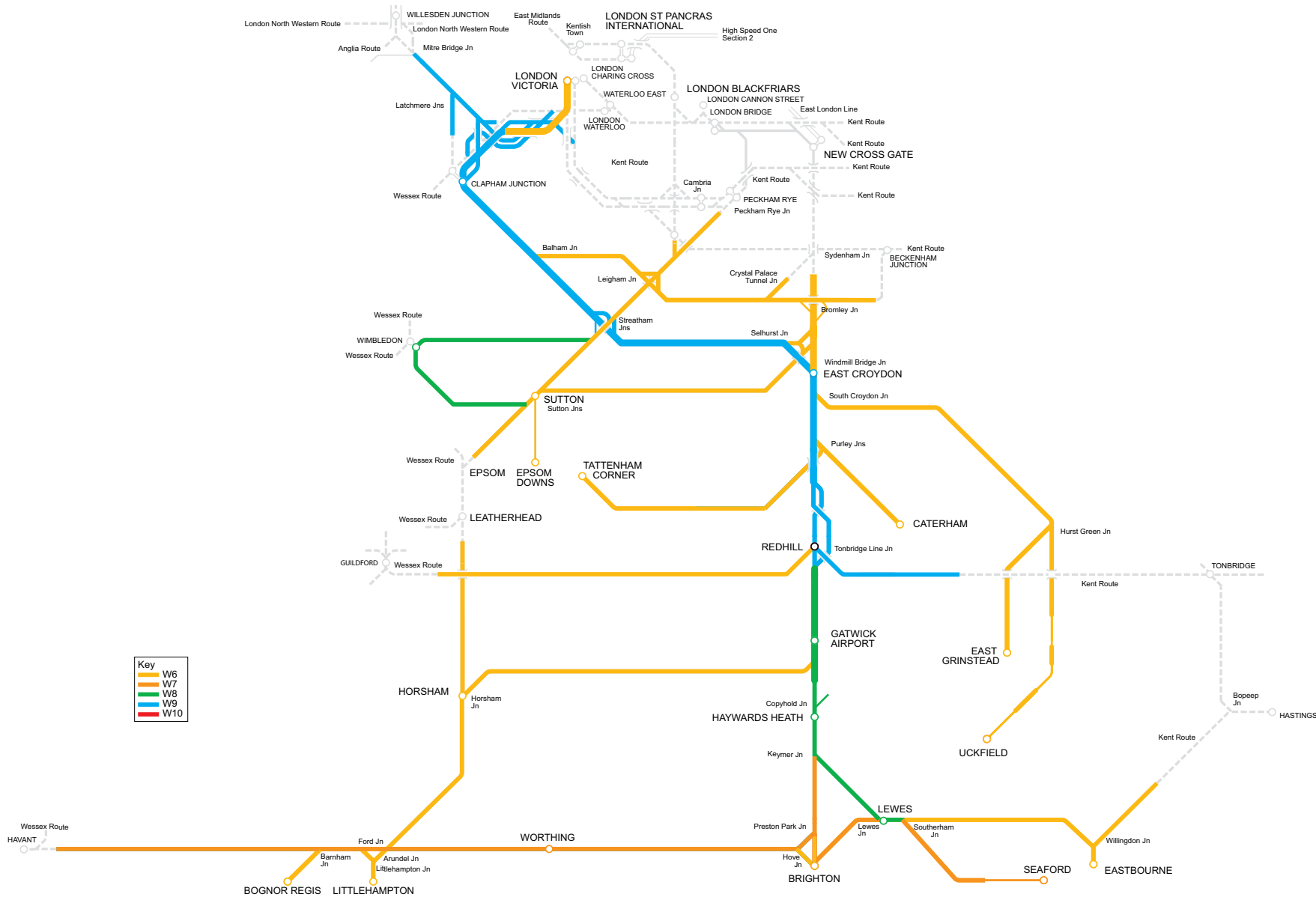
Route Availability



Sussex

Capability maps

Gauge



SRS	Name
Route B : Sussex	
B.01	London Victoria - Windmill Bridge Junction
B.02	Windmill Bridge Junction - Brighton
B.03	London Bridge - Windmill Bridge Junction
B.04	Three Bridges - Arundel Junction
B.05	Brighton - Havant
B.06	Brighton/Wivelsfield - Seaford/Hastings
B.07	South Central Inner Suburban
B.08	Sout Central Sutton Lines
B.09	Dorking - Horsham
B.10	Hurst Green - Uckfield
B.11	Tattenham Corner and Caterham Lines
B.12	East Grinstead Line
B.13	West London Line
B.14	Thameslink Core
B.15	Redhill - Tonbridge
B.99	Other Freight Lines

