Delivering a better railway for a better Britain

Route Specifications 2016
South East

South East Route

Route A: Kent and High Speed One (HS1)

Route B: Sussex

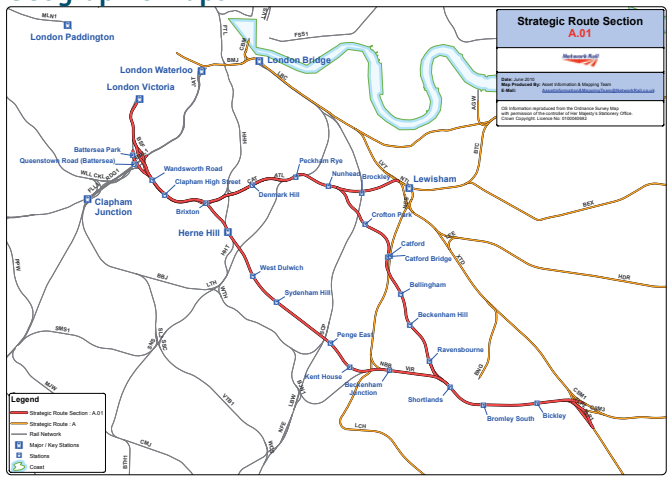
In 2014, Network Rail merged the Kent and Sussex Route into South East Route. Kent and Sussex becoming Areas within the Route.

To reflect this change, this document consists of Kent and Sussex Areas in separate sections.

The South East Route: Sussex Area Route Study Draft for Consultation was published in 2014 so this document will be updated in Summer 2015 when the Final document has been published.

SRS A.01 Victoria Lines

Geographic Maps



Route specification description

The Victoria Lines Strategic Route comprises of the lines between London Victoria and Bickley Junction via Herne Hill and via the Catford Loop. It also includes the connection at Nunhead Junction to Lewisham. There are also connections with the Thameslink and inner suburban routes covered by the South East Route: Sussex Area Network Specification. A junction still exists between Victoria Lines and Waterloo Station on the Wessex Route, but since international services transferred to London St Pancras International in 2007, this has not seen a timetabled service.

The route is mainly double-tracked, although there are multiple tracks between Victoria and Crofton Road Junction, and at the convergence of the Herne Hill and Catford routes towards Bickley Junction. Apart from the connection to Lewisham, which is controlled by London Bridge ASC, the rest of the route is controlled by Victoria ASC. The predominant linespeed is 60mph with some permanent speed restrictions across the route.

There are a large and diverse range of services operating on the route. The main operator is Southeastern Trains, who operate both suburban and Main Line services from a variety of locations in Kent and south east London. Thameslink manage stations on the Catford Loop line and operate services to London Blackfriars and beyond. The opening of the final phase of the East London Line service in December 2012 saw an additional 4tph between Clapham Junction and Highbury & Islington which also traverse this busy route.

There are also regular freight services across the route to/from facilities at Angerstein Wharf and the Isle of Grain as well as the Channel Tunnel.

Services operated jointly between Southeastern Trains and First Capital Connect were be subsumed within the Thameslink, Southern & Great Northern franchise in 2014, won by Govia Thameslink Railway (GTR), and now operate as Thameslink branded services.

Route capability overview

Table 1.0				
Information	**Current**	**+ 10 years**	**+ 30 Years**	**Notes**
Line of route description	SO110: Victoria to Ramsgate (via Herne Hill via Chatham) SO645: Battersea Park to Peckham Rye SO330: Nunhead to Hayes SO260: Brixton Jn to Shortlands Jn			
Section start	London Victora			
Section end	Bickley Jn (via Herne Hill and Catford loop)			
Route availability	RA8	RA8	RA8	
Gauge	W6 W9 (via Catford loop)	W6 W9 (via Catford loop)	W6 W9 (via Catford loop)	
Signals	TCB	TCB	TCB	
Speed **See Sectional Appendix for detailed speed profiles**	Predominant linespeed 60mph	Predominant linespeed 60mph Permanent speed restrictions removed/eased where possible	Increase speed to rolling stock and signalling capability	
Electrification	Third rail	Third rail	Third rail or overhead electrification	

Passenger train service levels (trains per hour / day)

Table 2.0				
	Current	**+ 10 Years**	**+ 30 Years**	**Notes**
Typical journey time	BMS-VIC (via HNH) – 27mins (stopping) SRT-PMR (via CAT) – 16mins	BMS-VIC (via HNH) – 27mins (stopping) SRT-PMR (via CAT) – 16mins	Reduce Main Line service journey time to lowest possible in line with changes in rolling stock and signalling	Selective or full double-tracking will permit faster journeys
No. of trains per hour	Up to 14tph via Herne Hill Up to 8tph via Catford loop 4tph East London line	Up to 14tph via Herne Hill Up to 8tph via Catford loop 4tph East London line	Frequency likely to remain consistent with previous years	

Current Freight Trains (paths per day)

Table 3.0				
	Current	**+ 10 Years**	**+ 30 Years**	**Notes**
Route section	Via Nunhead / via Shortlands			
Daily paths in one direction (as per WTT)	Up to 20 trains per day on each route	As per forecasts in the Freight Market Study		
* Figures are for freight trains in one direction only.				

Level crossings on route

There are no level crossings in this route section.

Proposed infrastructure investment in Control Period 5 (2014 – 2019)*

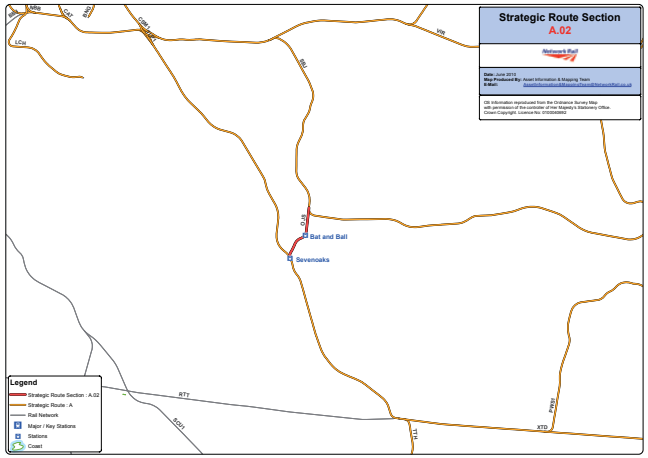
Table 5.0

Project	Project Description	ELR	Implementation Date	Output change	Notes	Status
London Victoria station – passenger congestion relief	Changes to station layout to reduce passenger congestion	-	CP5	Improved passenger experience		In development
Victoria to Herne Hill signalling renewal	Renewal of external signalling equipment	VIR	CP5	Asset reliability		In development

* In addition to the proposed enhancement programme, this table includes other Network Rail funded schemes, renewals and third party schemes where applicable.
** The precise timing and scope of renewals will remain subject to review to enable us to meet our overall obligations as efficiently as possible, consistent with the reasonable requirements of operators and other stakeholders.

SRS A.02 Otford - Sevenoaks

Geographic Maps



Route specification description

The Otford – Sevenoaks Strategic Route is the connection from the Maidstone East line to the Tonbridge Main Line at Sevenoaks known locally as the Bat & Ball line.

The line comprises of two miles of double track with a single station, signalled by Victoria ASC and Ashford IECC.

Southeastern Suburban and Thameslink route services between London and Sevenoaks operate on this route.

There are no scheduled freight services.

Route capability overview

Table 1.0				
Information	**Current**	**+ 10 years**	**+ 30 Years**	**Notes**
Line of route description	SO140: Swanley to Ashford			
Section start	Otford			
Section end	Sevenoaks			
Route availability	RA8	RA8	RA8	
Gauge	W6	W6	W6	
Signals	TCB	TCB	TCB	
Speed See Sectional Appendix for detailed speed profiles	40/60mph	40/60mph	Increase speed to rolling stock and signalling capability	
Electrification	Third rail	Third rail	Third rail or overhead electrification	

Passenger train service levels (trains per hour / day)

Table 2.0				
	Current	**+ 10 Years**	**+ 30 Years**	**Notes**
Typical journey time	SEV-OTF – 6mins	SEV-OTF – 6mins	SEV-OTF – 6mins	
No. of trains per hour	Up to 2tph	Up to 2tph	Frequency likely to remain consistent with previous years	

Current Freight Trains (paths per day)

Table 3.0				
	Current	**+ 10 Years**	**+ 30 Years**	**Notes**
Route section	None			
Daily paths in one direction (as per WTT)	-	-	-	
* Figures are for freight trains in one direction only.				

Level crossings on route

There are no level crossings in this route section.

Proposed infrastructure investment in Control Period 5 (2014 – 2019)*

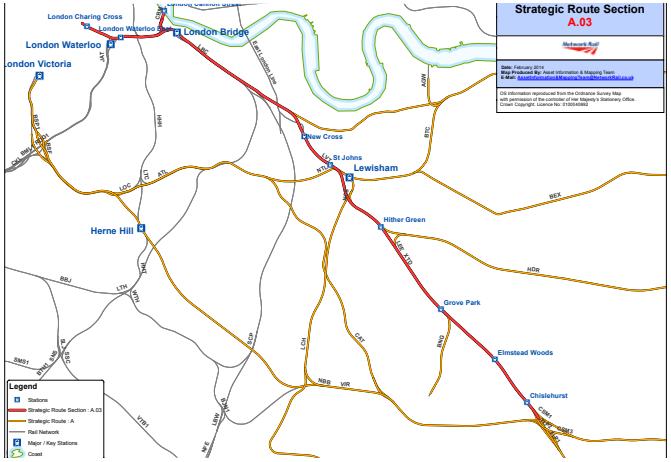
Table 5.0

Project	Project Description	ELR	Implementation Date	Output change	Notes	Status
No schemes are currently planned for Control Period 5						

* In addition to the proposed enhancement programme, this table includes other Network Rail funded schemes, renewals and third party schemes where applicable.
** The precise timing and scope of renewals will remain subject to review to enable us to meet our overall obligations as efficiently as possible, consistent with the reasonable requirements of operators and other stakeholders.

SRS A.03 London - Chislehurst

Geographic Maps



Route specification description

The Strategic Route forms part of the Tonbridge Main Line, running between Chislehurst and London Charing Cross and London Cannon Street. This route forms the core section of line on the Kent Area network with many passenger service groups converging. The route connects with several other routes and forms the key corridor into London Bridge and the London terminals.

The route is mainly four-tracked, with additional tracks on the approaches to London Bridge and to the major London stations. However, two track connections at Metropolitan and Borough Market Junctions to Cannon Street and Charing Cross respectively, result in bottlenecks that the Thameslink programme seeks to address (see below). The route is signalled by London Bridge ASC.

There has been considerable capital investment being carried out on this route. The South London RUS recommended a major programme of train lengthening to fulfil anticipated peak demand in the suburban area. Infrastructure works to enable 12-car operations is complete, with implementation phased in line with Thameslink construction timescales and rolling stock procurement programmes.

The Thameslink Programme will deliver a significant improvement in capacity throughout the south east and reduce the need for passengers to interchange onto the London Underground system by providing direct journeys north of the River Thames. The major work on this route will occur during CP5 under the Key Output 2 work package and involves extensive redevelopment of London Bridge to provide nine through and six terminating platforms for Kent and Sussex services respectively. The work package also includes major remodelling of the approach to London Bridge, including provision of a dive-under at South Bermondsey. The construction period, which started in 2014 is bringing significant challenges to passenger movements through London Bridge during CP5. The timetable specification for Thameslink and South Eastern franchise services on completion of this programme of work will be defined through both franchises.

The route forms part of the Trans-European Transport Network Core Network Corridor between London and the Channel Tunnel.

Route capability overview

Table 1.0				
Information	**Current**	**+ 10 years**	**+ 30 Years**	**Notes**
Line of route description	SO130: Charing Cross / Cannon Street to Dover Priory / Eurotunnel Interface (via Tonbridge)			
Section start	London Charing Cross / London Cannon Street			
Section end	Chislehurst Junction			
Route availability	RA8	RA8	RA8	
Gauge	W6/8	W6/8	W6/8	
Signals	TCB	TCB	TCB	
Speed See Sectional Appendix for detailed speed profiles	Up to 70mph	Up to 70mph	Increase speed to rolling stock and signalling capability	
Electrification	Third rail	Third rail	Third rail or overhead electrification	

Passenger train service levels (trains per hour / day)

Table 2.0				
	Current	**+ 10 Years**	**+ 30 Years**	**Notes**
Typical journey time	CIT-CHX – 30mins (stopping)	CIT-CHX – 30mins (stopping)	Reduce Main Line service journey time to lowest possible in line with changes in rolling stock and signalling.	
No. of trains per hour	Current high peak: Via Kent Route - up to 29tph to London Charing Cross & up to 24tph to London Cannon Street; Via Sussex Route – up to 30tph to London Bridge	Service patterns and frequencies to be confirmed through development of Thameslink programme and subsequent franchising	Frequency likely to remain consistent with previous years	

Current Freight Trains (paths per day)

Table 3.0				
	Current	+ 10 Years	+ 30 Years	Notes
Route section	Hither Green to Chislehurst Junction			
Daily paths in one direction (as per WTT)	Up to 8 trains per day	Up to 8 trains per day	As per forecasts in the Freight Market Study	
* Figures are for freight trains in one direction only.				

Level crossings on route

There are no level crossings in this route section.

Proposed infrastructure investment in Control Period 5 (2014 – 2019)*

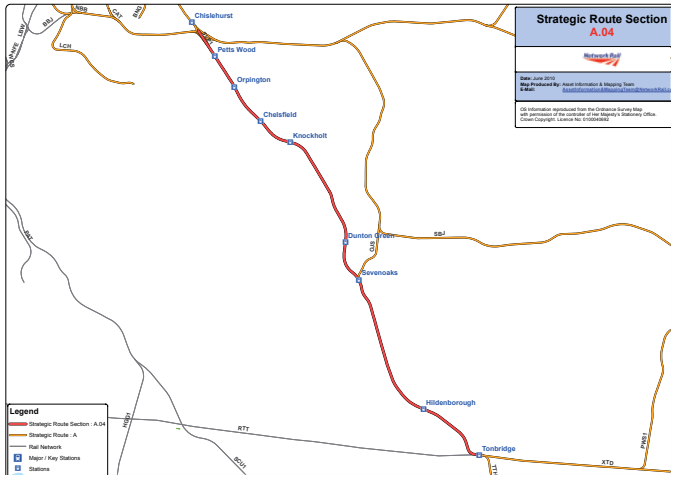
Table 5.0

Project	Project Description	ELR	Implementation Date	Output change	Notes	Status
Thameslink KO2	Reconstruction of London Bridge station - Track layout changes - Signalling & telecoms renewals - Power supply enhancement	XTD	2018	Improved capacity and performance Reducing congestion on London Underground and transport interchanges	Construction period 2014-18	In development
Traction power supply upgrade	Enhancements to Traction power to enable longer trains	XTD/all suburban network	2014-18	Additional peak capacity	Phased introduction in line with Thameslink programme	Delivery
Hither Green signalling renewal	Renewal of external signalling equipment	XTD	CP5	Asset reliability	Delivery aligned with Thameslink Programme	In development

* In addition to the proposed enhancement programme, this table includes other Network Rail funded schemes, renewals and third party schemes where applicable.
** The precise timing and scope of renewals will remain subject to review to enable us to meet our overall obligations as efficiently as possible, consistent with the reasonable requirements of operators and other stakeholders.

SRS A.04 Chislehurst – Tonbridge

Geographic Maps



Route specification description

The Strategic Route comprises the line between Chislehurst and Tonbridge, and forms the central section of the Tonbridge Main Line. The route connects with the Chatham Main Line via the junctions at St Mary Cray and Bickley. The Bat & Ball line joins this route at Sevenoaks Junction.

There are four tracks between Chislehurst and Orpington. From Orpington to Tonbridge the line is double track, where the main infrastructure features are long tunnels at Polhill and Sevenoaks. Signalling is controlled by Ashford IECC.

The route is operated by Kent Main Line and Suburban services between London and locations within south east London, Kent and East Sussex.

Infrastructure works to enable 12-car operations is complete, with implementation phased in line with Thameslink construction timescales and rolling stock procurement programmes.

The route forms part of the Trans-European Transport Network Core Network Corridor between London and the Channel Tunnel.

Route capability overview

Table 1.0				
Information	**Current**	**+ 10 years**	**+ 30 Years**	**Notes**
Line of route description	SO130: Charing Cross / Cannon Street to Dover Priory / Eurotunnel Interface (via Tonbridge)			
Section start	Petts Wood Junction			
Section end	Tonbridge			
Route availability	RA8	RA8	RA8	
Gauge	W7	W7	W7	
Signals	TCB	TCB	TCB	
Speed See Sectional Appendix for detailed speed profiles	80-90mph	80-90mph	Increase speed to rolling stock and signalling capability	
Electrification	Third rail	Third rail	Third rail or overhead electrification	

Passenger train service levels (trains per hour / day)

Table 2.0				
	Current	**+ 10 Years**	**+ 30 Years**	**Notes**
Typical journey time	SEV-CIT – 21mins (stopping)	SEV-CIT – 21mins (stopping)	Reduce journey time to lowest possible in line with changes in rolling stock and signalling	
No. of trains per hour	Up to 14tph Peak – combination of fast and slow	Up to 14tph Peak – combination of fast and slow	Frequency likely to remain consistent with previous years	

Current Freight Trains (paths per day)

Table 3.0				
	Current	+ 10 Years	+ 30 Years	Notes
Route section	Bickley to Tonbridge			
Daily paths in one direction (as per WTT)	Up to 3 trains per day	As per forecasts in the Freight Market Study		
* Figures are for freight trains in one direction only.				

Level crossings on route

There are no level crossings in this route section.

Proposed infrastructure investment in Control Period 5 (2014 – 2019)*

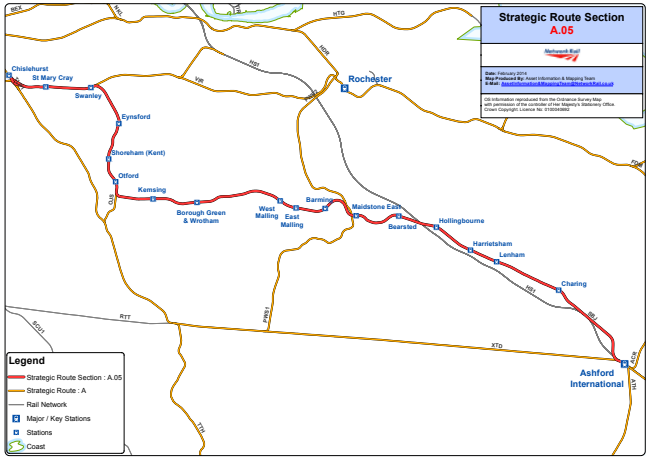
Table 5.0

Project	Project Description	ELR	Implementation Date	Output change	Notes	Status
Traction power supply upgrade	Enhancements to Traction power to enable longer trains	XTD/all suburban network	2014-18	Additional peak capacity	Phased introduction in line with Thameslink programme	Delivery
Depots and Stabling strategy	Provision of additional depots and stabling facilities	TBC	CP5	Efficient operational plan	Location of schemes to be confirmed	In development

* In addition to the proposed enhancement programme, this table includes other Network Rail funded schemes, renewals and third party schemes where applicable.
** The precise timing and scope of renewals will remain subject to review to enable us to meet our overall obligations as efficiently as possible, consistent with the reasonable requirements of operators and other stakeholders.

SRS A.05 Chislehurst - Ashford

Geographic Maps



Route specification description

The Chislehurst – Ashford Strategic Route comprises the line from Ashford to St Mary Cray Junctions via Maidstone East. The route connects with the Tonbridge Main Line and Chatham Main Line at Ashford and Swanley respectively.

From St Mary Cray Junction to Swanley, the Chislehurst to Ashford route comprises of four tracks and forms part of the Chatham Main Line. From Swanley Junction to Ashford the route is mainly double track, apart from at Maidstone East station and at several passing loops. Signalling control is by Victoria ASC, Maidstone SB and Ashford IECC. An aggregates railhead exists at Hothfield.

Kent Main Line services between London Victoria and Ashford are the principle passenger service group on this route. Where the route interfaces with the Chatham Main Line between Swanley and St Mary Cray, this is supplemented by Kent Main Line services between London and East Kent via the Medway towns.

Regular Channel Tunnel freight also utilises this route via Maidstone East.

The post-2018 Thameslink timetable specification includes a 2tph all day service to Maidstone East in addition to the current London Victoria service. The timetable specification for Thameslink and South Eastern franchise services will be defined on completion of this programme of work.

Route capability overview

Table 1.0				
Information	**Current**	**+ 10 years**	**+ 30 Years**	**Notes**
Line of route description	SO110: Victoria to Ramsgate (via Herne Hill and Chatham) SO140: Swanley to Ashford			
Section start	St Mary Cray Junction			
Section end	Ashford International			
Route availability	RA8	RA8	RA8	
Gauge	W9	W9	W9	
Signals	TCB	TCB	TCB	
Speed **See Sectional Appendix for detailed speed profiles**	70-90mph	80-90mph Permanent speed restrictions removed/eased where possible	Increase speed to rolling stock and signalling capability	
Electrification	Third rail	Third rail	Third rail or overhead electrification	

Passenger train service levels (trains per hour / day)

Table 2.0				
	Current	**+ 10 Years**	**+ 30 Years**	**Notes**
Typical journey time	SWA-AFK – 65mins (stopping)	SWA-AFK – 60mins (stopping)	Reduce journey time to lowest possible in line with changes in rolling stock and signalling	
No. of trains per hour	SWA-AFK – 4tph (peak); 2tph (off peak)	SWA-AFK – 6tph (peak); 4tph (off peak)	Frequency likely to remain consistent with previous years	

Current Freight Trains (paths per day)

Table 3.0				
	Current	+ 10 Years	+ 30 Years	Notes
Route section	Bickley to Ashford			
Daily paths in one direction (as per WTT)	Up to 6 trains per day	As per forecasts in the Freight Market Study		Frequency dependent on provision of route via Redhill being available for electric traction and/or clearance via HS1
* Figures are for freight trains in one direction only.				

Level crossings on route

Table 4.0			
Type	Current No. of level crossings	+ 10 Years	+ 30 Years
Supervised:	0	As determined by Level Crossing policy	
Automatic:	0		
User:	4		

Proposed infrastructure investment in Control Period 5 (2014 – 2019)*

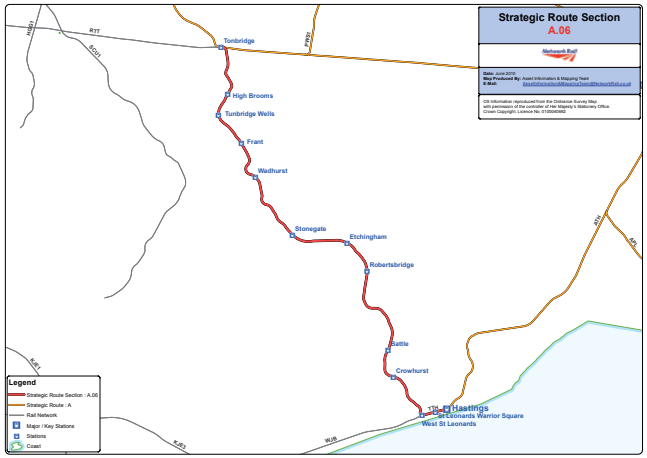
Table 5.0

Project	Project Description	ELR	Implementation Date	Output change	Notes	Status
Journey time improvement	Reduce impact of Permanent Speed Restrictions	SBJ	CP5	Improved journey times	Candidate scheme	In development
Maidstone signalling interlocking renewal	Renewal of interlocking and external equipment	SBJ	CP5	Asset condition		In development

* In addition to the proposed enhancement programme, this table includes other Network Rail funded schemes, renewals and third party schemes where applicable.
** The precise timing and scope of renewals will remain subject to review to enable us to meet our overall obligations as efficiently as possible, consistent with the reasonable requirements of operators and other stakeholders

SRS A.06 Tonbridge - Hastings

Geographic Maps



Route specification description

The Strategic Route comprises the line between Hastings and Tonbridge via Tunbridge Wells. The route connects with the East Coastway routes at Hastings and Bo Peep Junction and the Tonbridge Main Line.

The route is mainly double track, with four single track tunnels which present operational and capacity constraints. There are a diverse range of linespeed profiles and signalling controls is by successive signal boxes. Signalling control on both these routes will be rationalised in the future. Although electrified, the section between Tunbridge Wells and Hastings does not provide unlimited12-car capability, necessitating splitting/joining some peak services at Tunbridge Wells.

Regular freight services run to/from the Gypsum site at Mountfield.

Kent Main Line services between London and Tunbridge Wells and Hastings are the main passenger service groups on this route. Sussex Main Line services between Hastings and London Victoria via Haywards Heath and local services on the East Coastway traverse the route between Hastings and Bo Peep Junction.

In comparison with other lines in the south east, this line has a relatively slow linespeed due to gradient and curvature. The topographical challenges were highlighted during the winter of 2013/14 when the line was affected by a series of landslips after the severe weather. This resulted in the closure of sections of the line for some weeks.

Route capability overview

Table 1.0				
Information	**Current**	**+ 10 years**	**+ 30 Years**	**Notes**
Line of route description	SO170: Tonbridge to Bo Peep Jn SO600: Willingdon Junction to Ashford			
Section start	Tonbridge			
Section end	Hastings			
Route availability	RA8	RA8	RA8	
Gauge	W6	W6	W6	
Signals	TCB	TCB	TCB	
Speed **See Sectional Appendix for detailed speed profiles**	70-90mph	80-90mph Permanent speed restrictions removed/eased where possible	Increase speed to rolling stock and signalling capability	
Electrification	Third rail	Third rail	Third rail or overhead electrification	

Passenger train service levels (trains per hour / day)

Table 2.0				
	Current	**+ 10 Years**	**+ 30 Years**	**Notes**
Typical journey time	HGS-TON – 58mins (stopping)	HGS-TON – 55mins (stopping)	Reduce journey time to lowest possible in line with changes in rolling stock and signalling.	
No. of trains per hour	TBW-TON – 6tph (peak); 4tph (off peak)	TBW-TON – 6tph (peak); 4tph (off peak)	Frequency likely to remain consistent with previous years	

Current Freight Trains (paths per day)

Table 3.0				
	Current	+ 10 Years	+ 30 Years	Notes
Route section	Tonbridge to Mountfield Sidings			
Daily paths in one direction (as per WTT)	Up to 1 train per day	As per forecasts in the Freight Market Study		
* Figures are for freight trains in one direction only.				

Level crossings on route

Table 4.0			
Type	Current No. of level crossings	+ 10 Years	+ 30 Years
Supervised:	3	As determined by Level Crossing policy	
Automatic:	2		
User:	1		

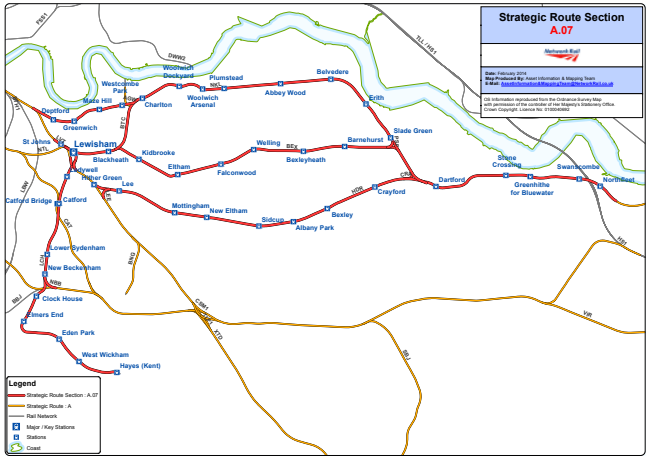
Proposed infrastructure investment in Control Period 5 (2014 – 2019)*

Table 5.0						
Project	**Project Description**	**ELR**	**Implementation Date**	**Output change**	**Notes**	**Status**
Journey time improvement	Reduce impact of Permanent Speed Restrictions	TTH	CP5	Improved journey times	Candidate scheme	In development
Tunbridge Wells power supply upgrade		TTH	CP5	Asset reliability		In development

* In addition to the proposed enhancement programme, this table includes other Network Rail funded schemes, renewals and third party schemes where applicable.
** The precise timing and scope of renewals will remain subject to review to enable us to meet our overall obligations as efficiently as possible, consistent with the reasonable requirements of operators and other stakeholders

SRS A.07 Dartford lines to Gravesend & Hayes Branch

Geographic Maps



Route specification description

The Strategic Route comprises the three lines converging on Dartford from the London area and the various connections between them and the other strategic routes. The Greenwich line runs between North Kent East Junction and Dartford via Slade Green. The Bexleyheath line is between Lewisham and Dartford. There is a connection between Greenwich and Bexleyheath lines from Charlton and Blackheath, where there is a connection with the Angerstein Wharf freight only branch. The Sidcup route runs between Hither Green and Dartford. From Dartford, the Strategic Route runs to Gravesend. The Hayes Branch connects Hayes to Lewisham.

The route is double track throughout. Signalling is controlled by London Bridge ASC and Ashford IECC. There are various linespeed profiles across the route.

The South London RUS recommended a major programme of train lengthening to fulfil anticipated peak demand in the suburban area. Infrastructure works to enable 12-car operations is broadly complete, with implementation phased in line with Thameslink construction timescales and rolling stock procurement programmes.

The Crossrail project will interface with the Kent Route on the North Kent line, joining the network from the portal at Woolwich and running to a new station at Abbey Wood. Work has already started and final commissioning is expected during 2018 when a 12tph service will be enabled 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 London Underground interchanges.

There is a freight terminal at Angerstein Wharf which sees regular aggregates traffic. Freight also traverses the Bexleyheath line between facilities on the north Kent coast and the West London Line.

The strategic route encompasses Dartford district and the London Boroughs of Lewisham and Greenwich. Each of these authorities are planning significant house building schemes, with concomitant increases in working age population. Rail already has a high modal share for journeys to work in this area, hence passenger demand is likely to exceed the regional average in the short-to-medium term.

The area has also been mooted as a potential location for a London airport and a large theme park. Either development would trigger significant changes to rail services on this corridor.

SRS A.07 Dartford lines to Gravesend & Hayes Branch

Route capability overview

Table 1.0				
Information	**Current**	**+ 10 years**	**+ 30 Years**	**Notes**
Line of route description	SO310: Hither Green to Maidstone West via Dartford SO290: North Kent Jn to Dartford Jn (via Greenwich) SO300: Lewisham to Crayford Creek jn (via Bexleyheath) SO330: Nunhead to Hayes			
Section start	Gravesend to Dartford; Dartford to Hither Green via Sidcup; Dartford to Lewisham via Bexleyheath; Dartford to North Kent East Junction via Greenwich; Charlton to Blackheath; Hayes to Lewisham			
Section end				
Route availability	RA8	RA8	RA8	
Gauge	W6/8	W6/8	W6/8	
Signals	TCB	TCB	TCB	
Speed **See Sectional Appendix for detailed speed profiles**	Various	Various Permanent speed restrictions removed/eased where possible	Increase speed to rolling stock and signalling capability	
Electrification	Third rail	Third rail	Third rail or overhead electrification	

Passenger train service levels (trains per hour / day)

Table 2.0				
	Current	**+ 10 Years**	**+ 30 Years**	**Notes**
Typical journey time	GRV-DFD – 15mins (slow) DFD-LBG via GNW – 40mins DFD-LBG via SID – 34mins DFD-LBG via BXH – 36mins HYS-LBG – 34mins (slow)	GRV-DFD – 15mins (slow) DFD-LBG via GNW – 40mins DFD-LBG via SID – 34mins DFD-LBG via BXH – 36mins HYS-LBG – 34mins (slow)	Reduce journey time to lowest possible in line with changes in rolling stock and signalling	
No. of trains per hour	GRV-DFD – up to 6tph DFD-LBG via GNW – up to 6tph DFD-LBG via BKH – up to 6tph DFD-LBG via SID – up to 7tph DFD-LBG via BXH – up to 10tph HYS-LBG – up to 6tph	GRV-DFD – up to 6tph DFD-LBG via GNW – up to 6tph DFD-LBG via BKH – up to 6tph DFD-LBG via SID – up to 7tph DFD-LBG via BXH – up to 10tph HYS-LBG – up to 6tph	Frequency likely to remain consistent with previous years	One potential solution to increasing London Bridge corridor capacity would be to convert the existing Hayes branch to another transport mode such as extension of London Underground Bakerloo line or Docklands Light Railway. This could potentially free up six train paths into central London in the high peak.

Current Freight Trains (paths per day)

Table 3.0				
	Current	**+ 10 Years**	**+ 30 Years**	**Notes**
Route section	Crayford Creek Jn to Angerstein Wharf / Nunhead to Hoo Jn			
Daily paths in one direction (as per WTT)	Up to 15 tpd	As per forecasts in the Freight Market Study		
* Figures are for freight trains in one direction only.				

Level crossings on route

Table 4.0			
Type	**Current No. of level crossings**	**+ 10 Years**	**+ 30 Years**
Supervised:	0	As determined by Level Crossing policy	
Automatic:	0		
User:	0		

Proposed infrastructure investment in Control Period 5 (2014 – 2019)*

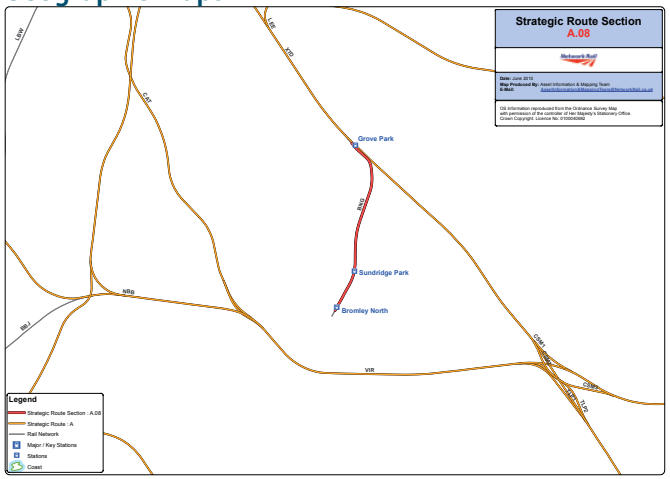
Table 5.0

Project	Project Description	ELR	Implementation Date	Output change	Notes	Status
Crossrail	Construction of south eastern branch of Crossrail to Abbey Wood	NKL	2018	12tph across central London to Maidenhead		In development
Traction power supply upgrade	Enhancements to Traction power to enable longer trains	All suburban network	2014-18	Additional peak capacity	Phased introduction in line with Thameslink programme	Delivery
Depots and Stabling strategy	Provision of additional depots and stabling facilities	TBC	CP5	Efficient operational plan	Location of schemes to be confirmed	In development
North Kent signalling re-control	Re-control of signalling from Ashford IECC to Three Bridges	NKL	CP5	Operational strategy		In development

* In addition to the proposed enhancement programme, this table includes other Network Rail funded schemes, renewals and third party schemes where applicable.
** The precise timing and scope of renewals will remain subject to review to enable us to meet our overall obligations as efficiently as possible, consistent with the reasonable requirements of operators and other stakeholders.

SRS A.08 Bromley North Branch

Geographic Maps



Route specification description

The Strategic Route comprises the short branch between Bromley North and Grove Park, where it connects with the Tonbridge Main Line.

The route is double track. Signalling is controlled by London Bridge ASC.

The route is operated by a Kent Suburban shuttle service between Grove Park and Bromley North. There are occasional through services to London terminals when planned work blocks other routes to Bromley.

There are no scheduled freight services.

Route capability overview

Table 1.0				
Information	**Current**	**+ 10 years**	**+ 30 Years**	**Notes**
Line of route description	SO350: Grove Park to Bromley North			
Section start	Grove Park			
Section end	Bromley North			
Route availability	RA8	RA8	RA8	
Gauge	W6	W6	W6	
Signals	TCB	TCB	TCB	
Speed See Sectional Appendix for detailed speed profiles	40mph	40mph	Increase speed to rolling stock and signalling capability	
Electrification	Third rail	Third rail	Third rail	

Passenger train service levels (trains per hour / day)

Table 2.0				
	Current	**+ 10 Years**	**+ 30 Years**	**Notes**
Typical journey time	GRP-BMN – 5mins	GRP-BMN – 5mins	Reduce journey time to lowest possible in line with changes in rolling stock and signalling	
No. of trains per hour	GRP-BMN – 3tph peak; 2tph off-peak	GRP-BMN – 3tph peak; 2tph off-peak	Frequency likely to remain consistent with previous years	

Current Freight Trains (paths per day)

Table 3.0				
	Current	+ 10 Years	+ 30 Years	Notes
Route section	-			
Daily paths in one direction (as per WTT)	None	As per forecasts in the Freight Market Study		
* Figures are for freight trains in one direction only.				

Level crossings on route

Table 4.0			
Type	Current No. of level crossings	+ 10 Years	+ 30 Years
Supervised:	0	As determined by Level Crossing policy	
Automatic:	0		
User:	0		

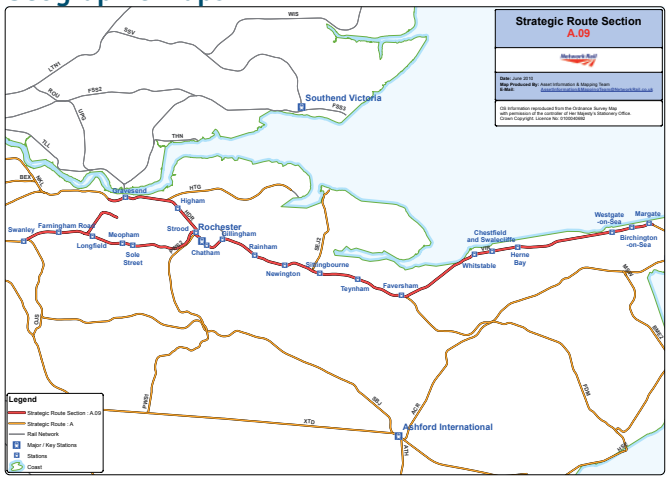
Proposed infrastructure investment in Control Period 5 (2014 – 2019)*

Table 5.0						
Project	**Project Description**	**ELR**	**Implementation Date**	**Output change**	**Notes**	**Status**
No schemes are currently planned for Control Period 5						

* In addition to the proposed enhancement programme, this table includes other Network Rail funded schemes, renewals and third party schemes where applicable.
** The precise timing and scope of renewals will remain subject to review to enable us to meet our overall obligations as efficiently as possible, consistent with the reasonable requirements of operators and other stakeholders.

SRS A.09 Gravesend/ Swanley - Margate

Geographic Maps



Route specification description

The Strategic Route comprises the line between Swanley and Margate, together with the section of line between Strood and Gravesend. At Gravesend the route connects with the Dartford lines and High Speed One. Other connections are at Strood for Medway Valley line and at Sittingbourne for the Sheerness branch. At Hoo Junction, the freight-only Grain branch connects with the route. There is also a second connection with High Speed One at Fawkham Junction near Swanley, which sees no timetabled services at present.

The route is mainly double track, with additional lines at key locations. Signalling is controlled by Victoria ASC, Ashford IECC, Gillingham ASC and successive signal boxes between Rochester and Sittingbourne, which will be decommissioned under East Kent resignalling in 2015 and control moved to Gillingham. Linespeeds are generally 80-90mph, however there is a wide variation across the route in response to various topographical issues.

The route is operated by Kent Main Line, High Speed and Suburban services between London and locations within Kent.

There are also regular freight services across the route to facilities at Hoo Junction, Grain branch and on the Sheerness branch.

The South London RUS recommended a major programme of train lengthening to fulfil anticipated peak demand in the suburban area. The programme includes platform extensions, traction power enhancement, re-positioning of signals and refinement of the operational plan to explore opportunities for selective door opening to permit 12-car operations. Delivery is being phased in line with Thameslink construction timescales and rolling stock procurement programmes. As part of the later phase of works, Gravesend station underwent major remodelling to provide 12-car platform capacity over Christmas in 2013.

As highlighted above during the current Control Period, the second phase of the East Kent resignalling programme will be completed. The programme will renew existing signalling between Faversham and Strood and re-control the Sheerness and Medway Valley lines. Control of all these lines will transfer from the individual signal boxes to Gillingham ASC. Opportunities to enhance the existing layout to provide capacity to meet future requirements have been built into the scope, which includes building a new station at Rochester.

The route encompasses an area of significant housing and economic development, which is being carried out under the aegis of the Thames Gateway. Specifically, the Chancellor announced the building of a new 'Garden City' at Ebbsfleet. This development will prompt increases in passenger demand above the regional average.

Route capability overview

Table 1.0				
Information	**Current**	**+ 10 years**	**+ 30 Years**	**Notes**
Line of route description	SO110: Victoria to Ramsgate (via Herne Hill and Chatham) SO310: Hither Green to Maidstone West (via Dartford)			
Section start	Swanley and Gravesend			
Section end	Margate			
Route availability	RA8	RA8	RA8	
Gauge	W6	W6	W6	
Signals	TCB	TCB	TCB	
Speed **See Sectional Appendix for detailed speed profiles**	80-90mph	80-90mph Permanent speed restrictions removed/eased where possible	Increase speed to rolling stock and signalling capability	
Electrification	Third rail	Third rail	Third rail or overhead electrification	

Passenger train service levels (trains per hour / day)

Table 2.0				
	Current	**+ 10 Years**	**+ 30 Years**	**Notes**
Typical journey time	MAR-RTR - 60mins RTR-SAY - 25mins RTR-GRV - 15mins	MAR-RTR - 57mins RTR-SAY - 25mins RTR-GRV - 13mins	Reduce journey time to lowest possible in line with changes in rolling stock and signalling	
No. of trains per hour	GRV-RTR – up to 4tph (peak) RTR-GLM – up to 15tph (peak)	As defined by EK resignalling – 15tph including 9tph turning back between RTR and SIT	Frequency likely to remain consistent with previous years	

Current Freight Trains (paths per day)

Table 3.0				
	Current	+ 10 Years	+ 30 Years	Notes
Route section	Gravesend to Hoo Jn			
Daily paths in one direction (as per WTT)	Up to 20 trains per day	As per forecasts in the Freight Market Study		
* Figures are for freight trains in one direction only.				

Level crossings on route

Table 4.0			
Type	Current No. of level crossings	+ 10 Years	+ 30 Years
Supervised:	3	As determined by Level Crossing policy	
Automatic:	2		
User:	5		

Proposed infrastructure investment in Control Period 5 (2014 – 2019)*

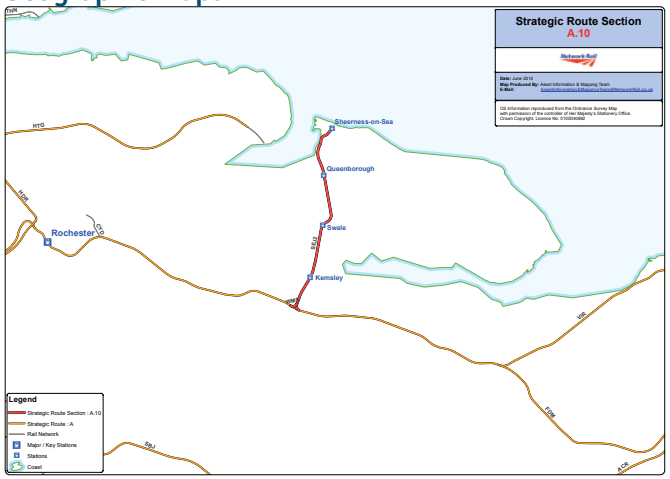
Table 5.0

Project	Project Description	ELR	Implementation Date	Output change	Notes	Status
East Kent Resignalling (phase 2)	Resignalling and re-control of signalling assets between Faversham and Strood	VIR	2015	Modern equivalent form signalling		Delivery
New Rochester station	Relocation of Rochester station	VIR	2015	Improved access to rail services from town	Under construction in conjunction with EK2	Delivery
Rainham turnback	New platform and turnback facilities	VIR	2015	More capacity across Medway Towns	Under construction in conjunction with EK2	Delivery
Traction power supply upgrade	Enhancements to Traction power to enable longer trains	VIR	2014-18	Additional peak capacity	Phased introduction in line with Thameslink Programme	Delivery
Journey time improvement	Reduce impact of Permanent Speed Restrictions	VIR	CP5	Improved journey times	Candidate scheme	In development

* In addition to the proposed enhancement programme, this table includes other Network Rail funded schemes, renewals and third party schemes where applicable.
** The precise timing and scope of renewals will remain subject to review to enable us to meet our overall obligations as efficiently as possible, consistent with the reasonable requirements of operators and other stakeholders.

SRS A.10 Sheerness Branch

Geographic Maps



Route specification description

The Strategic Route runs between Sheerness and the east and west junctions at Sittingbourne, where the line joins the Chatham Main Line.

The route is a combination of single and double track, signalled by Sittingbourne signal box. Signalling control on this route will be moved to Gillingham ASC under the second phase of East Kent resignalling in 2015.

A lifting bridge, Kingsferry Bridge, links the mainland to the Isle of Sheppey and is locally controlled by the bridge operator with permission by Sittingbourne signal box. The lifting section is non-electrified.

A local service operates on this route between Sittingbourne and Sheerness-on-Sea, the services forming part of a local Community Rail Partnership.

A diverse range of freight services also run on this route to facilities at Queenborough and Sheerness. A rail connected wharf at Ridham Dock is currently dormant but may see traffic in the future.

Route capability overview

Table 1.0				
Information	**Current**	**+ 10 years**	**+ 30 Years**	**Notes**
Line of route description	SO150: Sittingbourne (Eastern Jn) to Sheerness-on-Sea			
Section start	Sittingbourne			
Section end	Sheerness-on-Sea			
Route availability	RA8	RA8	RA8	
Gauge	W6	W6	W6	
Signals	TCB	TCB	TCB	
Speed See Sectional Appendix for detailed speed profiles	up to 70mph	up to 70mph	Increase speed to rolling stock and signalling capability	
Electrification	Third rail	Third rail	Third rail or overhead electrification	

Passenger train service levels (trains per hour / day)

Table 2.0				
	Current	**+ 10 Years**	**+ 30 Years**	**Notes**
Typical journey time	SIT-SSS – 17mins	SIT-SSS – 17mins	Reduce journey time to lowest possible in line with changes in rolling stock and signalling	
No. of trains per hour	SIT-SSS – 2tph	SIT-SSS – 2tph	Frequency likely to remain consistent with previous years	From December 2014, a new, direct Sheerness to Victoria service was introduced during the peaks.

Current Freight Trains (paths per day)

Table 3.0				
	Current	+ 10 Years	+ 30 Years	Notes
Route section	Sittingbourne to Sheerness			
Daily paths in one direction (as per WTT)	Up to 4 trains per day	As per forecasts in the Freight Market Study		
* Figures are for freight trains in one direction only.				

Level crossings on route

Table 4.0			
Type	Current No. of level crossings	+ 10 Years	+ 30 Years
Supervised:	0	As determined by Level Crossing policy	
Automatic:	0		
User:	3		

Proposed infrastructure investment in Control Period 5 (2014 – 2019)*

Table 5.0

Project	Project Description	ELR	Implementation Date	Output change	Notes	Status
East Kent Resignalling (phase 2)	Re-control of signalling assets	SEJ1&2	2015	Modern equivalent form signalling		In development

* In addition to the proposed enhancement programme, this table includes other Network Rail funded schemes, renewals and third party schemes where applicable.
** The precise timing and scope of renewals will remain subject to review to enable us to meet our overall obligations as efficiently as possible, consistent with the reasonable requirements of operators and other stakeholders.

SRS A.11 Strood – Paddock Wood

Geographic Maps

Route specification description

The Strategic Route runs between Strood, where the line joins the Chatham Main Line, and Paddock Wood at the junction with the Tonbridge Main Line.

The route is double track throughout its length and signalled by successive signal boxes, apart from the junctions with the Main Lines which are controlled by Ashford IECC. Signalling and level crossing control will transfer to Gillingham ASC under East Kent resignalling during CP5.

A local service operates on this route between Strood and the Paddock Wood, the services forming part of a local Community Rail Partnership. This service is supplemented by the introduction of peak High Speed services to London St Pancras via Strood.

Aggregates traffic run on this route to Allington sidings. A freight facility exists at Halling, where Cemex wish to retain the connection for possible future usage.

Route capability overview

Table 1.0				
Information	**Current**	**+ 10 years**	**+ 30 Years**	**Notes**
Line of route description	SO310: Hither Green to Maidstone West (via Dartford) SO180: Paddock Wood to Maidstone West			
Section start	Strood			
Section end	Paddock Wood			
Route availability	RA8	RA8	RA8	
Gauge	W6	W6	W6	
Signals	TCB	TCB	TCB	
Speed **See Sectional Appendix for detailed speed profiles**	up to 70mph	up to 80mph	Increase speed to rolling stock and signalling capability	
Electrification	Third rail	Third rail	Third rail or overhead electrification	

Passenger train service levels (trains per hour / day)

Table 2.0				
	Current	**+ 10 Years**	**+ 30 Years**	**Notes**
Typical journey time	SOO-PDW – 42mins	SOO-PDW – 38mins	Reduce journey time to lowest possible in line with changes in rolling stock and signalling	
No. of trains per hour	MDW-SOO – 2tph + 1tph HS High peak only MDW-PDW – 1tph	SOO-MDW – 2tph + 1tph HS Peak only MDW-PDW – 1tph	Frequency likely to remain consistent with previous years	

Current Freight Trains (paths per day)

Table 3.0				
	Current	+ 10 Years	+ 30 Years	Notes
Route section	Strood to Allington			
Daily paths in one direction (as per WTT)	Up to 4 trains per day	As per forecasts in the Freight Market Study		
* Figures are for freight trains in one direction only.				

Level crossings on route

Table 4.0			
Type	Current No. of level crossings	+ 10 Years	+ 30 Years
Supervised:	7	As determined by Level Crossing policy	
Automatic:	4		
User:	14		

Proposed infrastructure investment in Control Period 5 (2014 – 2019)*

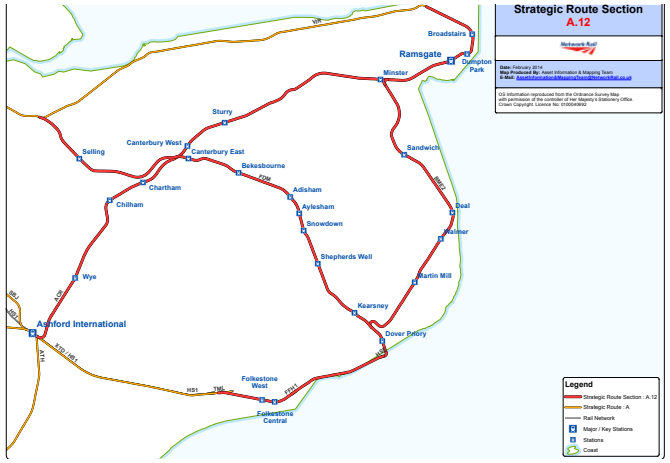
Table 5.0

Project	Project Description	ELR	Implementation Date	Output change	Notes	Status
East Kent Resignalling (phase 2)	Re-control of signalling assets	PWS1&2	2015	Modern equivalent form signalling		In development

* In addition to the proposed enhancement programme, this table includes other Network Rail funded schemes, renewals and third party schemes where applicable.
** The precise timing and scope of renewals will remain subject to review to enable us to meet our overall obligations as efficiently as possible, consistent with the reasonable requirements of operators and other stakeholders.

SRS A.12 East Kent Routes

Geographic Maps



Route specification description

The Strategic Route comprises the lines between Ashford and Ramsgate via Canterbury West, between Continental Junction to Margate via Dover Priory and Ramsgate, and between Faversham to Dover Priory via Canterbury East. The route interfaces with the Tonbridge Main Line and Chatham Main Line at various junctions.

The route covers a wide geographic area and contains by far the highest track mileage of the Kent strategic routes, which is mainly double track apart from at key stations. There are a diverse range of linespeed profiles and signalling controls on the component lines. Signalling control will be rationalised in the future under the National Operating Strategy.

Main Line and Domestic High Speed services between London and East Kent are the only passenger service groups on the routes via Canterbury West and Folkestone. The Main Line services run to/from London Charing Cross and London Cannon Street via the Tonbridge Main Line, whereas Domestic High Speed services run to/from London St Pancras via the connection with High Speed One at Ashford. Services to/from London Victoria run from Dover Priory via Canterbury East and the Chatham Main Line. There are no scheduled freight services on the entire strategic route.

Local authorities recognise the benefits that the high speed services have brought to the region and seek to maximise the regenerative effects. Efforts are currently focussed on developing and delivering journey time improvements between Ashford and Ramsgate, funded by a CP5 discretionary fund the ‘Regional Growth Fund’.

Parts of the strategic route form the Trans-European Transport Network Comprehensive Network Corridor on the south coast.

Route capability overview

Table 1.0				
Information	**Current**	**+ 10 years**	**+ 30 Years**	**Notes**
Line of route description	SO130: Charing Cross/Cannon Street to Dover Priory.Eurotunnel interface (via Tonbridge) SO220: Ashford to Ramsgate (via Canterbury West) SO160: Faversham to Dover Priory SO240: Minster East Jn to Buckland Jn SO110: Victoria to Ramsgate (via Herne Hill and Chatham)			
Section start	Saltwood Jn to Dover Priory; Ashford International to Ramsgate; Ramsgate to Margate; Dover Priory to Faversham; Dover Priory to Ramsgate			
Section end				
Route availability	RA8	RA8	RA8	
Gauge	W6	W6	W6	
Signals	TCB	TCB	TCB	
Speed See Sectional Appendix for detailed speed profiles	70-100mph	80-100mph Specific journey time enhancement between Ashford and Ramsgate delivered Permanent speed restrictions removed/eased where possible	Increase speed to rolling stock and signalling capability	
Electrification	Third rail	Third rail	Third rail or overhead electrification	

Passenger train service levels (trains per hour / day)

Table 2.0				
	Current	**+ 10 Years**	**+ 30 Years**	**Notes**
Typical journey time	AFK-RAM (via CBW) – 37mins (fast) AFK-DVP – 28mins (fast) DVP-RAM – 34mins DVP-FAV – 35mins (fast)	AFK-RAM (via CBW) – 30mins (fast) AFK-DVP – 27mins (fast) DVP-RAM – 32mins DVP-FAV – 32mins (fast)	Reduce Main Line service journey time to lowest possible in line with changes in rolling stock and signalling	
No. of trains per hour	AFK-RAM (via CBW) – up to 5tph Peak; 3tph Off Peak AFK-DVP – up to 5tph Peak; 3tph Off Peak DVP-RAM – 2tph Peak; 1tph Off Peak DVP-FAV – 2tph Peak; 1tph Off Peak	AFK-RAM (via CBW)– up to 5tph Peak; 3tph Off Peak AFK-DVP – up to 5tph Peak; 3tph Off Peak DVP-RAM – 3tph Peak; 1tph Off Peak DVP-FAV – 2tph Peak; 1tph Off Peak	Frequency likely to remain consistent with previous years Rolling stock and infrastructure available to run peak services at maximum length if required.	

Current Freight Trains (paths per day)

Table 3.0				
	Current	+ 10 Years	+ 30 Years	Notes
Route section	-			
Daily paths in one direction (as per WTT)	None	As per forecasts in the Freight Market Study		
* Figures are for freight trains in one direction only.				

Level crossings on route

Table 4.0			
Type	Current No. of level crossings	+ 10 Years	+ 30 Years
Supervised:	8	As determined by Level Crossing policy	
Automatic:	8		
User:	50		

Proposed infrastructure investment in Control Period 5 (2014 – 2019)*

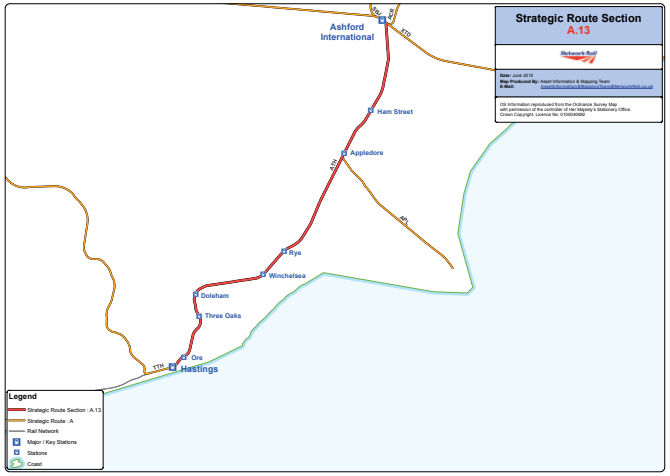
Table 5.0

Project	Project Description	ELR	Implementation Date	Output change	Notes	Status
Ashford to Ramsgate Journey time reduction	Improving journey times	ACR	CP5	Shorter journey times	Delivery of works funded through CP5	In development

* In addition to the proposed enhancement programme, this table includes other Network Rail funded schemes, renewals and third party schemes where applicable.
** The precise timing and scope of renewals will remain subject to review to enable us to meet our overall obligations as efficiently as possible, consistent with the reasonable requirements of operators and other stakeholders.

SRS A.13 Hastings - Ashford

Geographic Maps



Route specification description

The Strategic Route runs between Hastings and Ashford International. The Dungeness branch joins the route at Appledore.

The route is a combination of single and double track. The section between Ore and Appledore being single track, apart from the passing loops in the Rye station area. The line between Ore and Ashford is not electrified and is served by diesel passenger stock. The route is signalled by Hastings signal box between Hastings and Ore, Rye signal box controls the Rye station layout, and Ashford IECC controls the final section between Appledore and Ashford. Linespeeds are relatively low on this route and do not exceed 60mph on any section.

A local service operates on this route between Ashford and the East Sussex coast, the services forming part of a local Community Rail Partnership.

A weekly freight service runs on this route to Dungeness via the branch to transport spent nuclear fuel from the decommissioned power station to the north of England. This is likely to be supplemented by a weekly aggregates service between Lydd and north Kent.

Although as a regional route it is unlikely to experience the same level of growth as direct London services, there has been a noticeable increase in demand as passengers from Rye and Hastings respond to the offer of fast journey times to London via connections to Domestic High Speed services at Ashford. Hence, the extension of High speed services to Hastings and Bexhill is being investigated.

The strategic route form parts of the Trans-European Transport Network Comprehensive Network Corridor on the south coast.

Route capability overview

Table 1.0				
Information	**Current**	**+ 10 years**	**+ 30 Years**	**Notes**
Line of route description	SO600: Willingdon Junction to Ashford			
Section start	Bo Peep Junction			
Section end	Ashford International			
Route availability	RA6	RA6	RA8	
Gauge	W6	W6	W6	
Signals	Absolute Block/TCB	Absolute Block/TCB	TCB	
Speed See Sectional Appendix for detailed speed profiles	Predominant linespeed 60mph	Linespeed 70+mph, removal of PSRs	Increase speed to rolling stock and signalling capability	
Electrification	None	None	DC Third rail or AC Overhead	Future electrification dependant on business case on rolling stock strategy

Passenger train service levels (trains per hour / day)

Table 2.0				
	Current	**+ 10 Years**	**+ 30 Years**	**Notes**
Typical journey time	Ashford International to Hastings ~41 mins (semi-fast)	Ashford International to Hastings ~35 mins (semi-fast)	Reduce Main Line service journey time to lowest possible in line with changes in rolling stock and signalling	
No. of trains per hour	1tph AFK-BTN plus 1tpd RYE shuttle (Peak hour only) Plus 1tph ORE-VIC between ORE and HGS	AFK to BTN/EBN up to 2tph – either peak or all day BEX-STP High speed up to 2tph – either peak or all day 1tph ORE-VIC between ORE and HGS	Frequency likely to remain consistent with previous	

Current Freight Trains (paths per day)

Table 3.0				
	Current	+ 10 Years	+ 30 Years	Notes
Route section	Ashford to Appledore			
Daily paths in one direction (as per WTT)	1 train per week to Dungeness	As per forecasts in the Freight Market Study		
* Figures are for freight trains in one direction only.				

Level crossings on route

Table 4.0			
Type	Current No. of level crossings	+ 10 Years	+ 30 Years
Supervised:	2	As determined by Level Crossing policy	
Automatic:	7		
User:	12		

Proposed infrastructure investment in Control Period 5 (2014 – 2019)*

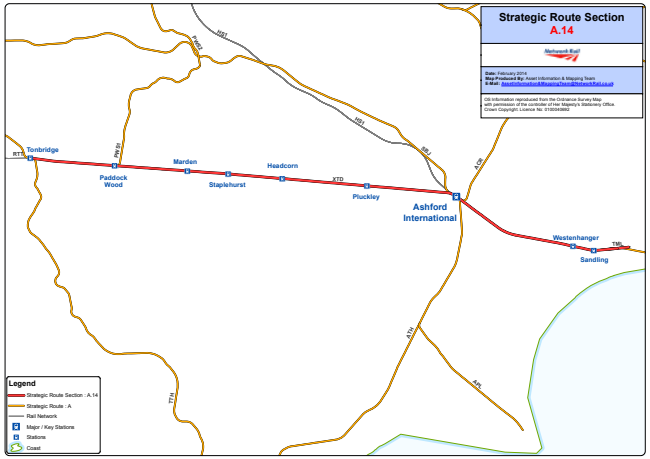
Table 5.0

Project	Project Description	ELR	Implementation Date	Output change	Notes	Status
Ashford to Keymer Jn Journey time reduction	Improving journey times	ATH	CP5	Shorter journey times	Delivery of works funded through CP5	In development

* In addition to the proposed enhancement programme, this table includes other Network Rail funded schemes, renewals and third party schemes where applicable.
** The precise timing and scope of renewals will remain subject to review to enable us to meet our overall obligations as efficiently as possible, consistent with the reasonable requirements of operators and other stakeholders.

SRS A.14 Tonbridge – Continental Jcn

Geographic Maps



Route specification description

The Strategic Route forms part of the Tonbridge Main Line, running between Tonbridge and the connection with the Channel Tunnel at Dollands Moor Freight Yard. Ashford International is the main hub on the route, where lines connect to London St Pancras International via High Speed One, Ramsgate via Canterbury West, Swanley via Maidstone East and Hastings. There are also opportunities to interchange with Eurostar services to the Continent at Ashford. Other junctions are at Paddock Wood for the Medway Valley line and at Tonbridge for Hastings via Tunbridge Wells. An aggregates facility exists on the country side of Ashford International at Sevington.

The route is mainly double track, but multiple tracks exist at key stations. Significant improvements were made to this route in the early 1990's to cater for additional Channel Tunnel traffic, which has left a legacy of high linespeeds (generally 90-100mph) and adequate signalling headways for the services on the route. The route is signalled from Ashford IECC.

Main Line services between London and East Kent are the main service group on the route. Domestic High Speed services traverse the section of the route between Continental Junction and Ashford where they access High Speed One.

Freight services run on this route to/from the Channel Tunnel, as well as occasional aggregates traffic at Sevington sidings.

The town of Ashford is forecast to see significant growth in the next 20 years. Although much of the growth by rail may be focussed on the high speed services to London St Pancras International, there is likely to be an increase in passenger demand to other London terminals and regional journeys.

The existing track layout at Ashford International presents a potential barrier to passenger growth. Domestic High Speed services can only access the high speed line via platforms 5 and 6, which exacerbates congestion on the platforms. Options to convert one of the existing international platforms (3 or 4) and/or significant track layout changes, are likely to be required in the future in line with service enhancements.

The route forms part of the Trans-European Transport Network Core Network Corridor between London and the Channel Tunnel.

Route capability overview

Table 1.0				
Information	**Current**	**+ 10 years**	**+ 30 Years**	**Notes**
Line of route description	SO130: Charing Cross/Cannon Street to Dover Priory.Eurotunnel interface (via Tonbridge)			
Section start	Tonbridge			
Section end	Saltwood Junction			
Route availability	RA8	RA8	RA8	
Gauge	W9	W9	W10	
Signals	TCB	TCB	TCB	
Speed See Sectional Appendix for detailed speed profiles	90-100mph	90-100mph	Increase speed to rolling stock and signalling capability	
Electrification	Third rail	Third rail	Third rail or overhead electrification	

Passenger train service levels (trains per hour / day)

Table 2.0				
	Current	**+ 10 Years**	**+ 30 Years**	**Notes**
Typical journey time	Ashford International to Tonbridge Main Line services ~36 mins (all stations)	Ashford International to Tonbridge Main Line services ~36 mins (all stations)	Reduce Main Line service journey time to lowest possible in line with changes in rolling stock and signalling	
No. of trains per hour	AFK-TON – up to 6tph Peak; 3tph Off Peak AFK-DVP – up to 5tph Peak; 3tph Off Peak	AFK-TON – up to 6tph Peak; 3tph Off Peak AFK-DVP – up to 5tph Peak; 3tph Off Peak	Frequency likely to remain consistent with previous years Rolling stock and infrastructure available to run peak services at maximum length if required	Conversion of Hayes branch would free up London Bridge corridor paths that could be utilised on this route.

Current Freight Trains (paths per day)

Table 3.0				
	Current	**+ 10 Years**	**+ 30 Years**	**Notes**
Route section	Ashford to Saltwood Junction			
Daily paths in one direction (as per WTT)	Up to 5 trains a day to Channel Tunnel	As per forecasts in the Freight Market Study		
* Figures are for freight trains in one direction only.				

Level crossings on route

There are no level crossings in this route section.

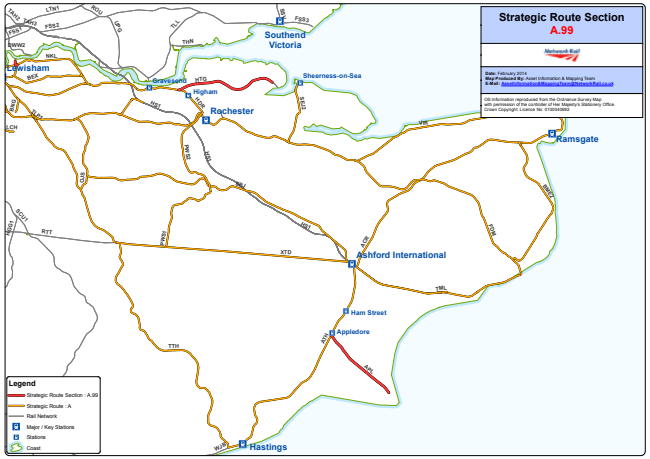
Proposed infrastructure investment in Control Period 5 (2014 – 2019)*

Table 5.0						
Project	**Project Description**	**ELR**	**Implementation Date**	**Output change**	**Notes**	**Status**
Depots and Stabling strategy	Provision of additional depots and stabling facilities	TBC	CP5	Efficient operational plan	Location of schemes to be confirmed	In development

* In addition to the proposed enhancement programme, this table includes other Network Rail funded schemes, renewals and third party schemes where applicable.
** The precise timing and scope of renewals will remain subject to review to enable us to meet our overall obligations as efficiently as possible, consistent with the reasonable requirements of operators and other stakeholders.

SRS A.99 Freight routes

Geographic Maps



Route specification description

There are three dedicated Freight routes on Network Rail infrastructure in Kent:

- Angerstein Wharf branch, which connects the freight facility on the Thames Estuary near Charlton with the North Kent line. The facility handles dredged and quarried material for the aggregates industry, mainly for onward distribution to other rail terminals within London.
- Grain Branch, which connects various facilities at Hoo Junction, Cliffe and Grain with the North Kent line near Gravesend. These facilities handle dredged and quarried materials for the aggregates industry as well as international container traffic.
- Dungeness Branch, which is used for distribution of material from the decommissioning of Dungeness Power Station to facilities in the north of England.

Route capability overview

Table 1.0				
Information	**Current**	**+ 10 years**	**+ 30 Years**	**Notes**
Line of route description	SO290: North Kent East Jn to Dartford Jn (via Greenwich) SO320: Hoo Jn to Grain (Goods Line) SO210: Appledore to Lydd Town			
Section start	Angerstein Wharf to Charlton; Grain to Hoo Junction; Dungeness to Appledore			
Section end				
Route availability	Grain - RA7 Angerstein - RA8 Dungeness - RA6	Grain - RA7 Angerstein - RA8 Dungeness - RA6	Grain - RA7 Angerstein - RA8 Dungeness - RA6	
Gauge	Grain, Angerstein and Dungeness: W6	Grain, Angerstein and Dungeness: W6	Grain, Angerstein and Dungeness: W6	
Signals	Grain - TCB Angerstein - TCB Dungerness - One train working	Grain - TCB Angerstein - TCB Dungerness - One train working	Grain - TCB Angerstein - TCB Dungerness - One train working	
Speed **See Sectional Appendix for detailed speed profiles**	Various	Various	Various	
Electrification	None	None	None	

Current Freight Trains (paths per day)

Table 3.0				
	Current	**+ 10 Years**	**+ 30 Years**	**Notes**
Route section	Grain – Up to 20 trains per day Angerstein – Up to 5 trains per day Dungeness – Up to 2 trains per week	As per forecasts in the Freight Market Study		
Daily paths in one direction (as per WTT)				
* Figures are for freight trains in one direction only.				

Level crossings on route

Table 4.0			
Type	**Current No. of level crossings**	**+ 10 Years**	**+ 30 Years**
Supervised:	N/A	As determined by Level Crossing policy	
Automatic:	N/A		
User:	N/A		

Proposed infrastructure investment in Control Period 5 (2014 – 2019)*

Table 5.0						
Project	**Project Description**	**ELR**	**Implementation Date**	**Output change**	**Notes**	**Status**
No schemes are currently planned for Control Period 5						

* In addition to the proposed enhancement programme, this table includes other Network Rail funded schemes, renewals and third party schemes where applicable.
** The precise timing and scope of renewals will remain subject to review to enable us to meet our overall obligations as efficiently as possible, consistent with the reasonable requirements of operators and other stakeholders.

High Speed One (HS1)

Route specification description

Although not part of Network Rail-owned infrastructure, HS1 forms an integral part of the rail network in Kent. Network Rail carries out operations and maintenance on this route under contract to HS1 Ltd. In addition to Eurostar services to/from mainland Europe via the Channel Tunnel, domestic high speed services operate on this infrastructure. These services operate to/from 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 services since the completion of High Speed One.

The current domestic service pattern sees up to 8tph arrive at London St Pancras International during the morning peak, with 4tph off peak from various locations in Kent.

The Kent Route Utilisation Strategy (January 2010) predicted passenger growth of 30% to 2022 across Kent. The RUS noted that growth beyond the average is expected in areas served by the new high speed domestic services, and where there is significant housing growth at Ashford and the Thames Gateway. In response to the anticipated additional demand, the RUS recommended a range of options to lengthen domestic services and extend journeys within Kent. These interventions will require additional high speed rolling stock and platform and track layout at Ashford International station.

Freight services have been successfully trialled on HS1, and it is anticipated that other European operators will provide services from new destinations on the continent in the near future.

Route Information Overview

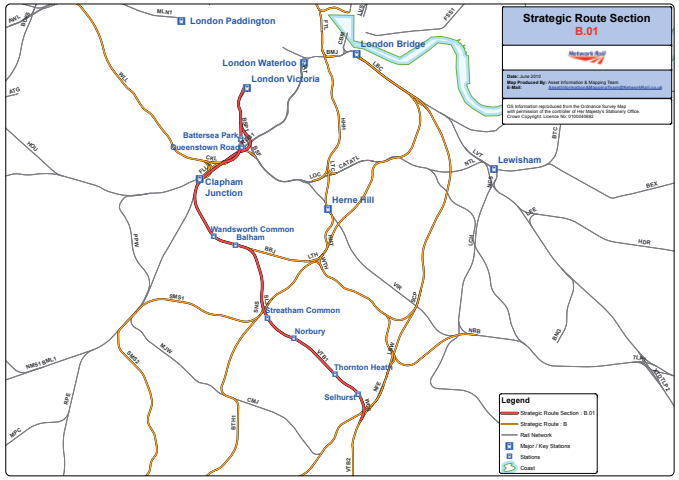
Linespeed: 225km/h Domestic Passenger trains
300km/h International Passenger trains
140km/h Freight trains
Gauge: UIC 'GC' on HS1 / UIC 'GB+' on Ashford connecting lines
Signalling: TVM430
Electrification: 25kv AC

Sussex

Route B: Sussex

SRS B.01 London Victoria - Windmill Bridge Junction

Geographic map



Route specification description

The Brighton Main Line (BML) is the busy main line between London and Brighton, it is split across three strategic route sections. This section covers from London Victoria to Windmill Bridge Junction, north of East Croydon station.

London Victoria is the principal station for those travelling from the South East of England into the West End of central London. The station has the second highest footfall in the UK with approximately 70 million entries and exits per annum.

The station has 19 platforms, with numbers 9 to 19 serving the Sussex Route area services. Platforms 9 -12 typically serve Slow line suburban services, Platforms 13 and 14 are dedicated to Gatwick Express services and Platforms 15-19 service Fast line operations. The Sussex Route side of the station receives approximately 16 Slow line trains per hour (tph) and 16 Fast line tph in the high peak hour. Fast line services emanate from Brighton, the East Coastway, and the West Coastway, Tattenham, Caterham, East Grinstead, Three Bridges, Redhill or Horsham, Slow line services emanate from the myriad of suburban locations usually starting/finishing at Epsom, Sutton, West Croydon, London Bridge or Norwood Junction.

In the High Peak Hour (08:00-08:59) the Fast Line trains are 12-car Class 377 trains or 10-car Class 442 trains (these have 23 metre vehicles so are equivalent to a 12-car 20m vehicle Class 377 train). Most suburban services on the Slow line are 10-car Class 377 following the CP4 platform extension scheme.

The Fast line side of the station is accessed by three tracks, an Up and Down Fast and a reversible approach line. The Brighton Reversible, as it is known, has been enhanced in CP4 to allow trains to run faster. The Slow line side of the station has just two approach tracks – an Up and Down Slow.

The limited number of approach tracks to both the Slow and Fast line platforms (constrained by the width of the alignment into London Victoria, Grosvenor River Bridge and approaching viaducts south thereof), mean that even additional platform faces at Victoria in the long term will have a limited benefit in terms of additional peak paths generated.

Heading south the Slow lines split at Battersea Park Junction with a route diverging onto a viaduct bound for Factory Junction and Stewarts Lane depot.

At Battersea Park, trains generally serve only the two Slow line platforms, Platforms 3 & 4, although Platform 5 on the Down Fast has been retained for 'two-track running' at weekends when two lines are closed for maintenance and inspection.

Platform 1 closed, in December 2012, with the introduction of the East London Line service to Clapham Junction and the withdrawal of the London Victoria - London Bridge South London Line service and the track was lifted in 2013 to allow for the abolition of the junction as part of the Sussex Suburban 10-car scheme which required Platform 3 to be lengthened across the . Platform 2 has been shortened for use by a twice-daily London Overground service. This platform will also be used by London Overground in the event of Clapham Junction being unavailable to their trains.

Heading south, Slow and Fast lines use Platforms 12-15 at Clapham Junction. The Slow line Platforms 14 and 15 were extended to 10-car during CP4. Most Fast line services call at Clapham Junction with the exception of Gatwick Express services. The Sussex and London and South East RUSs both recommend that a handful of high peak Gatwick Express services from/to Brighton should call at Clapham Junction to relieve overcrowding on East and West Coastway services that do offer that interchange.

Fast line services do not call anywhere else in the SRS area, the next stop being East Croydon (SRS B.02). Slow line services call Wandsworth Common, Balham (where Sutton/Epsom and Streatham Hill/Crystal Palace/ Norwood Junction routes diverge), Streatham Common, Thornton Heath, Norbury and Selhurst. All these stations had 10-car platforms completed on the slow lines in time for the December 2013 timetable.

The end point of the SRS is Windmill Bridge Junction where flat junction conflicts exist between Down Victoria Slow and Up London Bridge Slow lines and Down Victoria Fast and Up London Bridge Fast lines. In the long term, plans exist to relieve these constraints though these are outside the timescale of CP5.

Signalling is controlled by Victoria Area Signalling Centre (ASC) as far as Norbury, where Three Bridges ASC takes over. During CP5, control is being transferred to Three Bridges Rail Operations Centre (ROC).

Route capability overview

Table 1.0				
Information	**Current**	**2019**	**2043**	**Notes**
Line of route description	SO500: Victoria to Brighton			
Section start	Victoria			
Section end	Windmill Bridge Jn			
Route availability	RA8	RA8	RA8	
Gauge	W6, W7, W8, W9	W6, W7, W8, W9	W6, W7, W8, W9	
Signals	Track circuit block	Track circuit block	European Rail Traffic Management System (ERTMS)	
Speed **See Sectional Appendix for detailed speed profiles**	Fast: 70mph Slow: 60mph	Fast: 70mph Slow: 60mph	Raise linespeed to highest possible with ERTMS	
Electrification	750V dc third rail throughout	750V dc third rail throughout	750V dc third rail or 25kV overhead	See Network RUS: Electrification

Passenger train service levels (trains per hour / day)

Table 2.0				
	Current	**2019**	**2043**	**Notes**
Typical journey time (minutes)	**East Croydon - Victoria** AM Peak Fast: 16 Off-peak Fast: 18 AM Peak Slow: 26 Off-peak Slow: 27	**East Croydon - Victoria** AM Peak Fast: 16 Off-peak Fast: 18 AM Peak Slow: 26 Off-peak Slow: 27	**East Croydon - Victoria** AM Peak Fast: 15 Off-peak Fast: 17 AM Peak Slow: 27 Off-peak Slow: 28	
No. of trains per hour	**Arriving at Victoria** AM Peak Fast: 17 Off-peak Fast: 15 AM Peak Slow: 14 Off-peak Slow: 13	**Arriving at Victoria** AM Peak Fast: 18 Off-peak Fast: 16 AM Peak Slow: 14 Off-peak Slow: 12	**Arriving at Victoria** AM Peak Fast: 20 Off-peak Fast: 17 AM Peak Slow: 14 Off-peak Slow: 12	

Current Freight Trains (paths per day)

Table 3.0				
	Current	**2019**	**2043**	**Notes**
Route section	Selhurst/Streatham North Jn/Streatham Hill to West London Line/Pouparts Jn			
Daily paths in one direction (as per WTT)	6 (+6 Channel Tunnel freights when diverted)	As per forecasts in the Freight Market Study		
* Figures are for freight trains in one direction only on an average weekday.				

Level crossings on route

There are no level crossings in this route section.

Proposed infrastructure investment in Control Period 5 (2014 – 2019)*

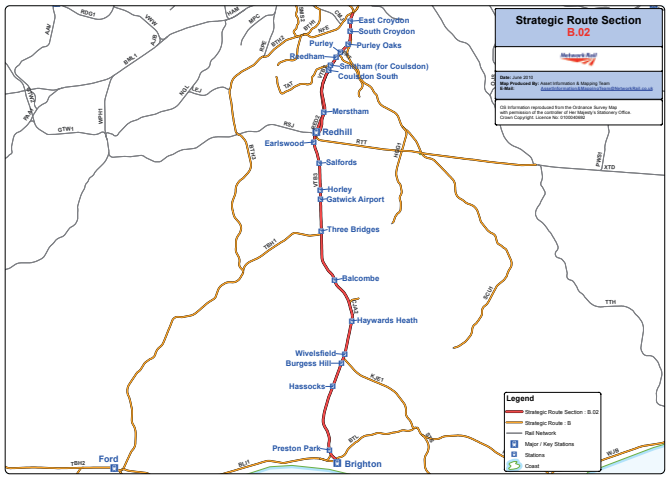
Table 5.0

Project	Project Description	ELR	Implementation Date	Output change	Funder	Notes	Status
S&C Renewal at Battersea Park Jn	Switch & crossing (pointwork) renewal	VTB1	2016/17	Renewed asset			In development
S&C Renewal at Pouparts Jn	Switch & crossing (pointwork) renewal	VTB1	2015/16	Renewed asset			In development
S&C Renewal at Clapham Junction	Switch & crossing (pointwork) renewal	VTB1	2016/17	Renewed asset			In development
Victoria Resignalling Phase 3	Recontrol to Three Bridges ROC	VTB1	2018/19	Centralised control of signalling activity			In development
Victoria Resignalling Phase 2	Resignalling to be controlled by Three Bridges ROC	VTB1	2018/19	Centralised control of signalling activity			In development
London Victoria Congestion Relief	Congestion relief works at Victoria station	VTB1	2016/17	Improved passenger flow, accessibility and experience			In development
Battersea Journey Time Improvement	Replacement of a crossover and improved speed on the Brighton Reversible line between Battersea Park and Victoria	VTB1	2014/15	Improved journey times, capacity and flexibility enhancements	NRDF	A CP4 scheme that has been delayed due to Victoria Resignalling Phase 1	Under construction
West London Line 8-car	Platform lengthening and associated works at Clapham Junction, Platforms 16 & 17	VTB1	2014/15	Longer platforms to enable the use of all doors on longer trains	NRDF	An accelerated CP5 scheme (started in CP4)	Under construction

* In addition to the proposed enhancement programme, this table includes other Network Rail funded schemes, renewals and third party schemes where applicable.
** The precise timing and scope of renewals will remain subject to review to enable us to meet our overall obligations as efficiently as possible, consistent with the reasonable requirements of operators and other stakeholders.

SRS B.02 Windmill Bridge Junction - Brighton

Geographic Map



Route specification description

The Brighton Main Line (BML) is the busy main line between London and Brighton and is split across three strategic route sections. This section covers from Windmill Bridge Junction, north of East Croydon station, to Brighton.

The Brighton Main Line between Windmill Bridge Junction and Brighton serves the large population centres of Croydon, Redhill, Haywards Heath and Brighton as well as a large number of intermediate stations in the outer London suburbs and Sussex. This route section also serves Gatwick Airport.

At Windmill Bridge Junction, Fast and Slow lines from London Bridge (B.03) join the four tracks from Victoria (B.01). Between Windmill Bridge Junction and East Croydon, five tracks are in place with the normal four track pattern plus a Fast Reversible.

East Croydon has six platforms and during the peak operates close to theoretical capacity with 36 peak direction services passing through in the high peak hour, as well as 20 services on the Fast line and 16 on the Slow line. With just three Fast line platforms available at the station, it is clear that even the eventual advent of ERTMS will leave it difficult to squeeze additional Fast line services through the station.

For this reason the footprint for an additional track and platform has been protected by Network Rail on the Fast line side of the station, and this would need to be allied with an additional track between here and Windmill Bridge Junction and further grade separation at the junction to ensure a significant number of additional paths were created in this area. All of these interventions are outside CP5 timescales but are being considered for CP6 (2019-2024).

South of Croydon the BML splits in the Coulsdon area with the Fast lines proceeding to the south west and the Slow lines diverging south east to serve Coulsdon South, Merstham and Redhill. The Redhill corridor enjoys high frequency services in the peak to London Bridge with 2-3 trains per hour (tph), London Blackfriars with 1-3tph and London Victoria with 3tph.

Currently Thameslink services via London Blackfriars operate via Tulse Hill and Herne Hill due to the Thameslink Programme works, this will be completed in 2018 and the restrictions will be removed.

Redhill station area, is constrained by the conflicting moves over the flat junctions at the southern end and the fact that only three platforms exist to handle an increasing number of splitting, joining and reversing manoeuvres. In CP5 an additional platform is to be constructed on the Reigate Line side. First Great Western services, formed of Class 165 & 166 diesel units, from Reading terminate here or reverse to go on to Gatwick Airport.

South of Redhill the Fast and Slow lines of the BML join again to create a four track railway to Balcombe Tunnel Junction. Gatwick Airport station has seven platforms and enjoys a 4tph peak and off-peak non-stop Gatwick Express service to London Victoria. In the High Peak Hour there are four Gatwick Expresses, two semi-fast trains to Victoria via Redhill, one direct train to London Bridge and two services to Blackfriars, due to the Thameslink Programme restrictions. In a typical off-peak hour the train service pattern sees 9tph to Victoria (including 4tph Gatwick Express), two semi-fast London Bridge services and four fast services to Blackfriars via London Bridge. Again, during the Thameslink Programme works, the Blackfriars trains will be diverted away from London Bridge.

At Three Bridges, the new Route Operations Centre will be progressively taking control of Sussex Route's signalling. This is located adjacent to the new Thameslink Depot which will house the new Class 700 units that will displace FCC's current fleet of Class 319 and 377 trains.

There is a junction here, two tracks run via Crawley, Horsham and the Arun Valley to the West Coastway, whilst the four-track main line reduces to two-tracks just north of Balcombe Tunnel.

Further south the BML passes through Haywards Heath and a range of smaller towns before reaching Brighton. This stretch of the route is predominantly a two track railway.

This stretch crosses the South Downs with an undulating terrain involving Ouse Valley and Vale Viaducts, either side of Haywards Heath, and tunnels at Balcombe, Haywards Heath and Clayton & Patcham (both between Hassocks and Preston Park).

Land has been protected in the Keymer Junction area, at Wivelsfield, where the line to Eastbourne/Seaford branches away to Lewes (B.06), to allow for an improved track layout in the future. This scheme again is seen as beyond CP5 timescales but is being considered for CP6.

There is a final junction just south of Preston Park, which sees a branch line link to Hove and the West Coastway (B.05). In the current timetable, off-peak services split/attach at Haywards Heath with portions to/from Eastbourne, Hastings or Ore and Littlehampton.

The entire SRS is controlled by Three Bridges ASC, although some sections will be transferred to Three Bridges ROC during CP5.

Route capability overview

Table 1.0				
Information	**Current**	**2019**	**2043**	**Notes**
Line of route description	SO500: Victoria to Brighton			
Section start	Windmill Bridge Jn			
Section end	Brighton			
Route availability	RA4,8	RA4,8	RA4,8	
Gauge	W6, W9	W6, W9	W6, W9	
Signals	Track circuit block	Track circuit block	European Rail Traffic Management System (ERTMS)	
Speed See Sectional Appendix for detailed speed profiles	90mph	Fast: 100mph Slow: 90mph	Raise linespeed to highest possible with ERTMS	
Electrification	750V dc third rail throughout	750V dc third rail throughout	750V dc third rail or 25kV overhead	See Network RUS: Electrification

Passenger train service levels (trains per hour / day)

Table 2.0				
	Current	**2019**	**2043**	**Notes**
Typical journey time (minutes)	**Brighton – East Croydon** AM Peak Fast: 49 Off-peak Fast: 34 AM Peak Slow: 57 Off-peak Slow: 56	**Brighton – East Croydon** AM Peak Fast: 48 Off-peak Fast: 32 AM Peak Slow: 57 Off-peak Slow: 56	**Brighton – East Croydon** AM Peak Fast: 47 Off-peak Fast: 31 AM Peak Slow: 57 Off-peak Slow: 56	
No. of trains per hour	**Departing East Croydon** AM Peak Fast: 19 Off-peak Fast: 20 AM Peak Slow: 15 Off-peak Slow: 11	**Departing East Croydon** AM Peak Fast: 20 Off-peak Fast: 20 AM Peak Slow: 15 Off-peak Slow: 11	**Departing East Croydon** AM Peak Fast: 20 Off-peak Fast: 20 AM Peak Slow: 15 Off-peak Slow: 11	

Current Freight Trains (paths per day)

Table 3.0				
	Current	2019	2043	Notes
Route section	Ardingly/Crawley/ Redhill/Purley to Windmill Bridge Jn			
Daily paths in one direction (as per WTT)	6 (+6 Channel Tunnel freights when diverted)	As per forecasts in the Freight Market Study		
* Figures are for freight trains in one direction only on an average weekday.				

Level crossings on route

There are no level crossings in this route section.

Proposed infrastructure investment in Control Period 5 (2014 – 2019)*

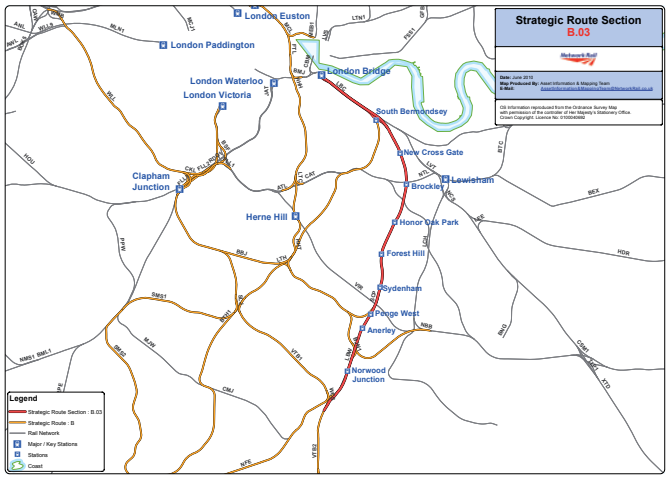
Table 5.0

Project	Project Description	ELR	Implementation Date	Output change	Funder	Notes	Status
S&C renewal at Haywards Heath	Switch & crossing (pointwork) renewal	VTB3	2014/15	Renewed asset			Completed
S&C renewal at Keymer Jn	Switch & crossing (pointwork) renewal	VTB3	2014/15	Renewed asset			Completed
S&C renewal at Earlswood South Jn	Switch & crossing (pointwork) renewal	VTB3	2014/15	Renewed asset			In development
S&C renewal at Balcombe Tunnel Jn	Switch & crossing (pointwork) renewal	VTB3	2017/18	Renewed asset			In development
S&C renewal at Purley	Switch & crossing (pointwork) renewal	VTB2	2015/16	Renewed asset			In development
Signalling recontrol to Three Bridges ROC	Brighton, Earlswood, Preston Park, South Croydon and Haywards Heath interlocking recontrol	VTB2/3	2018/19	Centralised control of signalling activity			In development
New platform at Redhill	Provision of an additional platform (Platform 0)	RED2	2017/18	Improved performance and enhanced capacity			In development

* In addition to the proposed enhancement programme, this table includes other Network Rail funded schemes, renewals and third party schemes where applicable.
** The precise timing and scope of renewals will remain subject to review to enable us to meet our overall obligations as efficiently as possible, consistent with the reasonable requirements of operators and other stakeholders.

SRS B.03 London Bridge - Windmill Bridge Junction

Geographic Map



Route specification description

The Brighton Main Line is the busy main line between London and Brighton, it is split across three strategic route sections. This section covers from London Bridge to Windmill Bridge Junction, north of East Croydon station.

This strategic route section (SRS) encompasses the four track main line (Fast and Slow lines) between London Bridge Low Level station and Windmill Bridge Junction. In addition it includes the connection to the Thameslink SRS at Bricklayers Arms/Blue Anchor Jn.

London Bridge Low Level receives 30 trains per hour (tph) in the high peak hour presently. This is split between approximately 14 Slow line and 16 Fast line services. Slow line services to/from London Bridge call at suburban stations via Tulse Hill to/from Beckenham Junction and the Norwood/Selhurst/West Croydon area plus suburban stations to Norwood Junction and Crystal Palace via Sydenham.

Fast line services into London Bridge operate to and from Caterham/Tattenham, East Grinstead, Reigate/Redhill/Three Bridges/Horsham/Arun Valley, Brighton, the East Coastway and the West Coastway.

This capacity has been affected by the London Bridge Thameslink Programme works, particularly since January 2015, work is ongoing to rectify the issues with the Low Level station operations.

There are currently no Thameslink services through London Bridge to London Blackfriars and the Thameslink Core, whilst the Thameslink Programme works are underway. A limited Thameslink service operates to London Bridge Low Level from Brighton, the rest of the trains operate via the suburban routes between East Croydon and London Blackfriars via Tulse Hill and Herne Hill.

South of London Bridge the route passes through a series of suburban stations (served by slow line services) between New Cross Gate and Norwood Junction. These stations had platforms extended from 8- to 10-car during CP4 to meet demand. The slow line stations enjoy a 6tph peak service to London Bridge in addition to an 8tph (4tph south of Sydenham) East London Line (ELL) service that joins the SRS at New Cross Gate.

Norwood Junction station has become a busy interchange in recent years between the various fast, slow and ELL services.

The station presently has six platforms, but no practical means of reversing stock in the station back in the London direction. This means all services must continue on to one of the congested Croydon stations which can be wasteful of rolling stock and sub-optimal for capacity. A scheme has been developed, to an early stage, to allow a reversible Platform 6 and possibly a new reversible Platform 7 but this is currently unfunded.

Trains are a mix of suburban and main line Southern services, Thameslink services to London Bridge or via Crystal Palace and London Overground services from West Croydon and Crystal Palace formed of 4- or 5-car Class 378 units.

Signalling is controlled by the new Three Bridges ROC as far as Anerley, where Three Bridges ASC takes over. This will be recontrolled to the ROC in CP6.

Route capability overview

Table 1.0				
Information	**Current**	**2019**	**2043**	**Notes**
Line of route description	SO510: London Bridge to Epsom Downs SO500: Victoria to Brighton			
Section start	London Bridge Gloucester Road Jn			
Section end	Gloucester Road Jn Windmill Bridge Jn			
Route availability	RA8	RA8	RA8	
Gauge	W6	W6	W6	
Signals	Track circuit block	Track circuit block	European Rail Traffic Management System (ERTMS)	
Speed **See Sectional Appendix for detailed speed profiles**	Fast: 70mph Slow: 60mph	Fast: 70mph Slow: 60mph	Raise linespeed to highest possible with ERTMS	
Electrification	750V dc third rail throughout	750V dc third rail throughout	750V dc third rail or 25kV overhead	See Network RUS: Electrification

Passenger train service levels (trains per hour / day)

Table 2.0				
	Current	**2019**	**2043**	**Notes**
Typical journey time (minutes)	**Norwood Junction – London Bridge** AM Peak Fast: 12 Off-peak Fast: 13 AM Peak Slow: 27 Off-peak Slow: 14 (see note)	**Norwood Junction – London Bridge** AM Peak Fast: 12 Off-peak Fast: 13 AM Peak Slow: 27 Off-peak Slow: 14	**Norwood Junction – London Bridge** AM Peak Fast: 11 Off-peak Fast: 12 AM Peak Slow: 26 Off-peak Slow: 13	Off-peak stopping services are provided by London Overground East London Line services, some Fast line trains call at New Cross Gate for connections
No. of trains per hour	**Arriving at London Bridge** AM Peak Fast: 15 Off-peak Fast: 14 AM Peak Slow: 11 Off-peak Slow: 6 **East London Line services at New Cross Gate** AM Peak: 8 Off-peak: 8	**Arriving at London Bridge** AM Peak Fast: 19 Off-peak Fast: 14 AM Peak Slow: 11 Off-peak Slow: 6 **East London Line services at New Cross Gate** AM Peak: 8 Off-peak: 8	**Arriving at London Bridge** AM Peak Fast: 19 Off-peak Fast: 14 AM Peak Slow: 11 Off-peak Slow: 6 **East London Line services at New Cross Gate** AM Peak: 8 Off-peak: 8	Thameslink Programme will enable an additional 4tph to run through London Bridge from East Croydon The future year service projections are estimates only and in some cases dependent on infrastructure investment or performance modelling

Current Freight Trains (paths per day)

Table 3.0				
	Current	**2019**	**2043**	**Notes**
Route section	Windmill Bridge Jn to Crystal Palace			
Daily paths in one direction (as per WTT)	3	As per forecasts in the Freight Market Study		
* Figures are for freight trains in one direction only on an average weekday.				

Level crossings on route

Table 4.0			
Type	**Current No. of level crossings**	**2019 No. of level crossings**	**2043 No. of level crossings**
Supervised:	0	As determined by Level Crossing policy	
Automatic:	0		
User:	1		

Proposed infrastructure investment in Control Period 5 (2014 – 2019)*

Table 5.0

Project	Project Description	ELR	Implementation Date	Output change	Funder	Notes	Status
S&C renewal at Norwood North Jn	Switch & crossing (pointwork) renewal	LBW	2018/19	Renewed asset			In development
Norwood Junction turnback	Provision of a turnback signal in Platform 6 at Norwood Junction and installation of bi-directional signalling between Norwood Junction and Bromley Jn to enable trains to return to Crystal Palace	LBW BBJ BJN2	2018/19	Improved performance, capacity and flexibility		Initially planned for late-CP4/early-CP5 but now post-Thameslink Programme, subject to funding	On hold
Additional platform at Norwood Junction	Commissioning of Platform 7 as a passenger platform to provide additional turnback facility off the main line	LBW	2018/19	Improved performance, capacity and flexibility		Initially planned for late-CP4/early-CP5 but now post-Thameslink Programme, subject to funding	On hold

* In addition to the proposed enhancement programme, this table includes other Network Rail funded schemes, renewals and third party schemes where applicable.
** The precise timing and scope of renewals will remain subject to review to enable us to meet our overall obligations as efficiently as possible, consistent with the reasonable requirements of operators and other stakeholders.

SRS B.04 Three Bridges - Arundel Junction

Route specification description

This Strategic Route Section (SRS) includes the Arun Valley line (Horsham – Arundel Junction) and the busy Horsham – Crawley – Three Bridges route section.

The Northern end of the SRS constitutes a two-track railway between Horsham and Three Bridges. The key intermediate station is Crawley with a large and growing population. This section of route enjoys a good level of service to both London Bridge and Victoria, with two trains per hour (2tph) to both London Bridge and London Victoria in the peaks.

Train lengths vary, but in the peak 12-car services are now operating to both London termini.

South of Horsham the Arun Valley line proceeds as a double track railway, the prime purpose of which is linking the large West Coastway towns of Littlehampton, Chichester and Bognor Regis (which all lie south of the SRS boundary at Arundel Junction) directly with London via the BML. The line also serves some significant settlements in its own right including Billingshurst and Pulborough. In the peak these stations enjoy a 2/3tph service to Horsham and London. Other services operate fast from Coastway locations without calling at Arun Valley stations.

Splitting and joining of trains at Horsham to provide a better mix of stopping and fast services on the Arun Valley commenced several years ago.

The long signalling headways at the northern end of the Arun Valley between Billingshurst and Christ's Hospital led initially to performance issues with the increased frequency of services on the route but this has been resolved as part of the Arun Valley resignalling scheme which was commissioned in March 2014 and saw the control of signalling transfer to Three Bridges ASC. Network Rail has funded, through Network Rail Discretionary Fund (NRDF), the shortening of headways between Christ's Hospital and Billingshurst and using Seven Day Railway money to improve headways further down the route to allow increased diversions at times of perturbation and in some planned blockades. A number of line speeds were also improved although the physical alignement of the line prevented a wholesale change of the maximum permitted speed.

There are now just two signalling centres controlling movements on this SRS - Three Bridges ASC and Arundel Signal Box. Control will be migrated to Three Bridges ROC in CP5.

Trains are currently formed of Class 377 stock but as Thameslink Class 700 rolling stock is introduced, these will be stored in sidings at Horsham and eventually replace the Class 377s on the London Bridge services with through Thameslink services.

Route capability overview

Table 1.0				
Information	**Current**	**2019**	**2043**	**Notes**
Line of route description	SO520: Three Bridges to Portsmouth Harbour			
Section start	Three Bridges			
Section end	Arundel Jn			
Route availability	RA4, RA8	RA4, RA8	RA4, RA8	
Gauge	W6	W6	W6	
Signals	Track circuit block (axle counter) throughout	Track circuit block (axle counter) throughout	European Rail Traffic Management System (ERTMS)	
Speed See Sectional Appendix for detailed speed profiles	85mph	90mph	90mph	
Electrification	750V dc third rail throughout	750V dc third rail throughout	750V dc third rail or 25kV overhead	See Network RUS: Electrification

Passenger train service levels (trains per hour / day)

Table 2.0				
	Current	**2019**	**2043**	**Notes**
Typical journey time (minutes)	**Barnham – Three Bridges** AM Peak: 52 Off-peak fast: 43 Off-peak stopping: 59	**Barnham – Three Bridges** AM Peak: 52 Off-peak fast: 40 Off-peak stopping: 59	**Barnham – Three Bridges** AM Peak: 52 Off-peak fast: 40 Off-peak stopping: 59	
No. of trains per hour	**Trains from Horsham (via Crawley)** AM Peak: 4 Off-peak: 4	**Trains from Horsham (via Crawley)** AM Peak: 4 Off-peak: 4	**Trains from Horsham (via Crawley)** AM Peak: 4 Off-peak: 4	

Current Freight Trains (paths per day)

Table 3.0				
	Current	2019	2043	Notes
Route section				
Daily paths in one direction (as per WTT)	None	As per forecasts in the Freight Market Study		
* Figures are for freight trains in one direction only on an average weekday.				

Level crossings on route

Table 4.0			
Type	Current No. of level crossings	2019 No. of level crossings	2043 No. of level crossings
Supervised:	3	As determined by Level Crossing policy	
Automatic:	7		
User:	12		

Proposed infrastructure investment in Control Period 5 (2014 – 2019)*

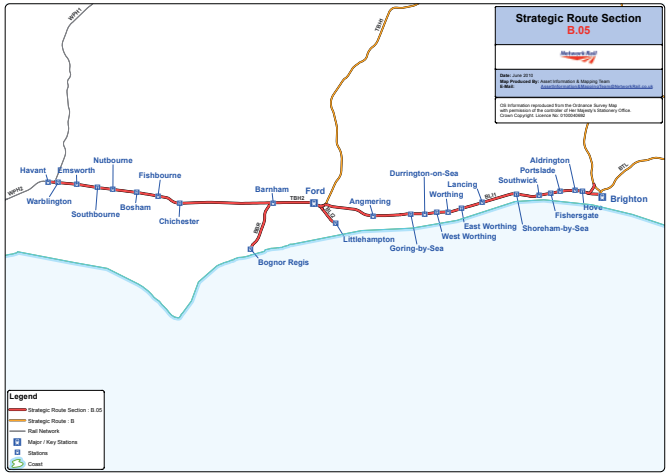
Table 5.0

Project	Project Description	ELR	Implementation Date	Output change	Funder	Notes	Status
Signalling recontrol to Three Bridges ROC	Arundel interlocking recontrol	TBH1	2017/18	Centralised control of signalling activity			In development

* In addition to the proposed enhancement programme, this table includes other Network Rail funded schemes, renewals and third party schemes where applicable.
** The precise timing and scope of renewals will remain subject to review to enable us to meet our overall obligations as efficiently as possible, consistent with the reasonable requirements of operators and other stakeholders.

SRS B.05 Brighton - Havant

Geographic Map



Route specification description

This Strategic Route Section (SRS) encompasses the whole of the West Coastway route within the Sussex Route area. The SRS is a two-track railway throughout it's length with spurs to Littlehampton and Bognor Regis along the way.

The route is characterised by an extremely large number of stations. The nature of this part of the coast is that, from Bognor Regis eastwards, it is increasingly densely populated and as a result a succession of small stations exist.

Service levels on the route can be split into two categories. East of Littlehampton to Worthing and into Brighton an intensive peak frequency service of up to 6 trains per hour (tph) exists (from Worthing eastwards) to serve the significant commuter market into Brighton. In addition this section of the Coastway supports direct services from Worthing, Littlehampton and Bognor Regis into London via the Brighton Main Line.

The western-end of the SRS between Barnham and Havant is serviced by through Brighton – Portsmouth and Brighton – Southampton services, in addition to some direct Chichester/ Southampton to London via the Arun Valley services operate. This broadly provides a 3 or 4 tph services for most of the towns at this end of the route.

The high number of stations along the route means journey times are relatively slow for through journeys between the major towns i.e. Southampton/Portsmouth – Havant – Chichester – Littlehampton – Worthing – Brighton. This presents a trade off of stops against journey time, however reflects the general pattern of journeys along the Coastway which tend to be 'short hop' in nature, with demand for trips from the smaller towns to the next big town predominating over inter-regional passengers.

Recent improvements on the West Coastway include additional capacity provided by Southern for West Coastway commuters into Brighton during the peaks.

The Sussex RUS was unable to justify major infrastructure improvements to allow a fast Southampton – Brighton service to operate in addition to the existing service patterns, however Network Rail will continue to identify small schemes that will improve performance and journey time on the route such as the banner repeater scheme at Angmering which was installed in early-CP5.

Trains on this route are mostly a mix of Class 377 and 313 units, operated by Southern, and a twice-daily First Great Western Class 158 unit venturing as far as Brighton.

The signalling on this SRS is controlled by Three Bridges ASC between Brighton and Aldrington, then Lancing Signal Box to Angmering, Arundel Signal Box to Ford, Barnham ASC for Barnham and Chichester Signal Box to Emsworth where control is taken over by Havant ASC on Wessex Route. The Littlehampton Branch is signalled by Littlehampton Signal Box and the Bognor Regis Branch is controlled by Bognor Regis Signal Box.

During CP5, some of these signal boxes and ASCs will be recontrolled or resignalled to Three Bridges ROC.

Route capability overview

Table 1.0				
Information	**Current**	**2019**	**2043**	**Notes**
Line of route description	SO630: Brighton to Littlehampton SO520: Three Bridges to Portsmouth Harbour SO640: Barnham to Bognor Regis			
Section start	Brighton/Preston Park Jn/Littlehampton			
Section end	Bognor Regis/Warblington			
Route availability	RA4,8	RA4,8	RA4,8	
Gauge	W6, W7	W6, W7	W6, W7	
Signals	Track circuit block	Track circuit block	European Rail Traffic Management System (ERTMS)	
Speed **See Sectional Appendix for detailed speed profiles**	75mph	90mph	Raise linespeed to highest possible with ERTMS	
Electrification	750V dc third rail throughout	750V dc third rail throughout	750V dc third rail or 25kV overhead	See Network RUS: Electrification

Passenger train service levels (trains per hour / day)

Table 2.0				
	Current	**2019**	**2043**	**Notes**
Typical journey time (minutes)	**Brighton – Havant** AM Peak: 57 Off-peak: 61	**Brighton – Havant** AM Peak: 57 Off-peak: 61	**Brighton – Havant** AM Peak: 57 Off-peak: 61	
No. of trains per hour	**Departing Hove** AM Peak: 9 Off-peak: 8 **Departing Barnham** AM Peak: 9 Off-peak: 9	**Departing Hove** AM Peak: 9 Off-peak: 8 **Departing Barnham** AM Peak: 9 Off-peak: 9	**Departing Hove** AM Peak: 9 Off-peak: 8 **Departing Barnham** AM Peak: 9 Off-peak: 9	

Current Freight Trains (paths per day)

Table 3.0				
	Current	**2019**	**2043**	**Notes**
Route section	Havant - Chichester			
Daily paths in one direction (as per WTT)	1	As per forecasts in the Freight Market Study		
* Figures are for freight trains in one direction only on an average weekday.				

Level crossings on route

Table 4.0			
Type	**Current No. of level crossings**	**2019 No. of level crossings**	**2043 No. of level crossings**
Supervised:	18	As determined by Level Crossing policy	
Automatic:	13		
User:	20		

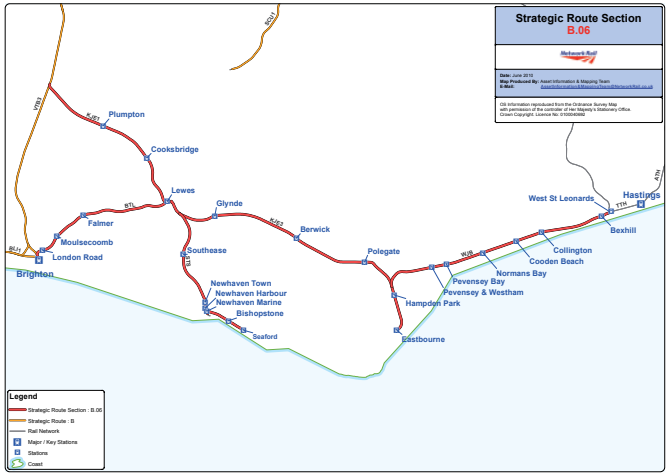
Proposed infrastructure investment in Control Period 5 (2014 – 2019)*

Table 5.0

Project	Project Description	ELR	Implementation Date	Output change	Funder	Notes	Status
Signalling recontrol to Three Bridges ROC	Arundel, Lancing interlocking recontrol	TBH1 TBH2 FLJ	2017/18	Centralised control of signalling activity			In development
Resignalling to Three Bridges ROC	Littlehampton and Bognor Regis signalling area resignalling	BLI2	2015/16	Centralised control of signalling activity			In development

* In addition to the proposed enhancement programme, this table includes other Network Rail funded schemes, renewals and third party schemes where applicable.
** The precise timing and scope of renewals will remain subject to review to enable us to meet our overall obligations as efficiently as possible, consistent with the reasonable requirements of operators and other stakeholders.

SRS B.06 Brighton/ Wivelsfield - Seaford/ Hastings



Route specification description

This Strategic Route Section (SRS) encompasses the whole of the East Coastway route within the Sussex Route area. The SRS is a two track railway throughout its length with spurs to Wivelsfield to allow direct services from the East Coastway to operate to/from London. A branch from east of Lewes also exists to serve Newhaven and Seaford.

The East Coastway route serves several major towns between Brighton and Hastings including Lewes and Eastbourne. This western end of the route supports a peak service into Brighton of around six trains per hour in the high peak between Lewes and Brighton (with services emanating from Eastbourne and Hastings plus the Seaford branch). In addition to this, direct London services operate from Hastings, Eastbourne and Seaford/Lewes. Finally, a through hourly Ashford – Brighton diesel operated service runs throughout the day.

Local services on the route are operated by Class 313 and 377 units, generally in 3- and 4-car formations. Through London services are operated by 12-car Class 377 or 10-car Class 442 formations. The Sussex RUS found that capacity provision was broadly adequate on the route although some targeted recommendations around lengthening of specific peak services were made.

Investment plans on the route are focused predominantly around renewing signalling assets and targeting associated journey time improvements.

Network Rail made substantial investment during late-CP4/ early-CP5 in resignalling the central part of the route (Glynde to Eastbourne/Bexhill) to Three Bridges ROC and is additionally funding, with Network Rail Discretionary Fund (NRDF), some associated linespeed improvements. In CP5 further investment in signalling renewal and re-control is expected to take place between Lewes and Seaford so that all signalling in this SRS is controlled from Three Bridges ROC.

Commercial freight traffic operates ash traffic from the refuse incinerator at Newhaven, operating to and from Acton/Brentford.

Passenger trains on this route are formed of Class 313s or 377s apart from the Brighton - Ashford 'Marshlink' services which are formed of 2-car Class 171 diesel units as electrification stops at Ore.

SRS B.06 Brighton/Wivelsfield - Seaford/ Hastings

Route capability overview

Table 1.0

Information	Current	2019	2043	Notes
Line of route description	SO620: Brighton to Seaford SO590: Keymer Jn to Eastbourne SO600: Willingdon Jn to Ashford (Kent)			
Section start	Brighton/Keymer Jn			
Section end	Seaford/Eastbourne/Bo-peep Jn			
Route availability	RA4,7,8	RA8	RA8	
Gauge	W8	W8	W8	
Signals	**Brighton/Keymer Jn - Southerham Jn/Southease and Eastbourne** Track Circuit Block **Southease - Newhaven Harbour and Southerham Jn - Hampden Park - Bo-peep Jn** Absolute Block **Newhaven Harbour - Seaford** One-train working	**Brighton/Keymer Jn - Eastbourne - Bo-peep Jn and Southease - Newhaven Harbour** Track circuit block **Newhaven Harbour - Seaford** One-train working	European Rail Traffic Management System (ERTMS)	
Speed **See Sectional Appendix for detailed speed profiles**	**Keymer Jn - Eastbourne** 90mph **Brighton - Seaford and Willingdon Jn - Hastings** 70mph	**Keymer Jn - Hastings** 90mph **Brighton - Seaford** 70mph	Raise linespeed to highest possible with ERTMS	

Passenger train service levels (trains per hour / day)

Table 2.0

	Current	2019	2043	Notes
Typical journey time (minutes)	**Seaford - Brighton** AM Peak: 33 Off-peak: 32 **Hastings - Lewes** AM Peak: 55 Off-peak: 53	**Seaford - Brighton** AM Peak: 32 Off-peak: 31 **Hastings - Lewes** AM Peak: 52 Off-peak: 51	**Seaford - Brighton** AM Peak: 32 Off-peak: 31 **Hastings - Lewes** AM Peak: 52 Off-peak: 51	Line speed improvements between Glynde and Hampden Park through resignalling have already been realised. Further line speed improvements between Hampden Park and Bexhill have been provided for by the resignalling scheme but further work is required before services can operate at the enhanced speed.
No. of trains per hour	**Departing Eastbourne** AM Peak: 4 Off-peak: 4 **Departing Lewes** AM Peak: 9 Off-peak: 7	**Departing Eastbourne** AM Peak: 4 Off-peak: 4 **Departing Lewes** AM Peak: 9 Off-peak: 7	**Departing Eastbourne** AM Peak: 4 Off-peak: 4 **Departing Lewes** AM Peak: 9 Off-peak: 7	

Current Freight Trains (paths per day)

Table 3.0				
	Current	**2019**	**2043**	**Notes**
Route section	Newhaven – Keymer Jn			
Daily paths in one direction (as per WTT)	1-2	As per forecasts in the Freight Market Study		
* Figures are for freight trains in one direction only on an average weekday.				

Level crossings on route

Table 4.0			
Type	**Current No. of level crossings**	**2019 No. of level crossings**	**2043 No. of level crossings**
Supervised:	12	As determined by Level Crossing policy	
Automatic:	7		
User:	22		

Proposed infrastructure investment in Control Period 5 (2014 – 2019)*

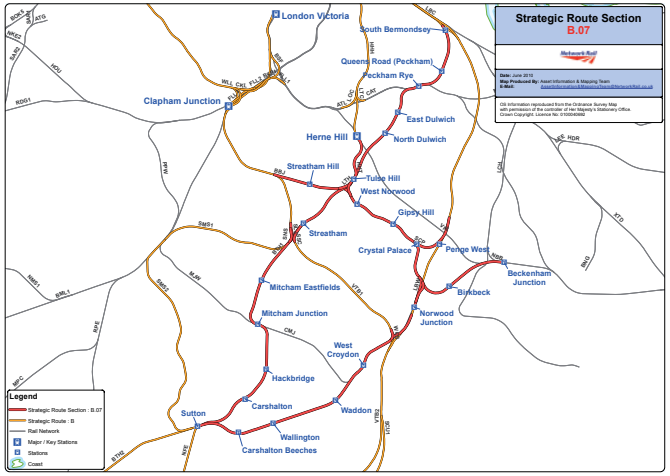
Table 5.0

Project	Project Description	ELR	Implementation Date	Output change	Funder	Notes	Status
Resignalling and recontrol to Three Bridges ROC	Berwick, Eastbourne, Hampden Park and Bexhill signal boxes interlocking recontrol	KJE3 WJB	2015	Centralised control of signalling activity		East Sussex Coast Resignalling Phase 1, carried over from CP4 due to resourcing issues	Completed
Resignalling and recontrol to Three Bridges ROC	Lewes, Newhaven Town and Newhaven Harbour signal boxes	KJE1 KJE2 BTL STS NHB	2015/16	Centralised control of signalling activity		East Sussex Coast Resignalling Phase 2	Under development
Resignalling and recontrol to Three Bridges ROC	Brighton, Haywards Heath interlockings, Lewes signal box	KJE1 KJE2 BTL	2018/19	Centralised control of signalling activity			Under development

* In addition to the proposed enhancement programme, this table includes other Network Rail funded schemes, renewals and third party schemes where applicable.
** The precise timing and scope of renewals will remain subject to review to enable us to meet our overall obligations as efficiently as possible, consistent with the reasonable requirements of operators and other stakeholders.

SRS B.07 South Central Inner Suburban

Geographic Map



Route specification description

The South Central Inner Suburban Strategic Route Section (SRS) covers the busy suburban network around south London. These are relatively densely populated areas which have no tube network and rely on the suburban railway.

The inner suburban routes feed into the Brighton Main Line (BML) slow lines at Balham and Selhurst (routes from Sutton via Hackbridge, Crystal Palace and Sutton via Wallington). In addition to these the suburban route from Streatham to London Bridge via Tulse Hill is included in this SRS.

All lines are double track and support a minimum peak service of four trains per hour to London Victoria or London Bridge. Off peak frequencies typically maintain close to the peak level of service.

Passenger demand on the suburban routes led to Network Rail extending platforms on the Sutton via Hackbridge, Crystal Palace via Streatham Hill and Sutton via Wallington routes, from 8- to 10-car which enabled longer trains to run from December 2013, a step change in peak capacity between the suburban network and central London.

Unfortunately because of major constraints at Tulse Hill (junctions and bridges at either end of the platforms), suburban services into London Bridge will remain at 8-car for the foreseeable future on that route, though the London and South East and South London RUS documents recommend two additional services on this route per hour during the peak by 2018/19 to meet demand. Long term timetable plans are being developed to accommodate this service level into London Bridge low level although the Sussex Route Study is examining the feasibility of 10-car operations as an alternative.

Trains are formed of Class 455 or 377 units and operated by Southern to London Victoria or London Bridge, however, Thameslink Class 319s, 377s & 387s run via Streatham or Crystal Palace to Tulse Hill and thence to London Blackfriars via Herne Hill until 2018 as the reconstruction of London Bridge progresses or from the Wimbledon Loop or via Hackbridge to London Blackfriars via Herne Hill.

Trains are operated by London Bridge, Victoria and Three Bridges ASCs, during CP5 & 6 this control will be transferred to Three Bridges ROC.

Route capability overview

Table 1.0				
Information	**Current**	**2019**	**2043**	**Notes**
Line of route description	SO510: London Bridge to Epsom Downs SO650: Balham to Beckenham Junction SO680: South Bermondsey Jn to Horsham			
Section start	South Bermondsey Jn/Herne Hill/Balham Jn/Penge West			
Section end	Beckenham Junction/Sutton Jn			
Route availability	RA4,8	RA4,8	RA4,8	
Gauge	W6, W8, W9	W6, W8, W9	W6, W8, W9	
Signals	Track circuit block	Track circuit block	European Rail Traffic Management System (ERTMS)	
Speed **See Sectional Appendix for detailed speed profiles**	60mph	60mph	Raise linespeed to highest possible with ERTMS	
Electrification	750V dc third rail throughout	750V dc third rail throughout	750V dc third rail or 25kV overhead	See Network RUS: Electrification

Passenger train service levels (trains per hour / day)

Table 2.0				
	Current	**2019**	**2043**	**Notes**
Typical journey time (minutes)	**Sutton – Herne Hill** AM Peak: 22 Off-peak: 23 **Beckenham Junction – South Bermondsey** AM Peak: 28 Off-peak: 28	**Sutton – Herne Hill** AM Peak: 22 Off-peak: 23 **Beckenham Junction – South Bermondsey** AM Peak: 28 Off-peak: 28	**Sutton – Herne Hill** AM Peak: 22 Off-peak: 23 **Beckenham Junction – South Bermondsey** AM Peak: 28 Off-peak: 28	
No. of trains per hour	**Departing Sutton** AM Peak: 13 Off-peak: 14 **Departing Tulse Hill** AM Peak: 11 Off-peak: 8 **Departing Crystal Palace** AM Peak: 14 Off-peak:12	**Departing Sutton** AM Peak: 13 Off-peak: 14 **Departing Tulse Hill** AM Peak: 10 Off-peak: 8 **Departing Crystal Palace** AM Peak: 14 Off-peak:12	**Departing Sutton** AM Peak: 13 Off-peak: 14 **Departing Tulse Hill** AM Peak: 10 Off-peak: 8 **Departing Crystal Palace** AM Peak: 14 Off-peak:12	

Current Freight Trains (paths per day)

Table 3.0				
	Current	2019	2043	Notes
Route section	East Croydon - Norwood Junction – Crystal Palace – Balham			
Daily paths in one direction (as per WTT)	2	As per forecasts in the Freight Market Study		
* Figures are for freight trains in one direction only on an average weekday.				

Level crossings on route

Table 4.0			
Type	Current No. of level crossings	2019 No. of level crossings	2043 No. of level crossings
Supervised:	1	As determined by Level Crossing policy	
Automatic:	0		
User:	1		

Proposed infrastructure investment in Control Period 5 (2014 – 2019)*

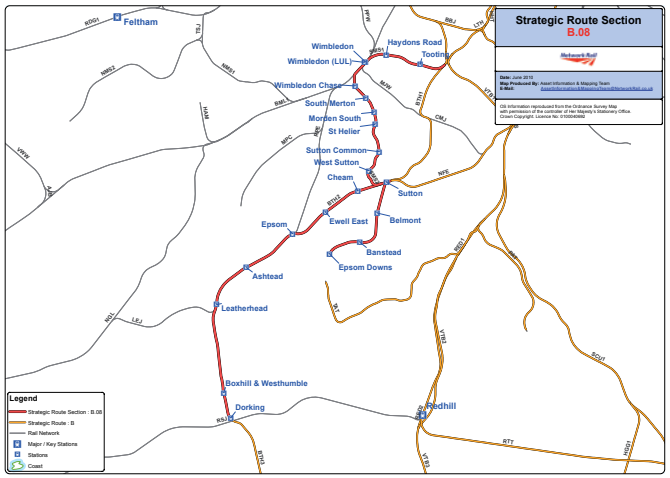
Table 5.0

Project	Project Description	ELR	Implementation Date	Output change	Funder	Notes	Status
Recontrol to Three Bridges ROC	Streatham, Sutton and Tulse Hill interlockings	BTH1 LTH WTH BBJ SCP NFE	2015/16-18/19	Centralised control of signalling activity			Under development

* In addition to the proposed enhancement programme, this table includes other Network Rail funded schemes, renewals and third party schemes where applicable.
** The precise timing and scope of renewals will remain subject to review to enable us to meet our overall obligations as efficiently as possible, consistent with the reasonable requirements of operators and other stakeholders.

SRS B.08 South Central Sutton Lines

Geographic Map



Route specification description

The South Central Sutton lines Strategic Route Section (SRS) covers the route commonly known as the Wimbledon Loop (the Sutton – Morden South – Wimbledon – Tooting – Streatham line), plus the outer suburban link between Dorking, Epsom and Sutton.

The Wimbledon Loop is a double track railway but supports only 2-3tph during most of the peak and off-peak periods meaning the route is unique amongst the suburban area – with all other routes enjoying at least 4tph. The Thameslink services are formed of 4- or 8-car Class 319s, although these trains will be replaced with 8-car Class 700 Thameslink trains by 2018. The peak only London Bridge services are operated by Southern and formed of 8-car Class 455 or 377 trains.

In addition to passenger traffic the route supports one or two freight services per day in each direction between Wimbledon and the Streatham area (stone and sand trains to/from Tolworth). Speeds are relatively low on the Loop due to the sharp curves and in particular, between Wimbledon and Sutton, the high number of intermediate stations.

Signalling improvements will be carried out in CP5 to break up the long signalling sections between Wimbledon and Sutton by installing new signals, this will improve capacity and performance on this line in times of perturbation.

Options for a station enhancement scheme at Wimbledon have been developed. The proposal is for a new London-end dispersal bridge. This will aid the large number of passengers travelling from the loop to interchange with the South West Trains suburban network. If the scheme, which is currently unfunded, goes ahead, instead of sharing a single exit staircase with all Tramlink passengers, a dispersal bridge will be available to access the Waterloo-bound platforms.

The Epsom Downs branch is predominantly single track and has a half-hourly service most of the day formed of 4 to 10-car Class 377/455 trains.

The main route to Epsom from Sutton continues through to Leatherhead, Dorking and Horsham. The Epsom - Leatherhead section is shared with South West Trains services. An unusual track layout at Epsom facilitates cross platform interchange between Southern and South West Trains services but is quite restrictive and inflexible operationally but is good for passengers interchanging between services to London Victoria and London Waterloo.

During CP4, platforms were lengthened at a number of locations along the line of route to allow for 10-car operation of Southern operated Dorking/Epsom to London Victoria service and South West Trains operated suburban services into Waterloo via Motspur Park/Raynes Park.

The Southern services are formed of Class 455 or 377 units as 4 to 10-car trains. South West Trains services are formed of mostly 8-car Class 455 trains, although 10-car operations are planned by the end of CP5.

From the east, trains are controlled from Victoria ASC as far as Ewell East. Wimbledon ASC, on Wessex Route, to Leatherhead and Dorking Signal Box to Dorking. In CP5, Victoria ASC and Dorking Signal Box will be recontrolled to Three Bridges ROC, whilst Wimbledon ASC will be taken over by Basingstoke ROC.

Route capability overview

Table 1.0				
Information	**Current**	**2019**	**2043**	**Notes**
Line of route description	SO510: London Bridge to Epsom Downs SO680: South Bermondsey Jn to Horsham SO700: Streatham South Jn to Sutton (via Wimbledon)			
Section start	Streatham South Jn/Sutton Jn			
Section end	Sutton/Epsom Downs/Dorking			
Route availability	RA4,8	RA4,8	RA4,8	
Gauge	W6, W8	W6, W8	W6, W8	
Signals	Track circuit block	Track circuit block	European Rail Traffic Management System (ERTMS)	
Speed **See Sectional Appendix for detailed speed profiles**	75mph	75mph	Raise linespeed to highest possible with ERTMS	
Electrification	750V dc third rail throughout	750V dc third rail throughout	750V dc third rail or 25kV overhead	See Network RUS: Electrification

Passenger train service levels (trains per hour / day)

Table 2.0				
	Current	**2019**	**2043**	**Notes**
Typical journey time (minutes)	**Sutton – Tooting** AM Peak: 23 Off-peak: 26 **Dorking – Sutton** AM Peak: 23 Off-peak: 23 **Epsom Downs – Sutton** AM Peak: 9 Off-peak: 9	**Sutton – Tooting** AM Peak: 23 Off-peak: 26 **Dorking – Sutton** AM Peak: 23 Off-peak: 23 **Epsom Downs – Sutton** AM Peak: 9 Off-peak: 9	**Sutton – Tooting** AM Peak: 23 Off-peak: 26 **Dorking – Sutton** AM Peak: 23 Off-peak: 23 **Epsom Downs – Sutton** AM Peak: 9 Off-peak: 9	
No. of trains per hour	**Departing Epsom** AM Peak: 13 Off-peak: 9 **Departing Wimbledon** AM Peak: 3 Off-peak: 2	**Departing Epsom** AM Peak: 13 Off-peak: 9 **Departing Wimbledon** AM Peak: 3 Off-peak: 2	**Departing Epsom** AM Peak: 13 Off-peak: 9 **Departing Wimbledon** AM Peak: 3 Off-peak: 2	

Current Freight Trains (paths per day)

Table 3.0				
	Current	2019	2043	Notes
Route section	Wimbledon - Tooting			
Daily paths in one direction (as per WTT)	1	As per forecasts in the Freight Market Study		
* Figures are for freight trains in one direction only on an average weekday.				

Level crossings on route

Table 4.0			
Type	Current No. of level crossings	2019 No. of level crossings	2043 No. of level crossings
Supervised:	1	As determined by Level Crossing policy	
Automatic:	0		
User:	2		

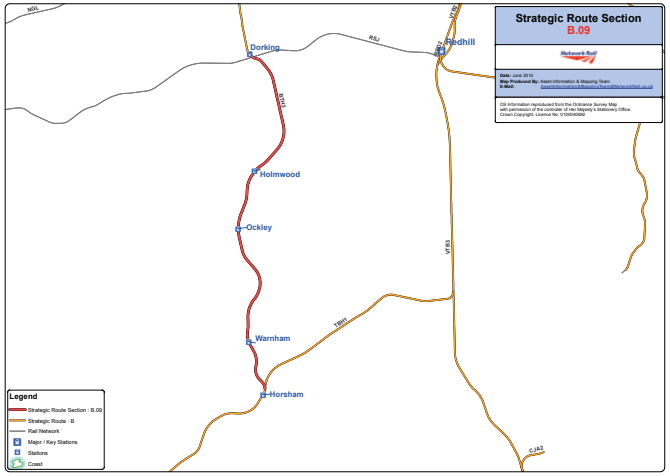
Proposed infrastructure investment in Control Period 5 (2014 – 2019)*

Table 5.0

Project	Project Description	ELR	Implementation Date	Output change	Funder	Notes	Status
National Operating Strategy (Three Bridges Rail Operating Centre)	Consolidation of all signalling and control activity into Three Bridges ROC (Victoria ASC and Dorking Signal Box)	BTH2 BTH3 SMS1 SMS2	2015/16	Centralised control of signalling activity		Additional signals at St Helier and Streatham	In development
National Operating Strategy (Basingstoke Rail Operating Centre)	Consolidation of all signalling and control activity into Basingstoke ROC (Ewell East to Leatherhead (Wimbledon ASC))	BTH2 BTH3	2018/19	Centralised control of signalling activity			In development

* In addition to the proposed enhancement programme, this table includes other Network Rail funded schemes, renewals and third party schemes where applicable.
** The precise timing and scope of renewals will remain subject to review to enable us to meet our overall obligations as efficiently as possible, consistent with the reasonable requirements of operators and other stakeholders.

SRS B.09 Dorking - Horsham



Route specification description

The Dorking – Horsham Strategic Route Section (SRS) covers a section of rural route. The line is double track throughout.

The line supports an hourly service between Horsham and London Victoria via Sutton and Balham, with two trains per hour operated during the peaks.

From December 2013, a small number of 10-car Class 377 trains operate on peak services replacing the previous eight-car Class 377 formations. Off-peak services are often formed of 4- or 8-car Class 455 trains.

Signalling on this SRS is controlled by Dorking Signal Box and Three Bridges ASC.

Route capability overview

Table 1.0				
Information	**Current**	**2019**	**2043**	**Notes**
Line of route description	SO680: South Bermondsey Jn to Horsham			
Section start	Horsham			
Section end	Dorking			
Route availability	RA4	RA4	RA4	
Gauge	W6	W6	W6	
Signals	Track circuit block	Track circuit block	European Rail Traffic Management System (ERTMS)	
Speed See Sectional Appendix for detailed speed profiles	75mph	90mph	Raise linespeed to highest possible with ERTMS	
Electrification	750V dc third rail throughout	750V dc third rail throughout	750V dc third rail or 25kV overhead	See Network RUS: Electrification

Passenger train service levels (trains per hour / day)

Table 2.0				
	Current	**2019**	**2043**	**Notes**
Typical journey time (minutes)	AM Peak: 20 Off-peak: 20	AM Peak: 20 Off-peak: 20	AM Peak: 20 Off-peak: 20	
No. of trains per hour	AM Peak: 2 Off-peak: 1	AM Peak: 2 Off-peak: 1	AM Peak: 2 Off-peak: 1	

Current Freight Trains (paths per day)

Table 3.0				
	Current	**2019**	**2043**	**Notes**
Route section				
Daily paths in one direction (as per WTT)	None	As per forecasts in the Freight Market Study		
* Figures are for freight trains in one direction only on an average weekday.				

Level crossings on route

Table 4.0			
Type	**Current No. of level crossings**	**2019 No. of level crossings**	**2043 No. of level crossings**
Supervised:	0	As determined by Level Crossing policy	
Automatic:	1		
User:	2		

Proposed infrastructure investment in Control Period 5 (2014 – 2019)*

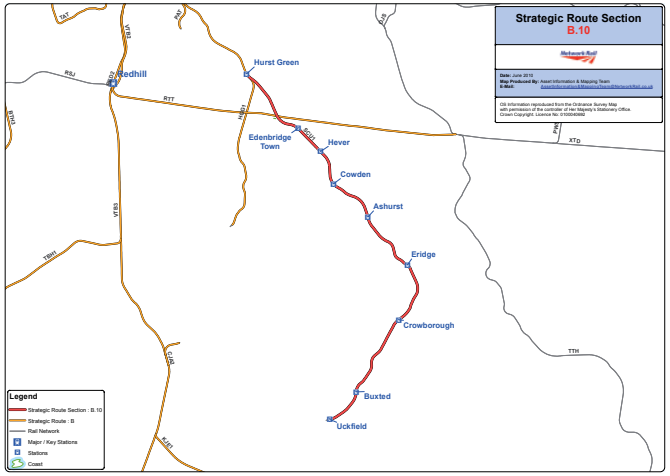
Table 5.0

Project	Project Description	ELR	Implementation Date	Output change	Funder	Notes	Status
National Operating Strategy (Three Bridges Rail Operating Centre)	Consolidation of all signalling and control activity into Three Bridges ROC (Three Bridges ASC and Dorking Signal Box)	BTH3	2018/19	Centralised control of signalling activity			In development

* In addition to the proposed enhancement programme, this table includes other Network Rail funded schemes, renewals and third party schemes where applicable.
** The precise timing and scope of renewals will remain subject to review to enable us to meet our overall obligations as efficiently as possible, consistent with the reasonable requirements of operators and other stakeholders.

SRS B.10 Hurst Green - Uckfield

Geographic Map



Route specification description

The Hurst Green – Uckfield Strategic Route Section (SRS) covers the non-electrified branch line section once the route has diverged from the East Grinstead line.

The route is a mix of single and double track railway, but is predominantly single track south of Hever save for a loop of just over two miles length in the Ashurst area.

The route enjoys a two trains per hour (tph) service during the peak to London Bridge with 1tph in the off-peak.

The key issue presently is overcrowding on the shorter length services that operate on the route during and close to the peak hours. As the route is operated by Class 171 diesel units, there is only a small fleet available to the TOC to deploy on the route. As a result some peak and shoulder peak services are not able to operate at the maximum length the route is capable of (8-car).

Electrification schemes in the North West will displace rolling stock to strengthen existing peak services to 8-car and eventually of 10-car operation during CP5, so associated platform lengthening is currently being developed, this will also be compatible with 12-car 20m vehicle trains.

Electrification is still an aspiration for this route or use of battery-powered trains (currently under development) if they are deemed successful.

Signalling is controlled by Oxted Signal Box but during CP5 this will be transferred to Three Bridges ROC.

Route capability overview

Table 1.0				
Information	**Current**	**2019**	**2043**	**Notes**
Line of route description	SO540: Hurst Green Jn to Uckfield			
Section start	Hurst Green Jn			
Section end	Uckfield			
Route availability	RA4,6	RA4,6	RA4,6	
Gauge	W6	W6	W6	
Signals	Track circuit block	Track circuit block	European Rail Traffic Management System (ERTMS)	
Speed See Sectional Appendix for detailed speed profiles	70mph	90mph	Raise linespeed to highest possible with ERTMS	
Electrification	None	None	None, 750V dc third rail or 25kV overhead	See Network RUS: Electrification

Passenger train service levels (trains per hour / day)

Table 2.0				
	Current	**2019**	**2043**	**Notes**
Typical journey time (minutes)	AM Peak: 38 Off-peak: 41	AM Peak: 37 Off-peak: 40	AM Peak: 37 Off-peak: 40	
No. of trains per hour	AM Peak: 2 Off-peak: 1	AM Peak: 2 Off-peak: 1	AM Peak: 2 Off-peak: 1	

Current Freight Trains (paths per day)

Table 3.0				
	Current	**2019**	**2043**	**Notes**
Route section				
Daily paths in one direction (as per WTT)	None	As per forecasts in the Freight Market Study		
* Figures are for freight trains in one direction only on an average weekday.				

Level crossings on route

Table 4.0			
Type	**Current No. of level crossings**	**2019 No. of level crossings**	**2043 No. of level crossings**
Supervised:	0	As determined by Level Crossing policy	
Automatic:	1		
User:	1		

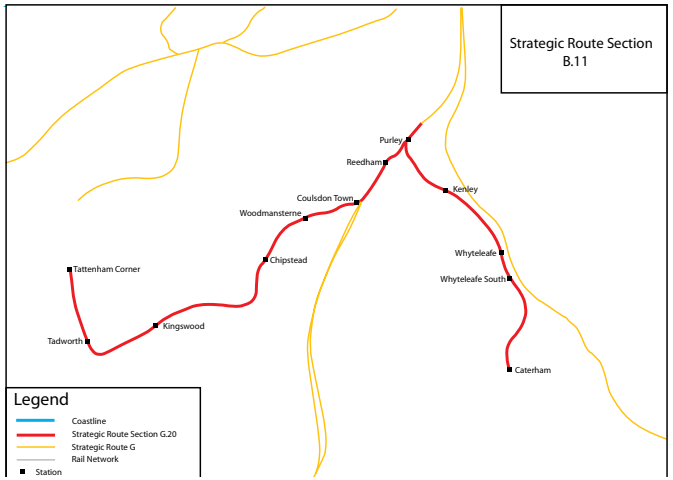
Proposed infrastructure investment in Control Period 5 (2014 – 2019)*

Table 5.0

Project	Project Description	ELR	Implementation Date	Output change	Funder	Notes	Status
National Operating Strategy (Three Bridges Rail Operating Centre)	Consolidation of all signalling and control activity into Three Bridges ROC (Oxted Signal Box)	SCU1	2018/19	Centralised control of signalling activity			In development
Uckfield Line Platform Extensions	Extension of platforms to 12-car 20m vehicle trains	SCU1	2017/18	Longer platforms for longer trains			In development

* In addition to the proposed enhancement programme, this table includes other Network Rail funded schemes, renewals and third party schemes where applicable.
** The precise timing and scope of renewals will remain subject to review to enable us to meet our overall obligations as efficiently as possible, consistent with the reasonable requirements of operators and other stakeholders.

SRS B.11 Tattenham Corner and Caterham Lines



Route specification description

The Tattenham Corner and Caterham Lines Strategic Route Section (SRS) covers two busy outer suburban branch lines emanating from the junction at Purley.

Both routes are served by trains to London Bridge and London Victoria and both routes see a 4tph service in the peak.

Presently around half of these services in the peak split and join with portions from the other branch at Purley. Train lengths have been improved, from December 2013, due to the lengthening of Platform 6 at Purley. This has enabled trains to be lengthened to 10-car between Purley and London.

These proposals will not impact on maximum train lengths on the branches themselves, where power supply constraints mean 10-car operation would require substantial upgrades. Stations on both branches have platforms of 5-8-car lengths.

Trains are operated by Southern and formed of 4 to 10-car Class 377 and 455 trains.

It is anticipated that some services to London Bridge will be replaced by Thameslink services in 2018, utilising the new 8-car Class 700 rolling stock.

Both routes are signalled from Three Bridges ASC, this will be transferred to Three Bridges ROC in CP5.

Route capability overview

Table 1.0				
Information	**Current**	**2019**	**2043**	**Notes**
Line of route description	SO660: Purley to Caterham and Tattenham Corner			
Section start	Purley			
Section end	Caterham/Tattenham Corner			
Route availability	RA8	RA8	RA8	
Gauge	W6	W6	W6	
Signals	Track circuit block	Track circuit block	European Rail Traffic Management System (ERTMS)	
Speed **See Sectional Appendix for detailed speed profiles**	60mph	60mph	Raise linespeed to highest possible with ERTMS	
Electrification	750V dc third rail throughout	750V dc third rail throughout	750V dc third rail or 25kV overhead	See Network RUS: Electrification

Passenger train service levels (trains per hour / day)

Table 2.0				
	Current	**2019**	**2043**	**Notes**
Typical journey time (minutes)	**Tattenham Corner – Purley** AM Peak: 23 Off-peak: 23 **Caterham – Purley** AM Peak: 12 Off-peak: 11	**Tattenham Corner – Purley** AM Peak: 23 Off-peak: 23 **Caterham – Purley** AM Peak: 12 Off-peak: 11	**Tattenham Corner – Purley** AM Peak: 23 Off-peak: 23 **Caterham – Purley** AM Peak: 12 Off-peak: 11	
No. of trains per hour	**Arrivals at Purley** AM Peak: 9 Off-peak: 7	**Arrivals at Purley** AM Peak: 9 Off-peak: 7	**Arrivals at Purley** AM Peak: 9 Off-peak: 7	

Current Freight Trains (paths per day)

Table 3.0				
	Current	**2019**	**2043**	**Notes**
Route section				
Daily paths in one direction (as per WTT)	None	As per forecasts in the Freight Market Study		
* Figures are for freight trains in one direction only on an average weekday.				

Level crossings on route

Table 4.0			
Type	**Current No. of level crossings**	**2019 No. of level crossings**	**2043 No. of level crossings**
Supervised:	2 - both on the Caterham Line	As determined by Level Crossing policy	
Automatic:	0		
User:	0		

Proposed infrastructure investment in Control Period 5 (2014 – 2019)*

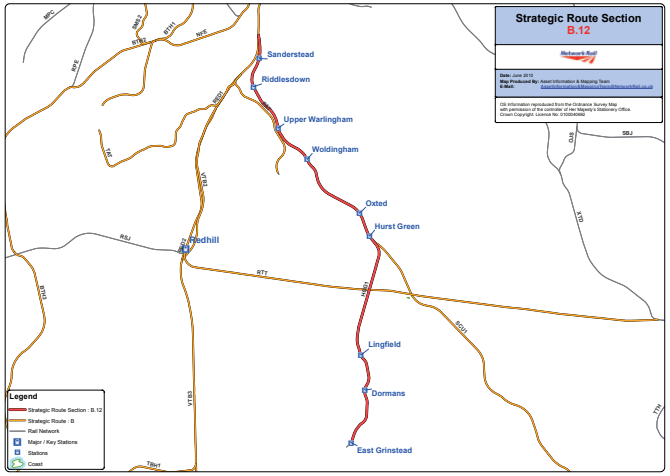
Table 5.0

Project	Project Description	ELR	Implementation Date	Output change	Funder	Notes	Status
National Operating Strategy (Three Bridges Rail Operating Centre)	Consolidation of all signalling and control activity into Three Bridges ROC (Three Bridges ASC)	TAT PAT	2018/19	Centralised control of signalling activity			In development

* In addition to the proposed enhancement programme, this table includes other Network Rail funded schemes, renewals and third party schemes where applicable.
** The precise timing and scope of renewals will remain subject to review to enable us to meet our overall obligations as efficiently as possible, consistent with the reasonable requirements of operators and other stakeholders.

SRS B.12 East Grinstead Line

Geographic Map



Route specification description

The East Grinstead line Strategic Route Section (SRS) covers the full length of the branch from South Croydon. The railway is double track throughout and serves a large number of rural and semi-rural towns south east of Croydon.

The route enjoys a four trains per hour (tph) service during the peak, split equally between London Bridge and London Victoria, with 2tph in the off-peak. Services run fast from/to London from East Croydon northwards.

Significant investment in this SRS has seen platform lengthening, power supply enhancements and track enhancements at East Grinstead in CP4 enabling 12-car Class 377 operations in the peak periods.

In 2018, services to London Bridge are likely to be replaced by Thameslink 12-car Class 700 trains.

Signalling is controlled from Three Bridges ASC as far as Upper Warlingham and then Oxted Signal Box for the rest of the SRS. In CP5, the whole line will be recontrolled to Three Bridges ROC.

Route capability overview

Table 1.0				
Information	**Current**	**2019**	**2043**	**Notes**
Line of route description	SO530: South Croydon to East Grinstead			
Section start	South Croydon Jn			
Section end	East Grinstead			
Route availability	RA4,6,8	RA4,6,8	RA4,6,8	
Gauge	W6	W6	W6	
Signals	Track circuit block	Track circuit block	European Rail Traffic Management System (ERTMS)	
Speed See Sectional Appendix for detailed speed profiles	85mph	90mph	Raise linespeed to highest possible with ERTMS	
Electrification	750V dc third rail throughout	750V dc third rail throughout	750V dc third rail or 25kV overhead	See Network RUS: Electrification

Passenger train service levels (trains per hour / day)

Table 2.0				
	Current	**2019**	**2043**	**Notes**
Typical journey time (minutes)	**East Grinstead - East Croydon** AM Peak: 37 Off-peak: 36	**East Grinstead - East Croydon** AM Peak: 37 Off-peak: 36	**East Grinstead - East Croydon** AM Peak: 37 Off-peak: 36	
No. of trains per hour	**Departing Oxted** AM Peak: 6 Off-peak: 3	**Departing Oxted** AM Peak: 6 Off-peak: 3	**Departing Oxted** AM Peak: 6 Off-peak: 3	

Current Freight Trains (paths per day)

Table 3.0				
	Current	**2019**	**2043**	**Notes**
Route section				
Daily paths in one direction (as per WTT)	None	As per forecasts in the Freight Market Study		
* Figures are for freight trains in one direction only on an average weekday.				

Level crossings on route

Table 4.0			
Type	**Current No. of level crossings**	**2019 No. of level crossings**	**2043 No. of level crossings**
Supervised:	0	As determined by Level Crossing policy	
Automatic:	0		
User:	2		

Proposed infrastructure investment in Control Period 5 (2014 – 2019)*

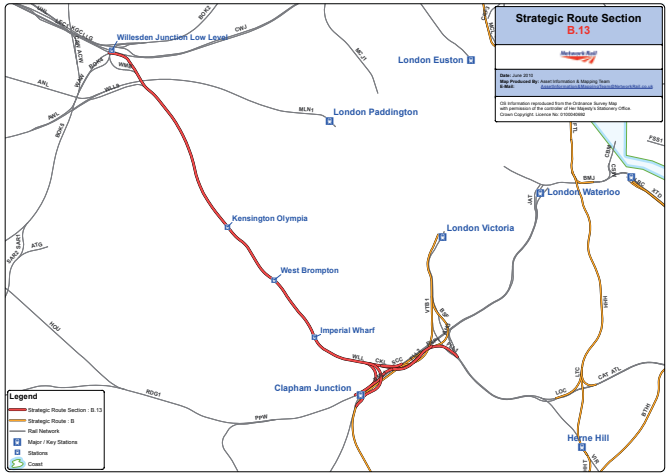
Table 5.0

Project	Project Description	ELR	Implementation Date	Output change	Funder	Notes	Status
National Operating Strategy (Three Bridges Rail Operating Centre)	Consolidation of all signalling and control activity into Three Bridges ROC (Three Bridges ASC)	SCU1 HGG1	2018/19	Centralised control of signalling activity			In development

* In addition to the proposed enhancement programme, this table includes other Network Rail funded schemes, renewals and third party schemes where applicable.
** The precise timing and scope of renewals will remain subject to review to enable us to meet our overall obligations as efficiently as possible, consistent with the reasonable requirements of operators and other stakeholders.

SRS B.13 West London Line

Geographic Map



Route specification description

The West London Line Strategic Route Section (SRS) covers the full length of the West London Line from Clapham Junction/Longhedge Junction to the West Coast Main Line/Willesden Junction High Level station. The railway is double track and bi-directionally signalled and serves several major urban traffic centres in West London, most notably West Brompton interchange with the London Underground network and the huge developments in the Shepherd's Bush area such as Westfield Shopping Centre.

The route today is served by a four trains per hour (tph) London Overground service between the North London Line and Clapham Junction (formed of 4- or 5-car Class 378 trains) and a 2/3tph peak and 1tph off-peak Southern service between Croydon (South or East)/Clapham Junction and Shepherds Bush/Watford Junction/ Milton Keynes (formed of 8-car Class 377 or 455 units).

The route experienced impressive growth in passenger loadings throughout the 2000s, but the opening of two new stations on the line in 2008/09 (in particular Shepherd's Bush) has lead to a period of particularly rapid growth. London Overground's service pattern has improved to help meet this challenge, but trains (in particular Southern's services) remain extremely overcrowded.

Network Rail delivered a platform lengthing scheme in summer 2014 that enables 8-car Southern services on the route and relieve the worst overcrowding in the peak. This will also enable London Overground to operate 5-car Class 378 trains as soon as the rolling stock is ready.

The AC/DC change over point in the Mitre Bridge Junction area currently adds significant time to trains, although London Overground and DB Schenker now changeover on the move, Southern's rolling stock is unable to do this.

Large scale maintenance work on Chelsea River Bridge is currently being delivered for early-CP5 completion and options are being assessed to raise linespeed over the bridge and in the approach areas.

The entire SRS is currently controlled by Victoria ASC but this will be transferred to Three Bridges ROC by the end of CP5.

Route capability overview

Table 1.0				
Information	**Current**	**2019**	**2043**	**Notes**
Line of route description	SO250: Battersea Pier to Wembley			
Section start	Factory Jn/Clapham Junction			
Section end	Mitre Bridge Jn/ Willesden Junction High Level			
Route availability	RA8	RA8	RA8	
Gauge	W6, W8, W9	W6, W8, W9	W6, W8, W9, W10, W12	
Signals	Track circuit block	Track circuit block	European Rail Traffic Management System (ERTMS)	
Speed See Sectional Appendix for detailed speed profiles	60mph	60mph	Raise linespeed to highest possible with ERTMS	
Electrification	**Willesden Junction – North Pole** 25kV ac overhead with some additional 750V dc third rail dual power for changeover on the move **North Pole – Factory Jn/ Clapham Junction** 750V dc third rail	**Willesden Junction – North Pole** 25kV ac overhead with some additional 750V dc third rail dual power for changeover on the move **North Pole – Factory Jn/Clapham Junction** 750V dc third rail	**Willesden Junction – North Pole** 25kV ac overhead with some additional 750V dc third rail dual power for changeover on the move **North Pole – Factory Jn/Clapham Junction** 750V dc third rail or 25kV ac overhead	See Network RUS: Electrification

Passenger train service levels (trains per hour / day)

Table 2.0				
	Current	**2019**	**2043**	**Notes**
Typical journey time (minutes)	**Clapham Junction - Willesden Junction High Level** Peak: 20 Off-peak: 20	**Clapham Junction - Willesden Junction High Level** Peak: 20 Off-peak: 20	**Clapham Junction - Willesden Junction High Level** Peak: 20 Off-peak: 20	Off-peak stopping services are provided by London Overground East London Line services, some fast trains call at New Cross Gate for connections
No. of trains per hour	**At Shepherd's Bush** **Peak: 6** **Off-peak: 5**	**At Shepherd's Bush** **Peak: 6** **Off-peak: 5**	**At Shepherd's Bush** **Peak: 6** **Off-peak: 5**	Thameslink Programme will enable an additional 4tph to run through London Bridge from East Croydon

Current Freight Trains (paths per day)

Table 3.0				
	Current	2019	2043	Notes
Route section	Factory Jn/Clapham Junction – Mitre Bridge Jn			
Daily paths in one direction (as per WTT)	30	As per forecasts in the Freight Market Study		
* Figures are for freight trains in one direction only on an average weekday.				

Level crossings on route

There are no level crossings on this section of route.

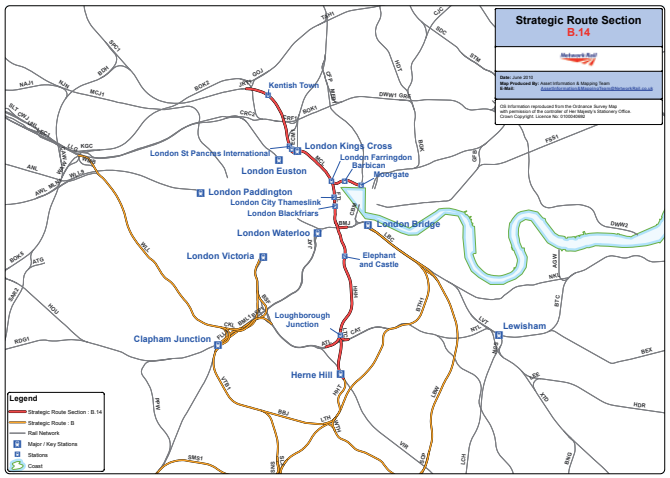
Proposed infrastructure investment in Control Period 5 (2014 – 2019)*

Table 5.0

Project	Project Description	ELR	Implementation Date	Output change	Funder	Notes	Status
National Operating Strategy (Three Bridges Rail Operating Centre)	Consolidation of all signalling and control activity into Three Bridges ROC (Victoria ASC)	WLL CKL SCC FLL2 FLL1	2018/19	Centralised control of signalling activity			In development
8-car Southern West London Line services	Platform extensions, for 8-car trains to ease overcrowding, at Clapham Junction, Imperial Wharf, West Brompton and Shepherd's Bush	WLL	2014/15	Longer platforms for longer trains	NRDF and Third Party	Accelerated CP5 scheme	Under construction

* In addition to the proposed enhancement programme, this table includes other Network Rail funded schemes, renewals and third party schemes where applicable.
** The precise timing and scope of renewals will remain subject to review to enable us to meet our overall obligations as efficiently as possible, consistent with the reasonable requirements of operators and other stakeholders.

SRS B.14 Thameslink Routes



Route specification description

This Strategic Route Section (SRS) covers the central core of the Thameslink route, from Tulse Hill through Elephant and Castle, Loughborough Junction, Blackfriars and Farringdon to Kentish Town.

The route is double track from Tulse Hill to Loughborough Junction, with a four track section from Loughborough Junction to Blackfriars where the route returns to two tracks for the lengthy underground/ sub-surface sections in central London.

The route from London Bridge High Level connects at Blackfriars Junction.

This SRS is a key component of the Thameslink Programme and CP5 will be a very challenging time for users of these routes as the route via London Bridge will be closed to these services for significant periods of time.

The Key Output 1 (KO1) phase of the scheme has seen platforms in the core section made capable for 12-car operation (from previous 8-car constraint). These trains are currently formed of Class 319 , 377 or 387 units.

The KO2 phase of the project sees major capacity enhancement works in the London Bridge area which will result in 24tph operating through the central section of this SRS (north of Blackfriars Junction) by 2018. The present frequency is 16tph. To enable this to work, automatic train operations will be introduced and requires the new Class 700 rolling stock, currently on order.

For the Sussex routes feeding into the Thameslink Core, the Thameslink Programme is a direct response to overcrowding on Brighton to Thameslink Core services presently during the peak. The London and South East RUS predicts over 80% growth by 2031 in demand for BML to London Bridge and Thameslink core services. This is against the backdrop of already overcrowded peak services.

The Thameslink Programme addresses this challenge in two phases: firstly, lengthening of platforms on the SRS to allow 12-car instead of 8-car peak services to operate, secondly, by delivering the capacity works at London Bridge in CP4 and CP5 to allow 4tph from Brighton to London Bridge and the Thameslink Core during the peak.

The SRS is currently controlled by Victoria ASC to City Thameslink with the remainder controlled by West Hampstead Power Signal Box, as part of the Thameslink Programme the whole SRS will be controlled by Three Bridges ROC and incorporates Automatic Train Operations to enable high frequency services through the core section.

Route capability overview

Table 1.0				
Information	**Current**	**2019**	**2043**	**Notes**
Line of route description	LN3213: Farringdon to Kentish Town SO280: Farringdon to Herne Hil			
Section start	Herne Hill			
Section end	Kentish Town			
Route availability	RA4, RA5, RA7, RA8	RA4, RA5, RA7, RA8	RA4, RA5, RA7, RA8	
Gauge	W6	W6	W6	
Signals	Track circuit block	Track circuit block	European Rail Traffic Management System (ERTMS)	Automatic Train Operation (ATO) will be introduced between Blackfriars/London Bridge and Kentish Town in 2018
Speed **See Sectional Appendix for detailed speed profiles**	60mph	60mph	Raise linespeed to highest possible with ERTMS and ATO	
Electrification	**Herne Hill – Farringdon** 750V dc third rail throughout **Farringdon – Kentish Town** 25kV ac overhead throughout (dual power systems City Thameslink to Farringdon for changeover)	**Herne Hill – Farringdon** 750V dc third rail throughout **Farringdon – Kentish Town** 25kV ac overhead throughout (dual power systems City Thameslink to Farringdon for changeover)	**Herne Hill – Farringdon** 750V dc third rail throughout **Farringdon – Kentish Town** 25kV ac overhead throughout (dual power systems City Thameslink to Farringdon for changeover if DC is still in use south of City Thameslink)	See Network RUS: Electrification

Passenger train service levels (trains per hour / day)

Table 2.0				
	Current	**2019**	**2043**	**Notes**
Typical journey time (minutes)	**Herne Hill – Kentish Town** AM Peak: 28 Off-peak: 26	**Herne Hill – Kentish Town** AM Peak: 28 Off-peak: 26	**Herne Hill – Kentish Town** AM Peak: 28 Off-peak: 26	
No. of trains per hour	**Blackfriars - St Pancras International** AM Peak: 14 Off-peak: 11	**Blackfriars - St Pancras International** AM Peak: 24 Off-peak: 14-18	**Blackfriars - St Pancras International** AM Peak: 24 Off-peak: 18	The future year service projections are estimates only and in some cases dependent on infrastructure investment or performance modelling

Current Freight Trains (paths per day)

Table 3.0				
	Current	2019	2043	Notes
Route section				
Daily paths in one direction (as per WTT)	None	As per forecasts in the Freight Market Study		
* Figures are for freight trains in one direction only on an average weekday.				

Level crossings on route

There are no level crossings on this section of route.

Proposed infrastructure investment in Control Period 5 (2014 – 2019)*

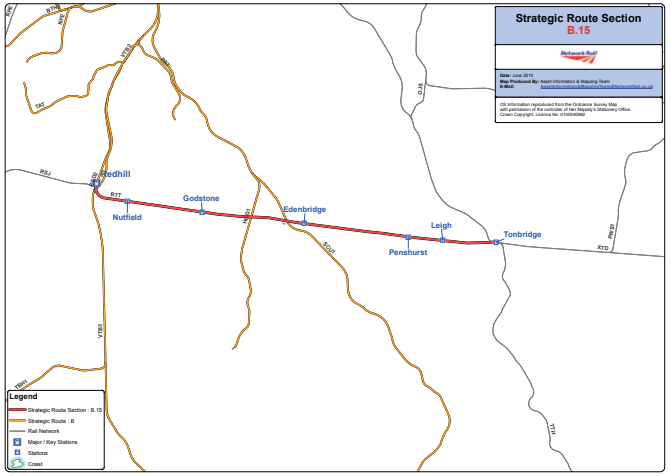
Table 5.0

Project	Project Description	ELR	Implementation Date	Output change	Funder	Notes	Status
Thameslink Programme: Key Output 2	Infrastructure works to enable automatic train operation through the Thameslink Core (Blackfriars to St Pancras International)	FTL HHH	2018	24 tph in the high peak hour			Under construction

* In addition to the proposed enhancement programme, this table includes other Network Rail funded schemes, renewals and third party schemes where applicable.
** The precise timing and scope of renewals will remain subject to review to enable us to meet our overall obligations as efficiently as possible, consistent with the reasonable requirements of operators and other stakeholders.

SRS B.15 Redhill - Tonbridge

Geographic Map



Route specification description

This Strategic Route Section covers the relatively rural link line between the Kent Area at Tonbridge and the slow lines of the Brighton Main Line (BML) on the Sussex Area at Redhill (B.02).

The route serves five small to medium sized towns, the middle station, Edenbridge, also enjoying a service to London via the Uckfield line from Edenbridge Town station.

Services on the route are hourly in the off peak to/from London Bridge. During the peak a broadly hourly service remains to/from London Bridge but a shuttle service also operates in some hours between Redhill and Tonbridge only.

Trains are operated by Southern using 4-car Class 377 trains.

The London services in the peak are maintained via splitting and joining operations at Redhill. These operations take up scarce platform resource at Redhill and Network Rail is constructing, in CP5, an additional platform at Redhill to improve performance and allow a number of other beneficial changes to the main line and North Downs line timetable.

The additional platform with be on the far side of Redhill station from the Tonbridge junction side. Options for a bay platform on the Tonbridge side have been reviewed and rejected on the basis of cost and likely output.

As well as supporting the regular passenger service, the route sees up to seven freight trains per day in each direction presently - when diversions from the main Channel Tunnel Freight route through Kent are on (usually on weekday nights and weekends). In addition to this traffic some Purley – Cliffe aggregate services operate via the route.

It remains an aspiration of the freight operators to be able to operate Channel Tunnel diversions with Class 92 locomotives but this requires the wholesale replacement of signalling equipment on this line, however, the situation will be reviewed for resignalling or recontrol of the line to Three Bridges ROC.

Signalling is controlled by Three Bridges ASC as far as Godstone with Ashford Integrated Electrical Control Centre (IECC) beyond.

Route capability overview

Table 1.0				
Information	**Current**	**2019**	**2043**	**Notes**
Line of route description	SO550: Redhill to Tonbridge			
Section start	Redhill			
Section end	Tonbridge West Jn			
Route availability	RA8	RA8	RA8	
Gauge	W8	W8	W8	
Signals	Track circuit block	Track circuit block	European Rail Traffic Management System (ERTMS)	
Speed See Sectional Appendix for detailed speed profiles	85mph	90mph	Raise linespeed to highest possible with ERTMS	
Electrification	750V dc third rail throughout	750V dc third rail throughout	750V dc third rail or 25kV overhead	See Network RUS: Electrification

Passenger train service levels (trains per hour / day)

Table 2.0				
	Current	**2019**	**2043**	**Notes**
Typical journey time (minutes)	**Tonbridge – Redhill** All day: 31	**Tonbridge – Redhill** All day: 31	**Tonbridge – Redhill** All day: 31	
No. of trains per hour	AM Peak: 2 Off-peak: 1	AM Peak: 2 Off-peak: 1	AM Peak: 2 Off-peak: 1	

Current Freight Trains (paths per day)

Table 3.0				
	Current	**2019**	**2043**	**Notes**
Route section	Tonbridge - Redhill			
Daily paths in one direction (as per WTT)	7	As per forecasts in the Freight Market Study		
* Figures are for freight trains in one direction only on an average weekday.				

Level crossings on route

Table 4.0			
Type	**Current No. of level crossings**	**2019 No. of level crossings**	**2043 No. of level crossings**
Supervised:	0	As determined by Level Crossing policy	
Automatic:	1		
User:	1		

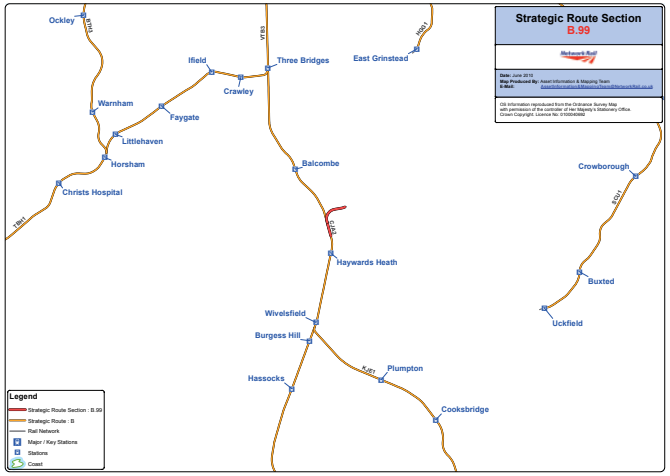
Proposed infrastructure investment in Control Period 5 (2014 – 2019)*

Table 5.0

Project	Project Description	ELR	Implementation Date	Output change	Funder	Notes	Status
New platform at Redhill	Provision of an additional platform (Platform 0)	RED2	2017/18	Improved performance and enhanced capacity			In development

* In addition to the proposed enhancement programme, this table includes other Network Rail funded schemes, renewals and third party schemes where applicable.
** The precise timing and scope of renewals will remain subject to review to enable us to meet our overall obligations as efficiently as possible, consistent with the reasonable requirements of operators and other stakeholders.

SRS B.99 Other Freight Lines



Route specification description

This Strategic Route Section (SRS) covers freight only routes in the Sussex Area. Given that the Route has the lowest volume of freight traffic of all the routes nationally it is perhaps not surprising that there are only a few route miles of freight only infrastructure on the Route.

The first section is the freight only, approximately one mile long, branch from Haywards Heath to Ardingly. This branch conveys loaded stone trains from the Mendips for unloading and distribution from Ardingly stone terminal.

Up to one train per day operates via the West London Line and the Brighton Main Line to this site.

The only other freight only infrastructure on Sussex Area is the Latchmere No 1 Junction to Longhedge Junction section of line means this route section is also now freight only. This section is the link between the South London line and the West London line and is heavily used by many types of freight train including Channel Tunnel and deep sea container traffic 24 hours a day. Much of this traffic is heading to and from the WCML.

Route capability overview

Table 1.0				
Information	**Current**	**2019**	**2043**	**Notes**
Line of route description	SO500: Victoria to Brighton			
Section start	Haywards Heath			
Section end	Ardingly Sidings			
Route availability	RA8	RA8	RA8	
Gauge	W6	W6	W6	
Signals	One train working	One train working	One train working	
Speed See Sectional Appendix for detailed speed profiles	20mph	20mph	Raise linespeed to highest possible with ERTMS	
Electrification	None	None	None	See Network RUS: Electrification

Passenger train service levels (trains per hour / day)

Table 2.0				
	Current	**2019**	**2043**	**Notes**
Typical journey time (minutes)				
No. of trains per hour	None	None	None	

Current Freight Trains (paths per day)

Table 3.0				
	Current	2019	2043	Notes
Route section	Haywards Heath – Ardingly Sidings			
Daily paths in one direction (as per WTT)	1	As per forecasts in the Freight Market Study		
* Figures are for freight trains in one direction only on an average weekday.				

Level crossings on route

There are no level crossings on this section of route.

Proposed infrastructure investment in Control Period 5 (2014 – 2019)*

Table 5.0							
Project	**Project Description**	**ELR**	**Implementation Date**	**Output change**	**Funder**	**Notes**	**Status**
No schemes are currently planned for Control Period 5							

* In addition to the proposed enhancement programme, this table includes other Network Rail funded schemes, renewals and third party schemes where applicable.
** The precise timing and scope of renewals will remain subject to review to enable us to meet our overall obligations as efficiently as possible, consistent with the reasonable requirements of operators and other stakeholders.

Glossary

Term	Meaning
25kV ac	25,000 Volts alternating current electricity power supply using overhead line equipment. Widely used on the rest of the network
750V dc	750 Volts direct current electricity power supply by top contact, side third rail. Widely used in London and the South East
ASC	Area Signalling Centre
ATO	Automatic Train Operation, being developed for high intensity operation of the Thameslink Core
BML	Brighton Main Line
Class 158	British Rail Engineering Limited (BREL) built (1989-92) diesel multiple units 2- or 3-car, 23m-long vehicles. Operated by First Great Western on West Country to Brighton services
Class 165	British Rail Engineering Limited (BREL) built (1992) diesel multiple units 2- or 3-car, 23m-long vehicles. Operated by First Great Western on Reading to Gatwick Airport/Redhill services
Class 166	ABB built (1992-93) diesel multiple units 2- or 3-car, 23m-long vehicles. Operated by First Great Western on Reading to Gatwick Airport/Redhill services
Class 171	Bombardier built (2003-05) Turbostar diesel multiple units formed of two or four 23m-long vehicles. Exclusively used by Southern
Class 313	British Rail Engineering Limited (BREL) built (1976-77) electric multiple units 3-car, 20m-long vehicles, powered by 750V dc third rail or 25kV ac overhead. Used by Southern on East and West Coastway services
Class 319	British Rail Engineering Limited (BREL) built (1987-90) electric multiple units 4-car, 20m-long vehicles, powered by 750V dc third rail or 25kV ac overhead. Used by First Capital Connect on Thameslink services
Class 377	Bombardier built (2002 onwards) electric multiple units formed of three, four or five 20m-long vehicles powered by 750V dc third rail or 25kV ac overhead (where fitted). Widely used by Southern and First Capital Connect TOCs
Class 378	Bombardier built (2008-11) Capitalstar electric multiple units formed of four 20m-long vehicles powered by 750V dc third rail or 25kV ac overhead (where fitted). Exclusively operated by London Overground
Class 442	British Rail Engineering Limited (BREL) built (1988-89) electric multiple units 5-car, 23m-long vehicles, powered by 750V dc third rail. Used by Southern on Gatwick Express and other express services
Class 455	British Rail Engineering Limited (BREL) built (1982-84) electric multiple units 4-car, 20m-long vehicles, powered by 750V dc third rail. Used by Southern on South London Metro services
Class 700	New Thameslink rolling stock to be built by Siemens for Key Output 2, they will be based at Cricklewood and Redhill Thameslink Depots and formed of 8-/12-car electric multiple units, powered by 750V dc third rail or 25kV ac overhead. They will be used on cross-London Thameslink services
Class 92	Brush Traction built (1993-96) electric locomotives, powered by 750V dc third rail or 25kV ac overhead. Used for international and domestic freight services such as those from Wembley to the Channel Tunnel. Operated by DB Schenker and GB Railfreight (GBRf)
CP4	Control Period 4 (2009-2014)
CP5	Control Period 5 (2014-2019)
CP6	Control Period 6 (2019-24)

Glossary

Term	Meaning
Down line	Usually the line away from London, on the East and West Coastways this is also away from Brighton
EK2	East Kent Resignalling Phase 2
ELL	East London Line
ELR	Engineers Line Reference, three letter code designating the line of route
ERTMS	European Rail Traffic Management System
Fast line	Predominantly used by trains with limited stops on the line
FGW	First Great Western, train operating company
FOC	Freight Operating Company
GRIP	Governance for Railway Investment Projects
GTR	Govia Thameslink Railway, train operating company
HS1	High Speed 1 - the high speed line between London St Pancras International and the Channel Tunnel
HS2	Proposed high speed line between London and Birmingham and beyond to Leeds and Manchester
IECC	Integrated Electronic Control Centre
Jn	Junction
Key Output 1	Thameslink Programme's second phase which extended platforms for 12-car operations and rebuilt Blackfriars station
Key Output 2	Thameslink Programme's final phase which will result in 24tph through the Thameslink Core
LTPP	Long Term Planning Process
MPH	Miles Per Hour
NRDF	Network Rail Discretionary Fund
ORR	Office of Rail Regulation (the regulator for the rail industry in Great Britain)
RA	Route Availability
ROC	Rail Operations Centre
RUS	Route Utilisation Strategy
S&C	Switch & Crossing
Slow line	Predominantly used by trains serving stations on the line
SRS	Strategic Route Section
TfL	Transport for London
Thameslink	Services linking destinations in the south, such as Brighton, and those north of London, such as Luton
Thameslink Core	The line and stations between London Blackfriars and Kentish Town
Thameslink Programme	The project team responsible for upgrading the Thameslink Routes

Glossary

Term	Meaning
TOC	Train Operating Company
TPH	Trains Per Hour
Up line	Usually the line towards London, on the East and West Coastways this is also in the direction of Brighton
WCML	West Coast Main Line
WTT	Working Timetable, detailed timetable used by rail industry staff
Up line	Usually the line towards London, on the East and West Coastways this is also in the direction of Brighton
WCML	West Coast Main Line
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