

Route Plans 2007
Route 1
Kent

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Route 1 Kent

1 1

Today's route

The principal elements of the Kent route are described below. The relevant Strategic Route Section is shown in brackets:

- the main line from Victoria/Blackfriars to Swanley (01.01) (two tracks via Herne Hill and two via Catford), where this splits into separate lines to Ramsgate (via Medway (01.10)) and Ashford (via Maidstone East (01.06)), with a connection via Bat and Ball to Sevenoaks (01.02);
- the main line from Cannon Street/Charing Cross to Tonbridge (01.03, 01.04, 01.05), where this splits into separate lines to Hastings (01.07) and Ashford (01.17);
- suburban lines into Victoria/Blackfriars (01.01) via Herne Hill, Catford and Lewisham (via Nunhead). These share tracks with main line services;
- suburban lines into Cannon Street/Charing Cross. Suburban services are mainly routed through Lewisham (01.08), which has lines to Hayes, Dartford (via Woolwich), Dartford (via Bexleyheath) and Dartford (via Sidcup). At Dartford these lines merge and continue on to join the main Medway line near Rochester (01.10);
- lines east of Ashford to Ramsgate (via Dover) and Ramsgate (via Canterbury West), and the Faversham to Dover line (01.14);
- connections to Waterloo International and section 1 of High Speed One;
- freight only lines to the Isle of Grain, Angerstein Wharf and Dungeness (01.16);
- the Redhill to Tonbridge line (01.11);
- the Community Rail lines to Sheerness-on-Sea (01.12), the Medway Valley line (01.13) and Hastings to Ashford line (01.15); and
- the branch line to Bromley North (01.09).

Route context

The Kent route is made up of a network of lines linking London (both the West End and City) with several different areas along the Kent and East Sussex coast. It includes the new high speed line to the Channel Tunnel, the final section of which is scheduled for opening in 2007.

It also provides an extensive suburban overground network throughout much of South East London, providing frequent metro services to a large part of the capital which is not served by the underground.

There are significant overcrowding issues on both main line and suburban services. The extra capacity available upon completion of the new high speed line will provide opportunities both to help address this and to reduce certain journey times.

In 2005 the Department for Transport awarded the Integrated Kent Franchise (IKF) to Govia.

This franchise includes a major timetable recast, coinciding with new domestic services on the high speed line, now known as High Speed One, from 2009.

The Department for Transport's South East Regional Planning Assessment (RPA), which defines the long term planning structure for the area, was published in January 2007.

The South London Route Utilisation Strategy (RUS) commenced in June 2006, and we will commence work on the Kent RUS in summer 2007. These will provide a detailed strategy for future development of the Kent route.

Passenger and freight demand

Passenger demand predominates throughout the major areas of the Kent network. The principal feature is commuter flows to central London from the major population centres, leading to widespread peak period overcrowding. Services generally compete with the road network, especially the main A2/M2, A20/M20 and A21 routes, all of which suffer from high levels of congestion.

A significant portion of demand is for the sizeable short distance commuting flows on main line services to London from stations such as Lewisham, Dartford, Orpington, Sevenoaks and Bromley South.

Demand for non-London services is focussed on the major towns, including the Medway Towns, Maidstone, Ashford, Canterbury, Tunbridge Wells and Hastings. There is also moderate demand to the large Bluewater shopping centre via Greenhithe.

Many of the current travel patterns require passengers to interchange onto other rail, underground, Docklands Light Railway (DLR) or bus routes to complete their journey. Many of these also have limited capacity, currently suppressing journeys on certain routes. Key interchanges are Victoria (Victoria and District/Circle lines), London Bridge (Jubilee, Northern lines, Southern and First Capital Connect), Charing Cross (Bakerloo and Northern lines), Waterloo East (South West Trains, Eurostar and Jubilee line), Lewisham (DLR) and Greenwich (DLR).

Volumes of Channel Tunnel freight remain at a level significantly below the allocation of paths that are reserved for this purpose. Freight services from other locations are generally showing some modest growth, particularly in aggregates. Aggregate termini at Battersea/Stewarts Lane and Angerstein serve the market for central London construction materials, in addition to there being a number of terminals in Kent. Ports and heavy industry in the Thames/Medway corridors are the other main generators of freight demand.

Current services

The main operator on the Kent route is Southeastern. Passenger services are also operated on the route by First Capital Connect, Eurostar and Southern Railway. Freight services are operated by English Welsh and Scottish Railway, Freightliner, GB Railfreight, Fastline Freight and Direct Rail Services.

The passenger service structure is complicated by the complexity of the network, the different stopping patterns and the existence of several London termini. The main lines via Swanley and Orpington can, to some extent, be considered separately though there are linkages between them:

- main line services via Swanley generally run to Victoria (via Herne Hill), though there are some limited services into Blackfriars, Cannon Street and Charing Cross;
- suburban services via Herne Hill generally run from Orpington to Victoria;
- suburban services via Catford generally run from Sevenoaks (via Swanley) to Blackfriars;
- main line services via Orpington all run to a mixture of Charing Cross and Cannon Street;
- suburban services via Lewisham mostly run to a mixture of Charing Cross and Cannon Street, though there is also a limited service to Victoria via Nunhead; and
- suburban services via Greenwich generally run to a mixture of Charing Cross and Cannon Street.

Figure 1 Chatham Lines – current train service level (trains per hour)

| Station | Victoria | Blackfriars | Cannon St or Charing Cross |
|-----------------------------------|-------------------|--------------------|----------------------------|
| Chatham | | 4 peak/2 off peak | Not Applicable |
| Maidstone East | | 21 peak/0 off peak | 0 peak/1 off peak |
| Sevenoaks (via Swanley) | Not Applicable | 3 peak/2 off peak | Not Applicable |
| Bromley South | 9 peak/6 off peak | 7 peak/2 off peak | Not Applicable |
| Herne Hill (excluding Thameslink) | 5 peak/3 off peak | 2 peak/0 off peak | Not Applicable |
| Catford | Not Applicable | 4 peak/2 off peak | Not Applicable |

Figure 2 Tonbridge/Dartford Lines – current train service level (trains per hour)

| Station | Charing Cross | Cannon Street | Victoria |
|---------------------------|-------------------|-------------------|----------------|
| Ashford (via Tonbridge) | 2 | 3 peak/0 off peak | Not Applicable |
| Tunbridge Wells | 4 peak/2 off peak | 1 peak/0 off peak | Not Applicable |
| Sevenoaks (via Orpington) | 5 peak/4 off peak | 3 peak/0 off peak | Not Applicable |
| Hither Green | 5 peak/4 off peak | 3 peak/2 off peak | Not Applicable |
| Greenwich | 3 peak/2 off peak | 2 peak/4 off peak | Not Applicable |
| Lewisham | 5 peak/4 off peak | 8 peak/4 off peak | 2 |

Figure 1 and Figure 2 show the current level of service to London from principal stations.

Freight services in Kent mainly run to the Channel Tunnel (around 10 trains per day), Isle of Grain (7-8 tpd), Hoo Junction (4-5 tpd), Angerstein (3 tpd), Battersea/Stewarts Lane (2-3 tpd), Medway/Isle of Sheppey (2 tpd) and Mountfield (1-2 tpd).

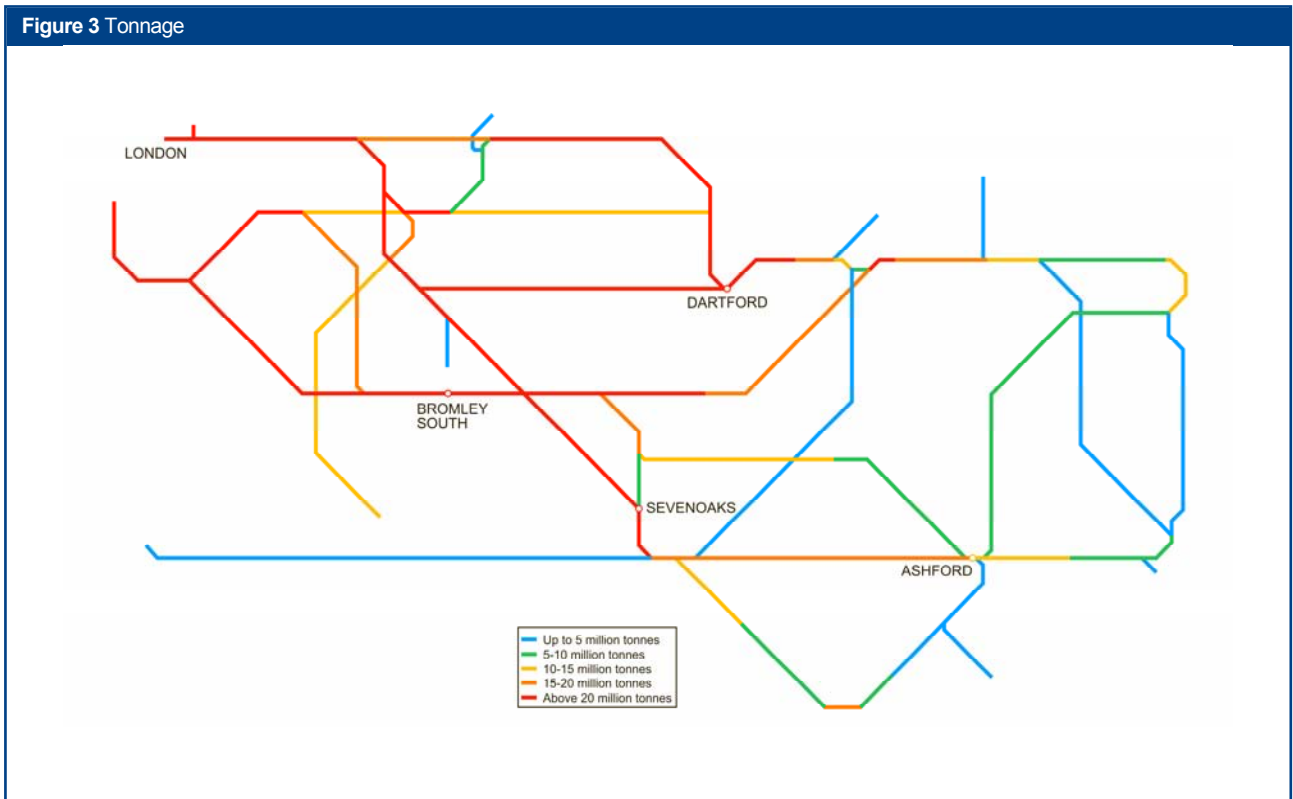
The line via Maidstone East, Catford and the West London Line (on Route 2) is the major route for Channel Tunnel freight across London, connecting into the major lines beyond. Approximately 30-40 percent of this traffic is W9 gauge (3-4 tpd).

The Kent domestic passenger routes are mainly served by a mixture of new and midlife electric multiple units, with varying characteristics. The Hastings to Ashford line is served by new diesel multiple units.

The main freight flows in Kent are operated by a mixture of class 66 diesel and class 92 electric locomotives.

Eurostar trains will continue to run on the main line network between Waterloo International and Fawkham Junction (via both Herne Hill and Catford) until November 2007, when High Speed One Section 2 to St Pancras is scheduled to open.

Figure 3 shows the tonnage levels on the route.



Traffic volumes are summarised in Figure 4.

Figure 4 Current use

| | Passenger | Freight | Total |
|------------------------------------|-----------|---------|-------|
| Train km per year (millions) | 30 | 2 | 32 |
| Train tonne km per year (millions) | 8,465 | 1,102 | 9,567 |

Current infrastructure capability

The following maps set out the capability of the current network.

Figure 5 Linespeed



Figure 6 Electrification

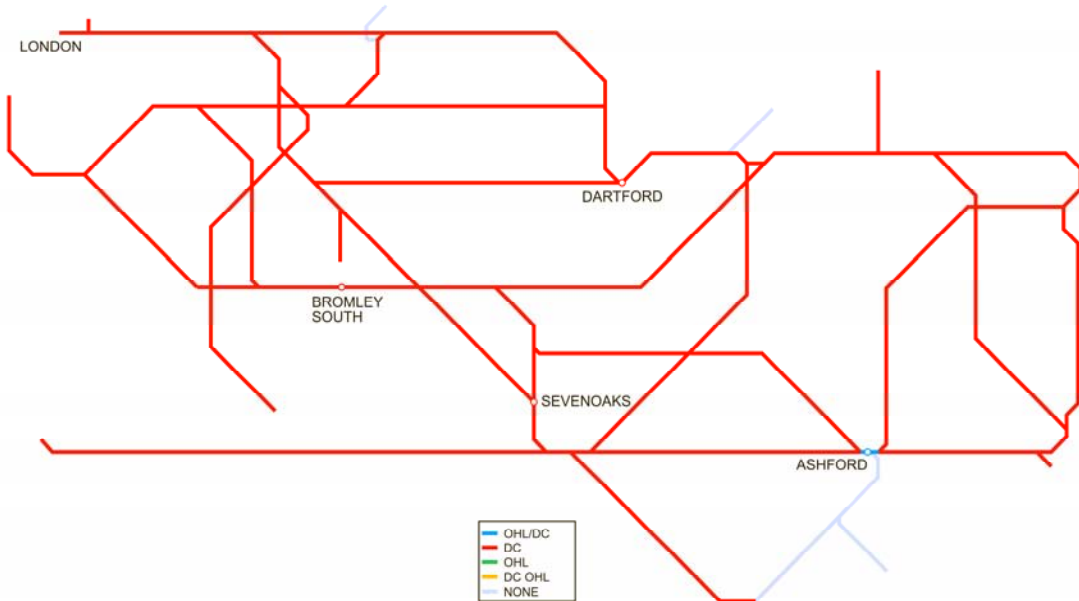


Figure 7 Route availability

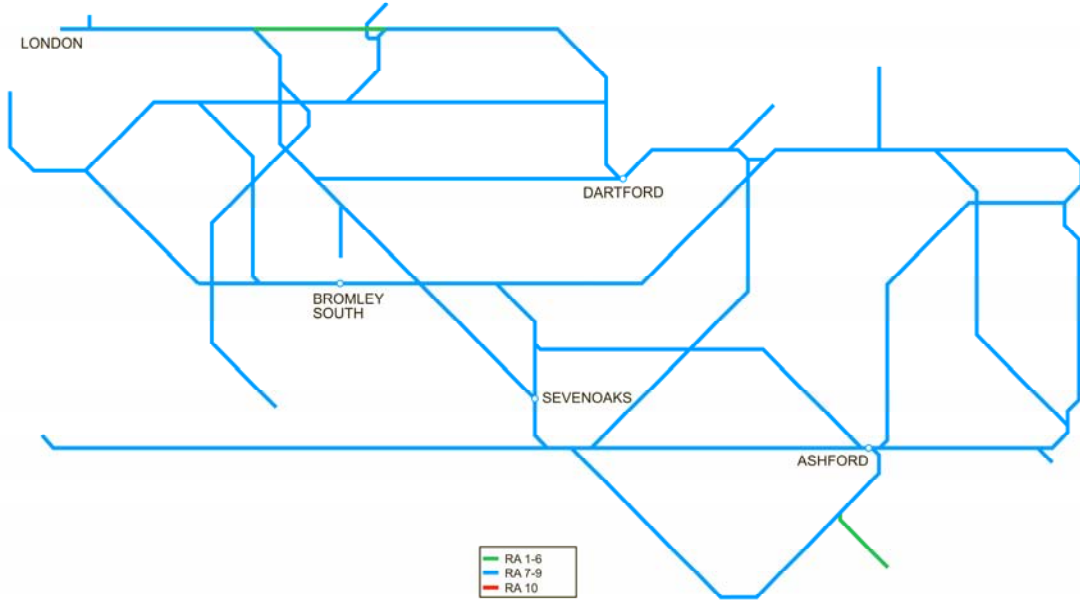


Figure 8 Gauge



Current capacity

The critical sections of the Kent route are operating near capacity for several hours each day. This is governed by a mixture of constraints, primarily limited capacity in the central London area.

Key constraints for passenger services are highlighted below. The first three apply to both Kent route and First Capital Connect services (on Route 2) as these share tracks through the critical London Bridge area:

- the restrictive layout of the approaches to London Bridge, with numerous conflicting moves between the different service groups across a series of flat junctions;
- the limited number of through platforms at London Bridge, especially on the Charing Cross line where all stopping London bound trains have to be timetabled through Platform 6, the busiest railway platform in Europe;
- the two track low speed section from London Bridge to Metropolitan Junction;
- the flat junctions in the Lewisham and Hither Green areas;
- the limited number of platforms at Charing Cross, together with some restrictions caused by the short length and reduced width at the end of Platforms 5 and 6;
- a mix of fast and stopping services on the mainly two track section between Orpington and Tonbridge;

- power supply restrictions south of Tunbridge Wells, requiring trains to attach and detach in the station or at Tonbridge. This is exacerbated by the track layout in the area with several single track sections through gauge restricted tunnels;
- ten car platforms on each of the lines to Dartford, and beyond;
- a mix of fast (including Eurostar) and stopping services on the two track section in the Herne Hill area, exacerbated by the flat crossing with the First Capital Connect route;
- the number of shunt moves required, and the capacity this takes up, to access the depot at Ramsgate; and
- passenger congestion at key stations such as Charing Cross, Waterloo East, Victoria and London Bridge.

Key constraints for freight services are:

- there are very few locations between the Swanley and the Wembley area where it is possible for freight services to be looped or regulated;
- freight services generally have to cross from the Atlantic lines to the Catford Loop lines at Crofton Road Junction. This is a low speed move which introduces additional performance risk; and
- freight services are restricted by the loading gauge and trailing load limits on certain routes.

Figure 9 shows the current train service level in key sections of the route.

Figure 9 Current train service level (peak trains per hour)

| Route Section | Number of trains |
|---|------------------|
| London Bridge – Metropolitan Junction | 29 |
| London Bridge – Cannon Street | 25 |
| Sevenoaks – Orpington | 15 |
| all trains via Lewisham | 16 |
| all trains via Herne Hill (including Thameslink and Eurostar) | 17 |

Figure 10 Current PPM MAA (2006/07)

| TOC | MAA | As at period |
|-----------------------|-------|--------------|
| Southeastern | 88.6% | 11 |
| First Capital Connect | 88.5% | 11 |
| Southern | 89.5% | 11 |

Current performance

Figure 10 shows the current PPM for the main TOCs running along the Route.

Train performance on the Kent Route is currently running at around equal to the national average, with the main passenger TOC (Southeastern) achieving a fifth successive year of performance improvement, bringing it to the highest level since 1995.

The reliability of assets under direct Network Rail control has continued to improve. The improving condition of signalling infrastructure has produced particular benefits, with a significant and ongoing reduction in points failures, track circuit failures and other signalling system faults. Kent has also experienced its lowest ever total of broken rails in the past 12 months, which has manifested itself in a reduction in the number of high impact performance incidents involving track related defects.

Kent has borne much of the burden of the inclement weather conditions throughout the early part of 2007, where snow and high winds have impacted upon the normal operation of the railway. Furthermore, the route has experienced a number of exceptional external events in the past year, over which the rail industry has no direct control. These also include major third party fires, subsidence and heavy flooding, all along key lines into Central London.

The route has implemented measures to ensure improved service recovery and has refined its contingency plans based on the experience of previous incidents to mitigate the effect of these when they occur.

Future requirements Strategic direction

The South London RUS commenced in June 2006, and we will commence work on the Kent RUS in summer 2007. These will provide a detailed strategy for future development of the Kent route.

The main strategic challenge to be answered by these RUSs is to cater for increasing demand to London and as such the strategic direction for the Kent route is likely to revolve around the provision of more capacity into London Terminals from Kent. The exact method of delivery will be determined by the RUS process.

A series of initiatives, with many significant impacts on the Kent route, is envisaged over the next few years. These are highlighted below:

- opening of Section 2 of the High Speed One line in November 2007. This will remove Eurostar trains from the line via Herne Hill and Swanley, releasing sufficient capacity to enable additional Victoria to Beckenham Junction services to run;
- a major timetable recast, also in 2007. This is aimed at making better use of existing capacity and improving performance in the critical London Bridge corridor, by optimising the times at which peak trains run through this area;
- implementation of the new IKF timetable in 2009. This will provide high speed services from St Pancras via High Speed One to Medway and East Kent, leading to significant journey time reductions. It will also alter all services closer to London which will enable performance improvement and potentially add alternative services;

- implementation of the Thameslink Programme. This will largely eliminate the bottleneck caused by the existing track and station layout in the London Bridge area. This will have major benefits for services into Charing Cross, including enabling all trains to call at London Bridge. There will also be some new direct journey opportunities created due to through running from certain Kent routes to the Thameslink network; and
- interfaces with Crossrail Line 1 at Abbey Wood, DLR at Woolwich Arsenal and East London Line Extension at New Cross.

Future demand

Demand from the Thames Gateway, Ashford and certain parts of east Kent is expected to grow very quickly, in line with considerable housing growth recommended by the South East Plan for these areas. The strongest growth at present outside London is for the Ashford – Canterbury area with the biggest growth originating point being Tunbridge Wells. It is expected that the new fast services to St Pancras will accelerate this effect significantly, especially at those stations, such as Canterbury West, which will see journey time to Central London reduced to under 60 minutes.

The planned major increases in capacity at Victoria underground station and on the Victoria Line are likely to encourage additional peak period demand on services into the main line station. At present, some journeys are made via alternative routes to avoid the underground.

The planned construction of several new high rise developments in the City of London, with the tallest at London Bridge station itself, is likely to lead to a significant increase in demand for services into London Bridge and Cannon Street. A further contributing factor will be the continued growth of the Docklands area and development of the Olympic site, both of which can be reached from London Bridge via the Jubilee Line.

The continued development of the Docklands area and London Olympics site is also likely to lead to an increased interchange to the DLR at both Lewisham and Greenwich.

The planned extension of the DLR to Woolwich is likely to lead to a sizeable interchange for this new cross-river link, accelerated by the development of the Royal Docks and the growth of London City Airport.

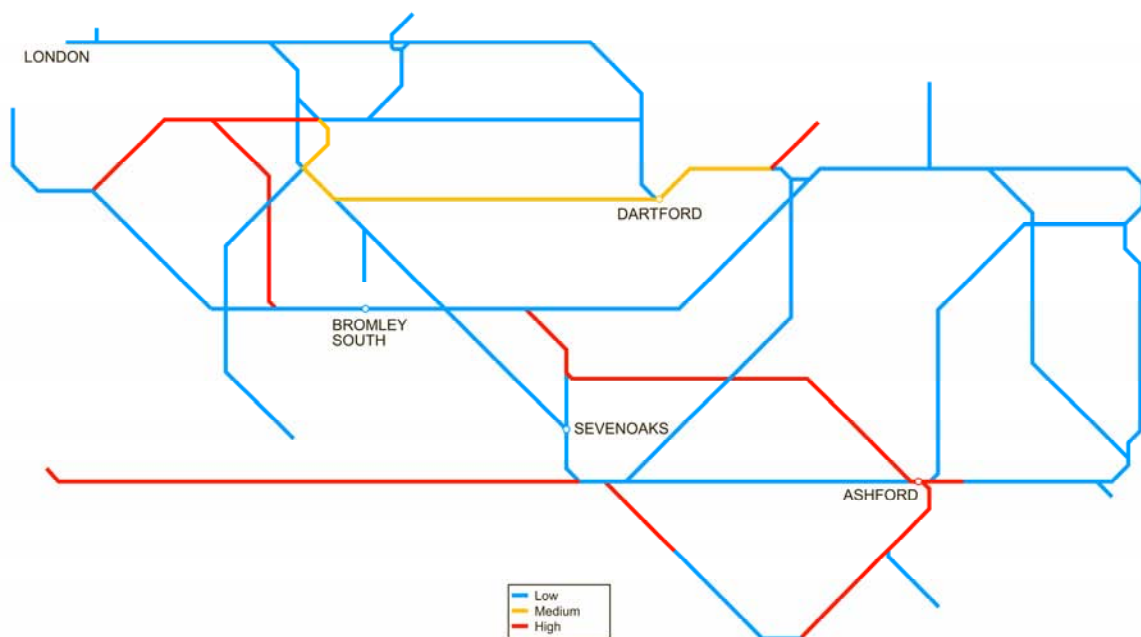
If the planned Crossrail scheme should go ahead, Abbey Wood would become a sizeable interchange and there would be a reduction in demand from beyond this point for services running via London Bridge.

Freight demand in Kent is likely to be dependent on the strength of the economy, transport policy, the pricing structure for Channel Tunnel freight and the success of railways in France and beyond in getting long distance freight onto railways. The Freight RUS predicts continuing freight growth over the next eight years, and this can be catered for within existing capacity provision.

There are proposals for the development of freight terminals at Howbury Park (near Dartford) and Hollingbourne (on the Maidstone East line).

There may be demand for fast freight services to Europe via the High Speed One line at some stage, as this route is the only European Gauge (UIC GC) route in the UK.

Figure 11 Tonnage growth



Future services

Figure 11 indicates the forecast percentage change in tonnage to 2016.

From the December 2007 timetable, Eurostar services will use the new High Speed One route into London St. Pancras and not the classic network into London Waterloo. They will retain the right to use the current routing into London Waterloo for diversionary purposes.

The entire timetable for Southeastern is to be rewritten for December 2009 to coincide with the introduction of high speed domestic services from Kent to London St. Pancras. The new timetable is currently being developed, and exact service levels will be determined as a result of the South London and Kent RUSs as well as detailed timetable development work by Southeastern.

Future capability

A major upgrade to the power supply throughout the route has recently been completed. This has allowed complete replacement of all old slam door trains with a modern new fleet. Following completion of this work, there remain a number of outstanding power supply issues in the Kent area where further investigation is required:

- work is ongoing to ensure that the power supply for the 2009 timetable is adequate, particularly with respect to routes where the new trains

providing the High Speed One domestic services are planned to operate;

- power supply issues prevent operation of 12-car trains to Hastings. This leads to the need for trains to split and join at Tunbridge Wells, an activity that adds to journey times and regularly leads to delays. Investigations have, however, concluded that it would not be economically feasible to upgrade the power supply at this time;
- power supply issues, together with several short platforms, prevent operation of 12-car trains on each of the lines to Dartford and beyond, as well as the Hayes and Orpington routes. We are currently investigating upgrading the power supply to remove this restriction on the Sidcup and Bexleyheath lines. This work, which would be required by the Thameslink Programme, will require platform extensions at New Cross, Hither Green, Eltham, Mottingham and Dartford;
- work will be required to renew and upgrade the Network Rail power supply feed from the national grid at New Cross; and
- work is ongoing to examine the potential benefits in upgrading the Ashford-Hastings line, as this line is expected to see an increase in demand as a result of High Speed One services to London.

Linespeeds are generally considered adequate, as journey times are primarily dependent on stopping patterns rather than maximum speeds. However, work is ongoing to check linespeeds along the Kent Coast as these have long stretches of straight track between stations.

To enable High Speed One domestic services to run to Dover, rather than terminate at Folkestone, we will carry out track realignment works to maximise the clearance available in the narrow bore Shakespeare Tunnels. We have agreed with HMRI an appropriate solution as there are clear benefits in serving Dover with these services.

We have aspirations to close the Folkestone Harbour branch as the branch is in very poor condition and does not receive a regular train service.

The following capability issues have been identified regarding Channel Tunnel freight routes:

- the route via Sevenoaks is not cleared for the operation of W9 gauge freight traffic. Increasing the gauge on this route is believed to require extensive works, including track lowering in Sevenoaks tunnel. The current level of Channel Tunnel freight is, however, such that this work is not yet economically viable; and
- the route via Redhill is not cleared for the operation of class 92 electric freight locomotives. Allowing such traffic on this route is believed to require extensive works to protect the signalling system and for power supply reinforcement between Redhill and Clapham Junction (on Route 2).

Future capacity

The route is operating close to the maximum number of trains that can be run at present. The following measures provide the most efficient utilisation of available capacity and are planned in 2009 upon introduction of the IKF timetable:

- maximisation of High Speed One usage by introducing high speed domestic services to Medway and East Kent via Ashford. The diversion of most fast services from these areas onto the High Speed line will free up capacity closer to London for use by other services;
- removal of conflicting moves across the flat junctions on the London Bridge approaches wherever possible. In particular this will require all Greenwich line services to run to Cannon Street rather than Charing Cross; and
- reduction in conflicting moves wherever possible at Lewisham.

Several further measures are envisaged as being necessary to accommodate the predicted growth:

- upgrades to the power supply on the Sidcup and Bexleyheath lines as described in the capability section above. Upgrade to the power supply on

- the rest of the Kent suburban network may also be necessary. This will provide a significant increase in the number of lines where 12-car trains can operate;
- provision of a headshunt siding in Ramsgate depot and a direct connection to the main line at the Minster end of the depot. This is necessary to remove the current bottleneck caused by shunting requirements in this area;
- implementation of the Thameslink programme. This would provide a major increase in capacity and remove the major constraints for all services groups via Lewisham and Orpington. It would include providing four tracks at Borough Market, additional platforms at London Bridge (allowing all Charing Cross services to call) and grade separated junctions at key locations; and
- it may be necessary to increase the speed of Crofton Road Junction by remodelling the track layout and/or making changes to the signalling system.

The signalling headways in Kent are generally considered adequate. Headways are rarely the limiting factor on the numbers of trains that can be run on this route, which is primarily governed by the occupancy of junctions and platforms, especially in the London area. Headways in East Kent were reviewed as part of the resignalling scheme for the area.

Certain stations will require works to enable them to cope with the predicted growth in passenger numbers:

- Charing Cross station is very congested with no space available for expansion. It may be necessary to relocate some retail outlets on the concourse to provide an increase in the circulation space. It may also be necessary to open the Embankment end entrance for a greater proportion of the day as passenger volumes grow;
- Waterloo East station is very congested and demand is likely to grow due to large new office developments in the local area. Also, it is not practical to fit ticket barriers unless passenger numbers using the main station link bridge can be reduced or the available space increased in some way. We are investigating provision of a new entrance, adjacent to Southwark underground station. This would provide improved access to the local area and remove some passengers from the link bridge, potentially allowing ticket barriers to be installed;
- Victoria station is very congested, particularly the interchange with London Underground. Options for increasing passenger capacity are under development by the Victoria Masterplan project.

This project has a significant interface with plans by London Underground to expand the underground station which may ease the situation; and

- London Bridge station is very congested. This is to be addressed by the London Bridge Masterplan which forms part of the Thameslink programme.

Future performance

Figure 12 shows the forecast reduction in Network Rail delay minutes compared with 2006/07.

The arrival of Govia as the Southeastern franchisee presents the Route with a fresh management outlook and provides the opportunity to aid continued performance improvements by building on the already good working relationship between the TOC and NR. Govia has committed to raise PPM to 91.6 percent by 2009 and this will require improvements to both our operational management and infrastructure performance.

Some examples of specific initiatives for performance improvement are as follows:

- renewal of track circuits between Tonbridge and Hastings;
- refitting of HW points machines in the Blackfriars area;
- installation of conduction rail protection at high risk arcing locations;
- renewal of the power supply for the Hither Green relay room;
- renewal of Hither Green interlocking;
- joint initiative between Network Rail and Southeastern to recover performance on the Metro Service Group; and
- use of track circuit monitors in Penge Tunnel.

Figure 13 shows the forecast PPM for the main TOCs running along the route.

Performance should improve as longer distance trains are transferred onto the High Speed One line, commencing with Eurostar in 2007 followed by longer distance domestic services from 2009.

The December 2007 timetable is expected to improve performance due to a reduction in conflicting train movements at critical locations and an improved method of working through the London Bridge area.

Engineering access

Engineering access on the route is largely managed by a cyclical possessions regime, with two tracks being able to be kept open to traffic for most types of maintenance work on four track sections.

Overnight maintenance opportunities are particularly short, primarily due the very high passenger demand for trains leaving London late in the evening, rendering the unpopular option of bus substitution impractical in most cases. This results in midweek possessions generally lasting no more than four hours, severely limiting the types of activity that can be carried out on weekdays and significantly increasing overall maintenance costs.

Planned cyclical maintenance is carried out during weeknight (where freight and passenger movements allow) and weekend possessions. The pattern of weeknight access, which has evolved in response to timetable limitations, seeks to provide maintenance opportunities on the main line based on a rolling 6 to 10 week cycle which is frequently modified in response to renewal projects. This provides a variety of different possession periods across the route from as little as 2hrs in the Dartford area, to as much 7hrs on a number of branch and country lines.

Demand for weekend services is significantly lower than that on weekdays for most of the year. Major items of engineering work are therefore scheduled to be carried out on Sundays, or in some cases on Saturdays, affecting far lower numbers of people. However, the route will be affected by some

Figure 12 Forecast reduction in delay minutes

| | 2007/08 | 2008/09 |
|------------------------------|---------|---------|
| % reduction in delay minutes | 6% | 14% |

Figure 13 Forecast PPM MAA

| TOC | 2007/08 | 2008/09 |
|-----------------------|---------|---------|
| Southeastern | 89.5% | 91.6% |
| First Capital Connect | 89.4% | 89.8% |
| Southern | 90.3% | 90.8% |

significant and challenging engineering projects over the next few years. Careful planning is underway for these schemes to minimise any adverse impact.

In the longer term the reconstruction of London Bridge station as part of the Thameslink programme may require some diversions to other London terminals and/or temporary reductions in service levels.

Opportunities and challenges

We anticipate that accommodating longer term growth in commuting to central London will be a significant challenge on the route, with continued growth in central London employment expected. The context is that most of the route is already operating at, or very close to capacity.

We believe that the solution to passenger growth and future capacity requirements will be met by a combination of several initiatives:

- implementation of a finalised 2009 timetable;
- construction of the Thameslink programme;
- encouraging a review of ticket pricing measures to spread the peak and smooth the high peak requirements;
- incremental capacity enhancement (which can be delivered as improvements to planned renewals); and
- limited stand alone capacity enhancements at critical locations.

It is notable that certain infrastructure constraints on this route do not lend themselves to a solution in the foreseeable future. These factors limit the route's ability to cope with future growth:

- there are several lines where expansion from two to four tracks would be desirable, but there is insufficient land available at critical locations;
- there are several flat junctions on the route, but there is insufficient space available for grade separation at many of the locations that would benefit from it; and
- there are numerous obstructions that physically limit platforms on the North Kent Line to ten car length, routes into Victoria/Blackfriars to eight car length and 12 car routes elsewhere.

Delivering future requirements

Summary

The main categories of infrastructure investment planned for the Kent route in the next few years are as follows:

- completion of Section 2 of the High Speed line;
- a comprehensive resignalling programme in the East Kent area in particular, with major track layout changes planned at Ramsgate, Margate, Faversham and Canterbury West. This work is being programmed so as to be substantially complete in advance of the introduction of domestic services via the High Speed One from these locations;
- works in support of the 2009 timetable, comprising new depots at Ashford and Ramsgate, signalling changes to allow 12 car trains to run to Tunbridge Wells and works to Shakespeare Tunnel to allow High Speed One services to run to Dover;
- major projects, principally Thameslink;
- a comprehensive resignalling programme for two of the major signalling centres on the route (Victoria and London Bridge);
- targeted incremental enhancements, with works tying into planned S&C renewals, resignalling schemes or property schemes wherever possible; and
- an ongoing renewals programme.

Expenditure

Figure 14 shows the planned level of expenditure on renewals on this route over the next two years. However, the precise timing and scope of

renewals 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.

Figure 14 Forecast expenditure

| £m (2006/07 prices) | 2007/08 | 2008/09 |
|------------------------------|-----------|-----------|
| Renewals | | |
| Track | | |
| Plain line | 13 | 16 |
| Switches and crossings | – | 3 |
| Other | 0 | – |
| Track total | 13 | 20 |
| Civils | | |
| Underbridges | 1 | 8 |
| Overbridges | 0 | 0 |
| Bridgeguard 3 | 1 | 1 |
| Earthworks | 1 | 4 |
| Tunnels | 2 | 1 |
| Coast and estuary defence | 0 | – |
| Major structures | 3 | 1 |
| Other | 1 | 2 |
| Civils total | 8 | 17 |
| Signalling | | |
| Resignalling | 10 | 28 |
| Minor works/other | 4 | 7 |
| Over-planning | (0) | – |
| Signalling total | 14 | 35 |
| Electrification | | |
| AC systems | | |
| HV switchgear | 0 | – |
| Other | 0 | 1 |
| DC systems | | |
| HV switchgear | 4 | 1 |
| HV cables | 3 | 1 |
| LV switchgear | 9 | 5 |
| Transformers/rectifiers | 2 | 2 |
| Grid supply points | 0 | 0 |
| Conductor rail | 1 | 1 |
| Other | 4 | 0 |
| Electrification total | 24 | 11 |

| | | |
|---|-----------|------------|
| Telecoms | | |
| Concentrators | | |
| Large | – | 0 |
| Small | 0 | 0 |
| Customer information systems (CIS) | – | 0 |
| Other | 0 | 0 |
| Telecoms total | 0 | 1 |
| Operational property | | |
| Stations | | |
| Managed | 15 | 15 |
| Franchised | 5 | 4 |
| Operational property total | 21 | 19 |
| Plant and machinery | | |
| Fixed plant | | |
| Point heating | 5 | 2 |
| Signal supply points | 0 | 0 |
| Other | 0 | 1 |
| Plant and machinery total | 5 | 3 |
| Total Renewals | 85 | 107 |
| Enhancements (funded by) | | |
| Network Rail | | |
| Potential schemes | 3 | – |
| Total | 3 | 0 |
| Network Rail (RAB) | | |
| Planned | | |
| Borough Market viaduct | 2 | 5 |
| Tunbridge Wells 12 car tumbback | 1 | 4 |
| 12 car trains on Sidcup & Bexleyheath lines | 0 | 2 |
| Ashford – Hastings route improvements | 0 | 2 |
| Canterbury West (enhancement options) | 0 | 1 |
| Other | 1 | 2 |
| Total | 5 | 17 |
| Potential schemes | 8 | 13 |
| Total | 12 | 30 |
| Other third party | | |
| Planned | | |
| Catford station redevelopment | 0 | 1 |
| Cannon Place | 0 | 1 |
| IKF new depots – telecom works | 0 | 1 |
| Kent depots – telecom works | 0 | 1 |
| Other | 3 | 2 |
| Total | 4 | 6 |
| Potential schemes | 0 | 1 |
| Total | 4 | 6 |
| Total Enhancements | 19 | 36 |

Figure 15 Forecast volumes

| | 2007/08 | 2008/09 |
|---|-----------|-----------|
| Track | | |
| Plain line (km) | | |
| Rail | 22 | 22 |
| Sleepers | 19 | 22 |
| Ballast | 20 | 22 |
| Total | 60 | 65 |
| Switches & crossings (no.) | | |
| Complete renewal | – | 7 |
| S&C (equivalent units) | – | 7 |
| Other (km) | | |
| Drainage | 1 | – |
| Civils | | |
| Underbridges (m ²) | 327 | 3,480 |
| Overbridges (m ²) | – | 60 |
| Bridgeguard 3 (m ²) | 360 | 254 |
| Earthworks (m ² slope surface) | – | 38,067 |
| Tunnels (m ²) | 1,003 | 2,006 |
| Major structures (m ²) | – | 1,686 |
| Electrification | | |
| AC systems | | |
| HV switchgear (cb) | 2 | – |
| DC systems | | |
| HV switchgear (cb) | 27 | 13 |
| HV cables (km) | 17 | 13 |
| LV switchgear (cb) | 103 | 152 |
| Transformers/rectifiers (no.) | 7 | 3 |
| Grid supply points (no.) | 1 | 6 |
| Conductor rail (km) | 5 | 8 |
| Telecoms | | |
| Concentrators | | |
| Small (no.) | – | 8 |

The planned volume of renewals is detailed in Figure 15.

It should be noted that in order to manage the deliverability of our Civils, Signalling & Electrification plans we have included an element of over planning in our work banks. As a consequence the sum of our route plans exceeds our plan for the

network as a whole. It is likely that a small proportion of the activities in these areas will slip to subsequent years.

Maintenance

Figure 16 below shows the planned level of expenditure on maintenance on this route over the next two years.

Figure 16 Forecast expenditure

| £m (2006/07 prices) | 2007/08 | 2008/09 |
|---------------------|---------|---------|
| Maintenance | 58 | 53 |

Infrastructure investment

Figure 17 highlights schemes that are planned for completion in the financial year shown.

| Project | Project description | Output change | Main asset type(s) | Funding | GRIP stage | Completion year | |
|---------|--|---|--|--------------------------|--------------------------------|-----------------|---------|
| A | High Speed One Section 2 | Completion of High Speed One to St Pancras | Significant journey time reductions on Eurostar (from 2007) and domestic services (from 2009). Removal of Eurostar from lines to Waterloo frees paths for other services | New line | London and Continental Railway | 6 | 2007/08 |
| B | Ashford depot (01.14) | New depot | Maintenance facilities for High Speed One domestic services | Depots | DfT | 6 | 2007/08 |
| C | Ramsgate depot (01.14) | Reconfigure depot | Stabling facilities for High Speed One domestic services | Depots | DfT | 6 | 2008/09 |
| C | Ramsgate headshunt (01.14) | New track at depot entrance | Reduced need for shunting moves via the main line. Improved performance | Track, signals | SRNTP | 6 | 2007/08 |
| D | Hither Green signals (01.04) | Like for like renewal of signal interlocking | Renewal | Signals | None | 4 | 2006/07 |
| E | Folkestone Warren (01.14) | Cliff face stabilisation | Route has a history of problems due to rock falls arising from erosion of the coastline. Scheme will reduce this risk. Improved asset condition and performance | Structures | None | 3 | 2006/07 |
| A-F | Shakespeare tunnel class 395 clearance (01.14) | Track realignment and various minor works | Allow High Speed One domestic services to serve Dover | Track, structures | None | 3 | 2008/09 |
| E | Folkestone East signal renewals (01.14) | Like for like signalling renewal, with closure of the Folkestone Harbour branch under consideration | Renewal. Network simplification. Alternative options for operating the Orient Express are being assessed | Signals, track, property | None | 4 | 2006/07 |
| F | Sevenoaks tunnel water management (01.05) | Water ingress management scheme | Tunnel has a history of problems due to water ingress. Improved asset condition and performance | Structures | None | 3 | 2006/07 |
| E | Driver only operation CCTV renewals (01.05) | Like for like CCTV renewals at various sites | Improved asset condition | Telecoms | None | 4 | 2008/09 |

Figure 17 Planned infrastructure investment

| Project | Project description | Output change | Main asset type(s) | Funding | GRIP stage | Completion year |
|---|--|--|-------------------------|---------------------------------|------------|-----------------|
| C East Kent resignalling (Ramsgate) (01.14) | Combined track and signal renewals. Revised track layout to comply with modern signalling standards. | Improved asset condition and performance. Ability to access depot from the Minster end should eliminate need for most shunting moves of on main line and increase capacity | Signals, track | Network Rail Discretionary Fund | 3 | 2009/10 |
| J East Kent resignalling (Faversham) (01.10) | Signal renewals with changes to allow services to reverse in Platform 3. Likely to require revised track layout to comply with modern signalling standards | Improved asset condition and performance. Track layout options currently under investigation | Signals, track | Network Rail Discretionary Fund | 2 | 2009/10 |
| K East Kent resignalling (Margate) (01.10) | Signal renewals with rationalisation of existing layout. Closure of Platform 4 | Network simplification with improved layout. Improved asset condition and performance | Signals, track | Network Rail | 3 | 2009/10 |
| L East Kent resignalling (Canterbury West) (01.14) | Combined track and signal renewals. New track layout to be provided. New platform under consideration | Improved track layout for terminating trains. Reduced road closure times at level crossings. Improved asset condition and performance | Signals, track, station | Network Rail Discretionary Fund | 3 | 2009/10 |
| M East Kent resignalling (other works) (01.10) | Like for like signal renewals. Removal or reinstatement of existing disused crossovers | Renewal. Improved opportunity for service recovery by reinstating turnbacks at Whitstable and Herne Bay (Birchington removed) | Signals, track | Network Rail | 3 | 2009/10 |
| G Rochester River bridge (01.10) | Bridge strengthening or reconstruction | Improved asset condition | Structures | Network Rail | 1 | 2006/07 |
| H Maidstone to Ashford earthworks (01.06) | Embankment strengthening at Hollingbourne, Bearsted and Charing | Improved asset condition | Structures | Network Rail | 2 | 2008/09 |
| I Darenth viaduct (Swanley – Fawkham Junction) (01.10) | Brickwork repairs | Improved asset condition | Structures | Network Rail | 5 | 2006/07 |
| N Bopeep Junction S&C (01.07) | Like for like S&C renewal | Renewal | Track | Network Rail | 2 | 2008/09 |
| O Factory Junction S&C (01.01) | Like for like S&C renewal | Renewal | Track | Network Rail | 8 | Completed |

Figure 17 Planned infrastructure investment

| Project | Project description | Output change | Main asset type(s) | Funding | GRIP stage | Completion year |
|---------|---|--|---------------------|---------------------------------|------------|-----------------|
| P | DLR extension (01.08) Station changes at Woolwich Arsenal | New journey opportunities | Station | TfL | 5 | 2009/10 |
| C | Deptford station (01.08) Station redevelopment | Improved station facilities | Station | Third party and Network Rail | 4 | 2007/08 |
| R | Greenhithe station (01.10) Station redevelopment | Improved station facilities | Station | TBA | 4 | 2007/08 |
| S | Grove Hill tunnel slab track renewal (01.07) Like for like renewal of slab track in tunnel | Renewal | Track | Network Rail | 4 | 2007/08 |
| X | Victoria ASC UPS (01.01) Renewal of battery backup system to signalling centre | Renewal | Signals | Network Rail | 1 | 2006/07 |
| V | London Bridge ASC UPS (01.04) Renewal of battery backup system to signalling centre | Renewal | Signals | Network Rail | 1 | 2008/09 |
| V | London Bridge CIS (01.04) Upgrade to customer information system | Improved passenger information | Telecoms | Network Rail | 2 | 2007/08 |
| V | Charing Cross CIS (01.04) Upgrade to customer information system | Improved passenger information | Telecoms | Network Rail | 2 | 2007/08 |
| V | Regenerative braking (01.08) Allow energy to be returned to power supply system from train braking | Reduction in energy consumption | Electrification | TBA | 1 | 2007/08 |
| S | Tunbridge Wells 12-car turnback (01.07) New siding to the country end of Tunbridge Wells | Allows increase from 10 car to 12 car for Charing Cross – Tunbridge Wells services | Signals, structures | Network Rail Discretionary Fund | 4 | 2007/08 |

Figure 18 highlights other schemes under consideration.

| Project | Project description | Output change | Main asset type(s) | Funding | GRIP stage |
|---|---|---|----------------------------|---------------------------------|---|
| U Thameslink Programme (01.04) | Major works including remodelling of London Bridge and approaches. Provision of four tracks between Borough Market and Metropolitan Junction. Significant major renewals included | Elimination of major bottleneck at London Bridge. Improved capacity and performance across a wide area. Enables running of 12 car trains on an expanded Thameslink network. Improves access to Charing Cross for other services | All asset types | TBC | TBC |
| V London Bridge Masterplan (01.04) | Reconstruction of London Bridge station. Includes interface with 'Shard of Glass' | As above | All asset types | TBC | TBC |
| C East Kent resignalling phases 2 and 3 (01.10) | Resignalling scheme with possible opportunities for track layout changes | Improved asset condition and performance | Signals | Network Rail | Under consideration |
| W 12-car Networker scheme (01.08, 01.04) | Platform extensions: New Cross, Hither Green, Eltham, Mottingham and Dartford. Power supply upgrade and minor works | 12 car operation on Sidcup and Bexleyheath lines to Dartford, Hayes and Orpington lines. | Platforms, electrification | TBC | Part of Thameslink programme works. Under consideration for earlier implementation. |
| X Victoria resignalling (01.01) | Resignalling scheme with possible opportunities for track layout changes | Improved asset condition and performance | Signals | Network Rail | Under consideration |
| V Isle of Grain freight enhancements (01.16) | Construction of a passing loop on freight only branch, or bi-directional signalling between Gravesend and Hoo Junction | Minimal opportunity at present for standing freight trains between Kent and WCML/GWML. Would increase cross-London timetable opportunities and improve performance | Track, signals | Network Rail Discretionary Fund | Under consideration |
| Z Crofton Road Junction speed review (01.01) | Removal of approach control on the signal protecting the junction | Increase speed of crossing move from Down Atlantic to Down Catford Loop line | Signals | Network Rail Discretionary Fund | Under consideration by Cross London RUS |

Figure 18 Infrastructure investment under consideration

| Project | Project description | Output change | Main asset type(s) | Funding | GRIP stage |
|--|--|---|--------------------------------------|---------------------------------|---|
| F Second 'unrestricted' freight route to the Channel Tunnel.(01.05,01.11) | Upgrade one of the existing channel tunnel routes (either via Redhill or Sevenoaks) so that it is suitable for both W9 gauge traffic and class 92 electric locomotives | Removes need for diesel haulage via Redhill when route via Maidstone East is closed | Signals, electrification, structures | TBC | Under consideration |
| X Victoria Masterplan (01.01) | Redevelopment of Victoria station | Congestion relief | Station | TBC | Under development |
| A New Cross Grid power supply renewal (01.08) | Renewal and upgrade of power supply feed from national grid to Network Rail | Improved asset condition and performance. Needed to ensure capability for future growth. | Electrification | Network Rail | Under consideration |
| B Ashford domestic use of platforms 3 and/or 4 (01.17) | Options under consideration. Station layout changes likely to be required; minor track and signalling changes may also be needed | May avoid performance worsening when High Speed One domestic services are introduced. Need to maintain existing capacity and performance in this area | Station, track, signals | Network Rail Discretionary Fund | Under discussion with DfT, South Eastern and Eurostar |
| A Cannon Street development (01.03) | New office building above station concourse | Improved station facilities | Property | Third Party | Under development |
| C Waterloo East additional entrance (01.04) | Additional entrance near Southwark LUL | Congestion relief. Improved access to local area to cater for major developments. May facilitate ticket barrier installation at main entrance | Station | Network Rail Discretionary Fund | Under development |
| D Howbury Park (01.08) | New freight terminal | Freight capacity | Depot | Third party | Capacity in area under review |
| E New Hythe (01.13) | Freight terminal to replace existing facility at Paddock Wood | Freight capacity | Depot | Third party | Awaiting outside party funding |

Figure 18 Infrastructure investment under consideration

| Project | Project description | Output change | Main asset type(s) | Funding | GRIP stage |
|---------|---|--|--------------------|--------------|--------------------------------|
| H | Hollingbourne (01.15) New freight terminal | Freight capacity | Depot | Third party | Awaiting outside party funding |
| Af | Port of Dover rail connection (01.14) New freight connection to serve Dover docks | Freight capacity | Depot | Third party | 1 |
| X | Victoria Masterplan (01.01) Redevelopment of Victoria station | Congestion relief | Station | TBC | Under development |
| TC | Gravesend station (01.10) Station redevelopment | Improved station facilities | Station | Third party | Under development |
| Ai | Maidstone East station (01.06) Station redevelopment | Improved station facilities and expanded station car park | Station | Third party | Under development |
| Ti | Denton new station (01.10) New station | New journey opportunities | Station | Third party | Under consideration |
| Au | Battersea Pier to Linford Street Junction intersection bridges (01.01) Like for like bridge renewals. Upgrades to ballasted decks are being considered | Improved asset condition. Reduced maintenance requirements | Structures, track | Network Rail | Under consideration |

Non-infrastructure developments

Figure 19 highlights significant timetable schemes for the route are under development.

| Figure 19 Timetable development | | | | |
|---------------------------------|---|--|--|---------------------------------|
| Description | Key issues | Actions or options being developed | Benefits | Target timetable implementation |
| 2007 timetable recast | Performance through London Bridge | Under development | Improved performance through the critical London Bridge corridor | 2007 implementation |
| 2009 IKF timetable | Altered capacity. Journey times | Under development | Alternative journeys. Shorter journey times to Kent coast. | 2009 implementation |
| Thameslink construction period | Temporary capacity reductions in the London Bridge area | Options being developed | Aim to maintain capacity into London during the works | TBC |
| Resilient timetable review | Performance | Review Rules of the Plan to ensure accurate fit with route constraints | Improves knowledge of route capability | Ongoing |

Figure 20 Other projects

| Description | Key issues | Actions or options being developed | Benefits | Start date |
|------------------------|---|------------------------------------|---|------------------|
| Smartcard introduction | Revenue protection and flexible ticketing | Discussion with DfT, TfL and ATOC | Revenue increase and potentially demand management improvements | To be determined |

Appendix

Figure 21 Strategic route sections

| Predominant aspect recorded (secondary aspects recorded in brackets). ELR is Engineers Line Reference, RA is Route Availability | | | | | | | | | | | | |
|---|--|--|----------------|---------|----------------|---------------|-------|-------|-----------------|-----------------|--------------------|--------------|
| SRS | SRS Name | ELR | Classification | Funding | Community Rail | Freight Gauge | RA | Speed | Electrification | Signalling Type | Signalling Headway | No of Tracks |
| 01.01 | Victoria Lines | VIR, CAT, NTL | London & SE | DfT | No | W6/W9 | RA8 | 45-60 | Third rail | TCB | 2.5 – 3 mins | 2-4 |
| 01.02 | Oxford – Sevenoaks | OJS | London & SE | DfT | No | W6 | RA8 | 40 | Third rail | TCB | 3 – 4 | 2 |
| 01.03 | Cannon Street | CBM | London & SE | DfT | No | W6 | RA8 | 20 | Third rail | TCB | 2 – 2.5 | 3 |
| 01.04 | Charing Cross – Chislehurst Junction | XTD | Primary | DfT | No | W6 | RA8 | 60 | Third rail | TCB | 2 – 3 | 2-4 |
| 01.05 | Chislehurst Junction – Tonbridge | XTD | Primary | DfT | No | W6 | RA8 | 70-90 | Third rail | TCB | 2 – 3.5 | 2 |
| 01.06 | Chislehurst Junction – Ashford via Maldstone E. | VIR, SBJ | Primary | DfT | No | W9 | RA8 | 70-80 | Third rail | TCB | 3 – 4 | 2-4 |
| 01.07 | Tonbridge – Hastings | TTH | London & SE | DfT | No | W6 | RA8 | 60-80 | Third rail | TCB | 3 – 5.5 | 1-2 |
| 01.08 | Dartford Lines plus Hayes Branch | NKL, BEX, BTC, NCS, HDR, LLL, LCH | London & SE | DfT | No | W6/W8 | RA6/8 | 60 | Third rail | TCB | 2 – 6 | 2 |

Figure 21 Strategic route sections

| Predominant aspect recorded (secondary aspects recorded in brackets). ELR is Engineers Line Reference, RA is Route Availability | | | | | | | | | | | | |
|---|----------------------------------|-----------------------------|----------------|---------|----------------|---------------|-------|--------|-----------------|-----------------|--------------------|--------------|
| SRS | SRS Name | ELR | Classification | Funding | Community Rail | Freight Gauge | RA | Speed | Electrification | Signalling Type | Signalling Headway | No of Tracks |
| 01.09 | Bromley North | BNG | London & SE | DfT | No | W6 | RA8 | 40 | Third rail | TCB | 3 | 2 |
| 01.10 | Dartford and Swanley – Margate | VIR,HDR | London & SE | DfT | No | W6 | RA8 | 70-90 | Third rail | TCB | 2 – 4 | 2 |
| 01.11 | Redhill – Tonbridge | RTT | Secondary | DfT | No | W9 | RA8 | 60-85 | Third rail | TCB | 7 – 9 | 2 |
| 01.12 | Sheerness Branch | SEJ | London & SE | DfT | Yes | W6 | RA8 | 30 | Third rail | TCB | 4 | 1 |
| 01.13 | Sitood – Paddock Wood | PWS | London & SE | DfT | Yes | W6 | RA8 | 55 | Third rail | TCB | 7 | 2 |
| 01.14 | East Kent Routes | VIR,FDM/A CR,BME,XT D | London & SE | DfT | No | W6 | RA8 | 40-70 | Third rail | abs block | 3 – 14.5 | 2 |
| 01.15 | Hastings – Ashford | ATH | Rural | DfT | No | W6 | RA8 | 40-60 | none | mixed | 13 – 14 | 1-2 |
| 01.16 | Freight lines | Various | Freight only | DfT | No | W8 | RA6/7 | 30 | none | key token | N/A | 1-2 |
| 01.17 | Tonbridge – Continental Junction | XTD | Primary | DfT | No | W9 | RA8 | 90-100 | Third rail | TCB | 2.5 – 3.5 | 2 |

Capacity and operational constraints

- A London Bridge: insufficient platform capacity for service growth or for all existing Charing Cross services to call
- B Borough Market – Metropolitan Junction: two track section restricts capacity
- C Spa Road: flat junctions between Tonbridge, Greenwich and Brighton lines restrict capacity
- D Lewisham, Hither Green: flat junctions restrict capacity
- E Orpington – Tonbridge: mainly two track railway with differing stopping patterns restricts capacity
- F Heme Hill: Flat crossing between Sussex and Kent routes restricts capacity
- G Tonbridge – Hastings: four single track tunnel sections restrict capacity
- H Ashford International platforms not available for domestic services
- I Ramsgate: track layout at depot restricts capacity
- J Charing Cross: platform capacity constraints with no space for future growth

Other issues on the route

- 1 All routes: proposed new timetable, including high-speed services on High Speed One, to improve capacity and performance
- 2 Borough Market – Metropolitan Junction: four tracking proposed for the Thameslink programme will increase capacity
- 3 London Bridge: remodelling and additional platforms proposed for the Thameslink programme will increase capacity
- 4 Bermondsey: grade separated junction proposed for the Thameslink programme will eliminate crossing moves and increase capacity
- 5 Lewisham: improvements to junction proposed for the Thameslink programme will increase capacity
- 6 Woolwich Arsenal: interchange with the proposed DLR extension
- 7 Abbey Wood: interchange with the proposed Crossrail line
- 8 Shakespeare Tunnels: evacuation procedure for proposed High Speed One domestic services being assessed

Note

This Route Plan forms part of the business plan suite of documents which is produced annually and in accordance with our network licence condition 7. Our plans and the way in which we intend to achieve those plans are summarised in the Business Plan itself. This document provides further detail on the specific plans for this Strategic Route including the expenditure over the next two years to the end of Control Period 3.

This year our business plan focuses on the remainder of Control Period 3 (to March 2009). We shall provide a submission to the Office of Rail Regulation in October 2007, which will set out our view of the expenditure and activities that will be required in Control Period 4 (2009/10 to 2013/14).

The Route Plan shows in more detail how the strategies set out in the Business Plan will be delivered at a route level across the network, and how we are working with our customers and other stakeholders to improve the

performance and utilisation of the network. It presents a portfolio of activities to develop the network.

The expenditure section contains tables showing the planned level of expenditure and volumes on renewals on the route over the next two years, split by asset category. Expenditure figures are shown in 2006/07 prices, and are rounded to the nearest £1 million. An entry of £0 indicates spend of less than £0.5 million. It should be noted that in order to manage the deliverability of our Civils, Signalling & Electrification plans we have included an element of overplanning in our work banks. As a consequence the sum of our route plans exceeds our plan for the network as a whole. It is likely that a small proportion of the activities in these areas will slip to subsequent years.

Please note that figures in tables may not sum to the totals shown, because of rounding.

The other documents in the business plan suite can be found on the Network Rail website www.networkrail.co.uk



This Route Plan is part of a set.
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