



Route 3 South West Main Line

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Today's route

The principal elements of the South West Main Line route are described below. The relevant Strategic Route Section is shown in brackets:

- the main line from Waterloo to Woking (03.01), where this splits into separate lines to Portsmouth Harbour (03.06) and to Weymouth via Basingstoke and Southampton (03.02, 03.03, 03.04);
- the 'main' suburban lines (03.07), which include branches to Epsom, Chessington, Hampton Court, and Guildford (via Cobham);
- the 'Windsor' suburban lines (03.12), which encompass lines to Shepperton, Staines (via Hounslow or Richmond), and Kingston (via Richmond);
- the outer Windsor lines (03.13), comprising lines to Windsor, Reading and Alton;
- the North Downs line (03.08, 03.09) from Wokingham to Redhill (via Guildford);
- the line from Cosham Junction to Fareham, where it splits into separate lines to Eastleigh and St Denys (03.11);
- the branch to Lymington (03.05);
- freight lines to Furzebrook, Hamworthy Goods, Fawley and the docks in Southampton (03.14); and
- the Isle of Wight line (03.10).

Route context

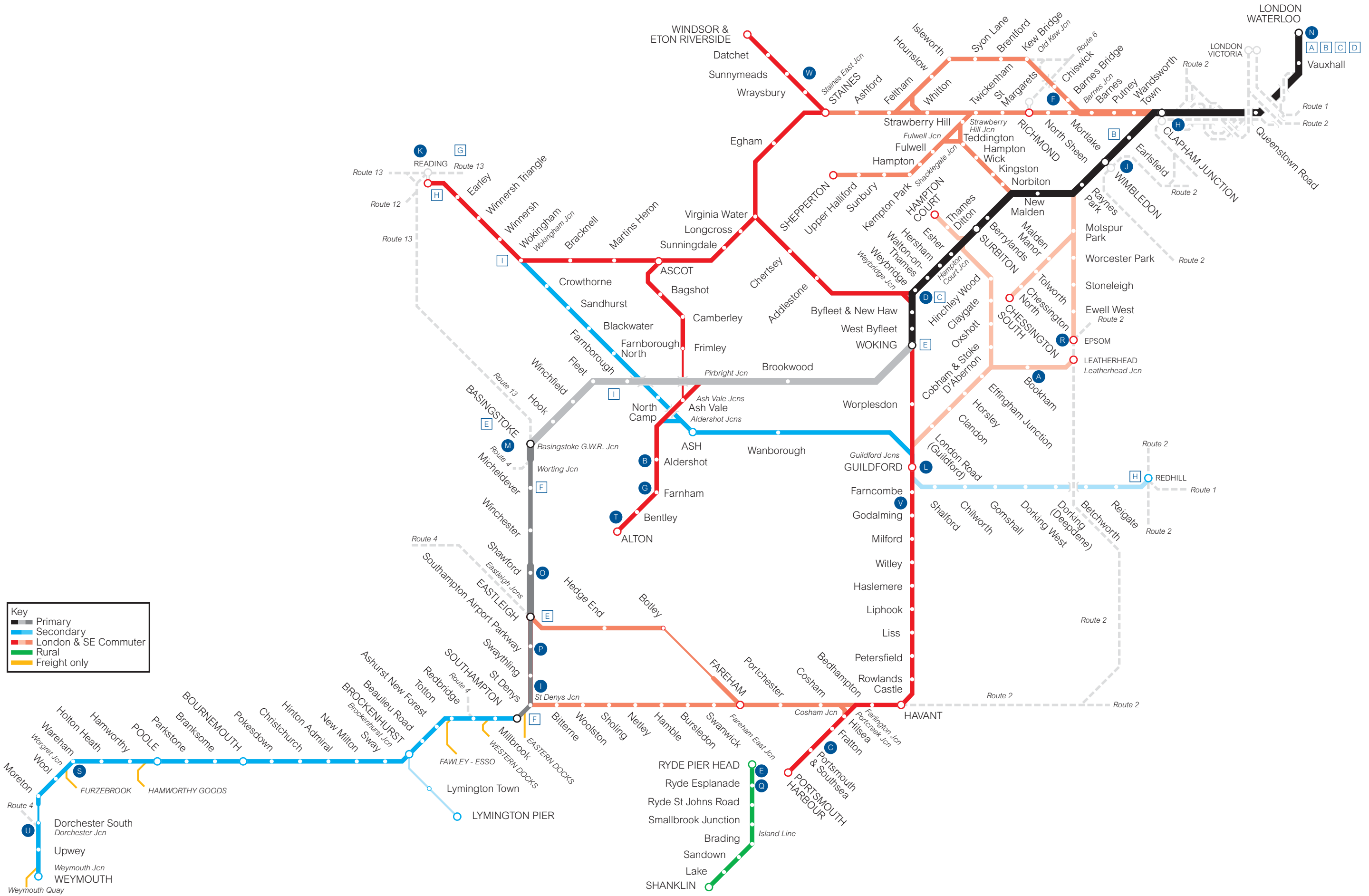
The South West Main Line (SWML) route is one of the busiest and most congested routes on the network. It serves a major commuter area as well as providing long distance services to Waterloo. There is also a large amount of leisure traffic to the coastal towns and a sizeable traffic flow connects to ferry terminals along the south coast such as Poole, Lymington, Southampton and Portsmouth.

International services use the route from Waterloo International station but they will transfer to London St Pancras in 2007.

The route is also important for freight traffic, especially intermodal and automotive traffic from the Port of Southampton as well as petroleum, aggregates and Ministry of Defence flows.

Network Rail has published its first Route Utilisation Strategy (RUS) on the SWML, covering the period up until 2017. The RUS contains detailed analysis about this route, and has considered options to accommodate future growth. The RUS conclusions are reflected within this route plan. The DfT's Southern Regional Planning Assessment is currently under development and is due for publication in 2006. It will be followed by the South West RPA.

Route 3 South West Main Line



Key

- Primary
- Secondary
- London & SE Commuter
- Rural
- Freight only

Passenger and freight demand

The RUS has shown that the number of passenger journeys per year on South West Trains (SWT), the route's main operator, has risen by 22% in six years. Commuter travel in the peaks has risen by around 20% in the same period, leading to frequent overcrowding. The SWML encompasses an area served by the main A3 and M3 trunk roads, which also suffer from increasing levels of congestion.

As well as the significant portion of main line demand that is for short distance commuting to London from stations such as Wimbledon, Surbiton and Woking, destinations away from London also have considerable demand. This is focused on the major towns, including Guildford, Windsor, Reading, Basingstoke, Southampton, Bournemouth, Portsmouth and Exeter (from Route 4).

Southampton and Bournemouth airports attract an increasing flow of rail passengers, and there is strong off-peak demand for leisure and tourism activities across much of the area.

The majority of freight demand is from Southampton's docks, container terminals and Eastleigh Yard. A high proportion of freight trains in the area carry containers, but there are also petroleum, metals, aggregates and MOD flows.

Current services

The predominant operator on this route is SWT. Other operators are Southern, First Great Western Link, Virgin Cross Country, Wessex Trains, Eurostar and Island Line. EWS, Freightliner and GB Railfreight carry out freight operations.

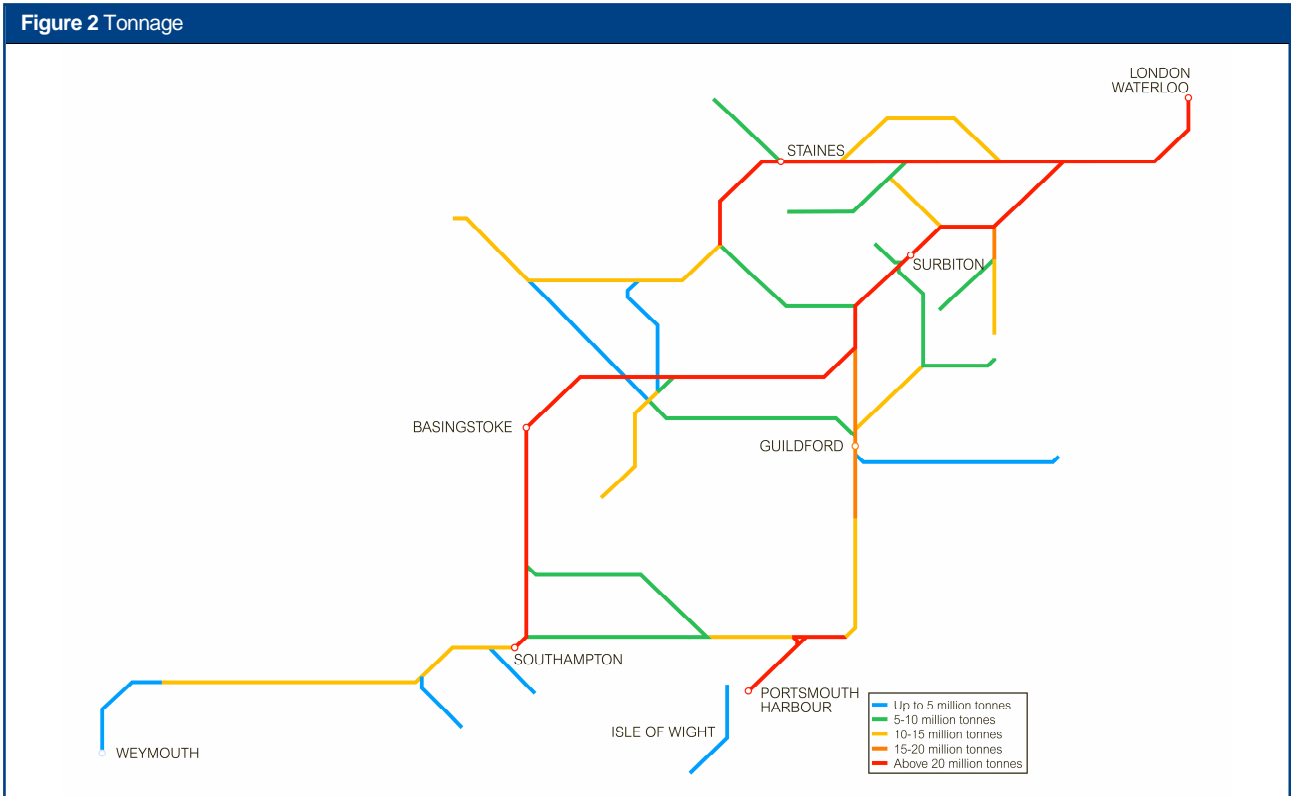
The majority of services on the route serve London, with the timetable being primarily structured to allow an intensive level of service into Waterloo and also to maximise capacity at another pinch point, Woking Junction. Cross-country and some freight services are pathed based on timings on the West Coast Main Line (Strategic Route 18) and integrate with the SWML at Basingstoke.

The timetable changed considerably in December 2004, with SWT providing more services into Waterloo and also significantly improving punctuality.

Figure 1 shows the current level of service to London from principal stations.

Figure 1 Current Train Service Level (trains per hour)

From	Peak hour to Waterloo
Reading	3
Guildford	5
Basingstoke	4
Southampton	2
Portsmouth	3
Weymouth	1
Richmond	9
Wimbledon	18
Surbiton	7
Woking	11



Current traffic

The SWML carries a variety of traffic, but predominantly modern electric multiple units. From Waterloo to Worting Junction, fast and slow services are separated onto the fast and slow lines, and mixed traffic with differing speed, acceleration and stopping patterns is only problematic between Southampton and Worting Junction. Freight services on the route mainly run to and from the Eastleigh and Southampton areas from the West Coast Main Line, Western and London areas. There is also some oil traffic between Holybourne and Fawley, and aggregates traffic.

Figure 2 (above) shows the tonnage levels on the route.

Traffic volumes are summarised in Figure 3.

Figure 3 Current use

	Passenger	Freight	Total
Train km per year (millions)	38	2	40
Train tonne km per year (millions)	10,728	982	11,711

Current infrastructure capability

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

Figure 4 Linespeed

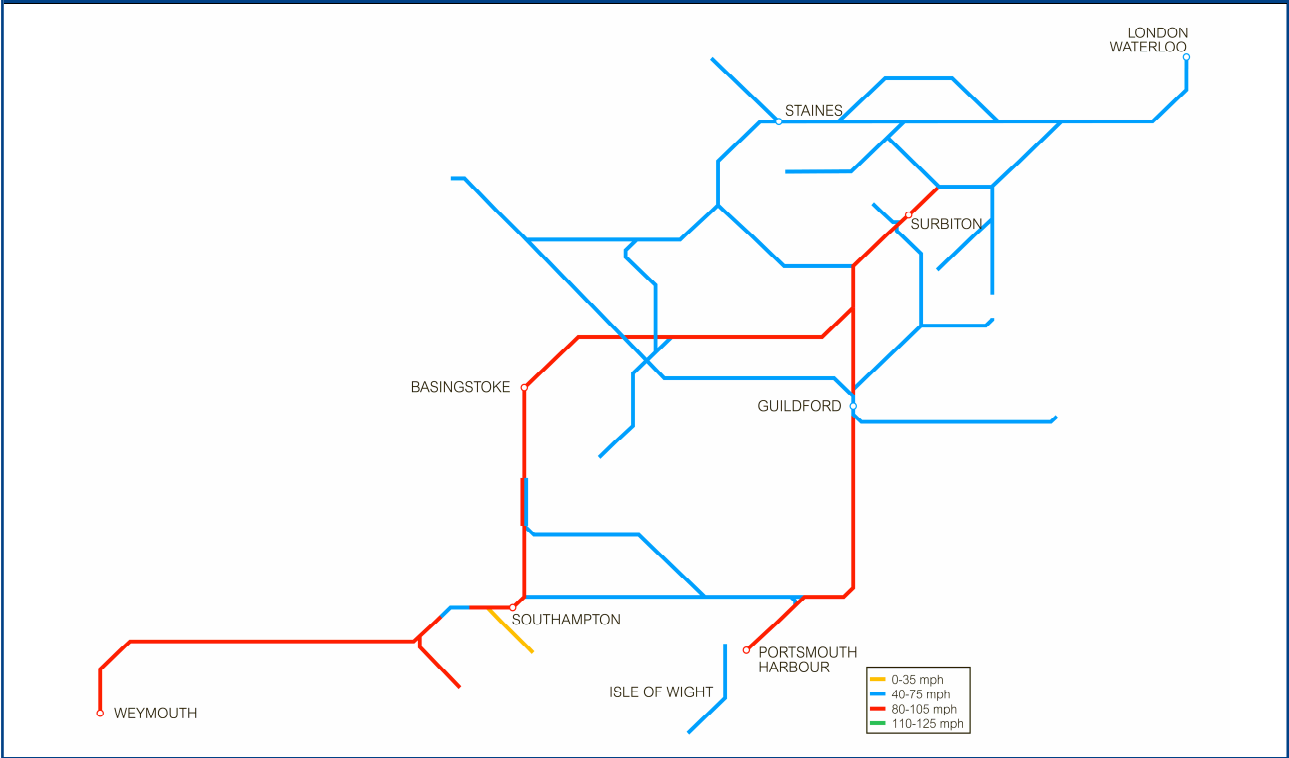


Figure 5 Electrification

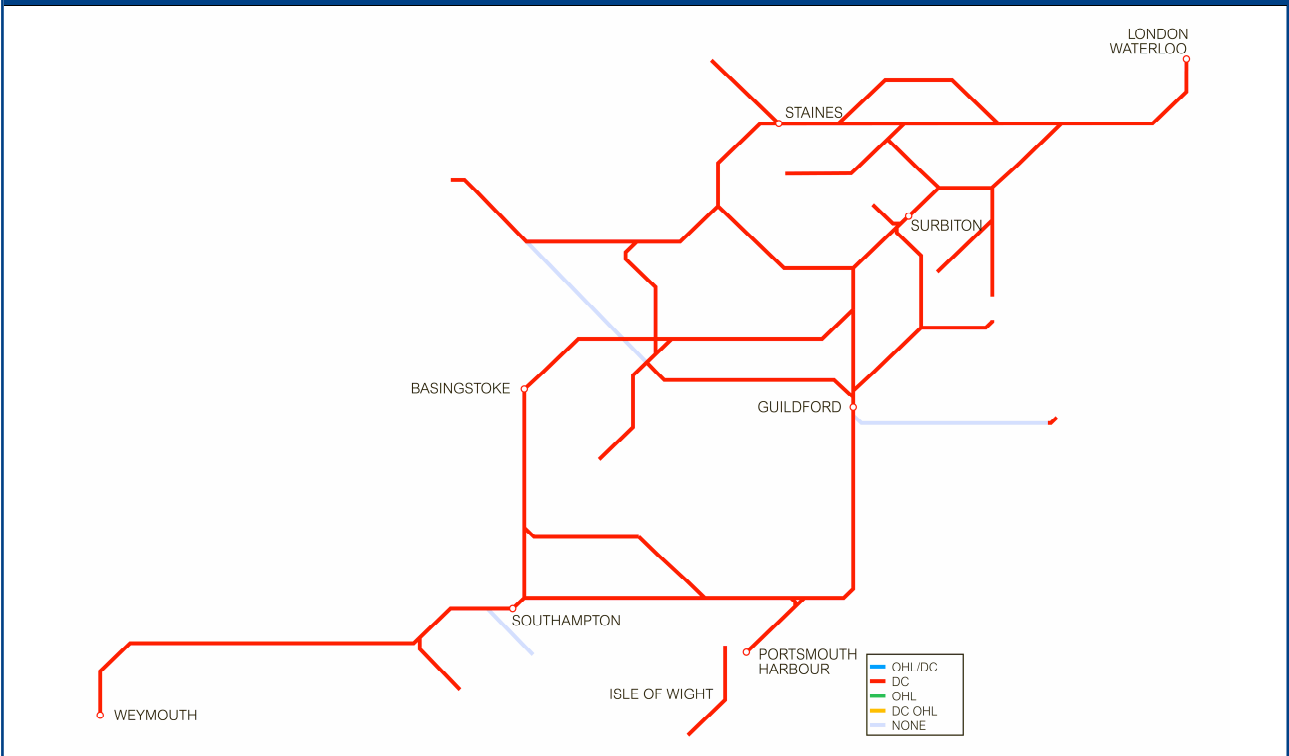


Figure 6 Route availability

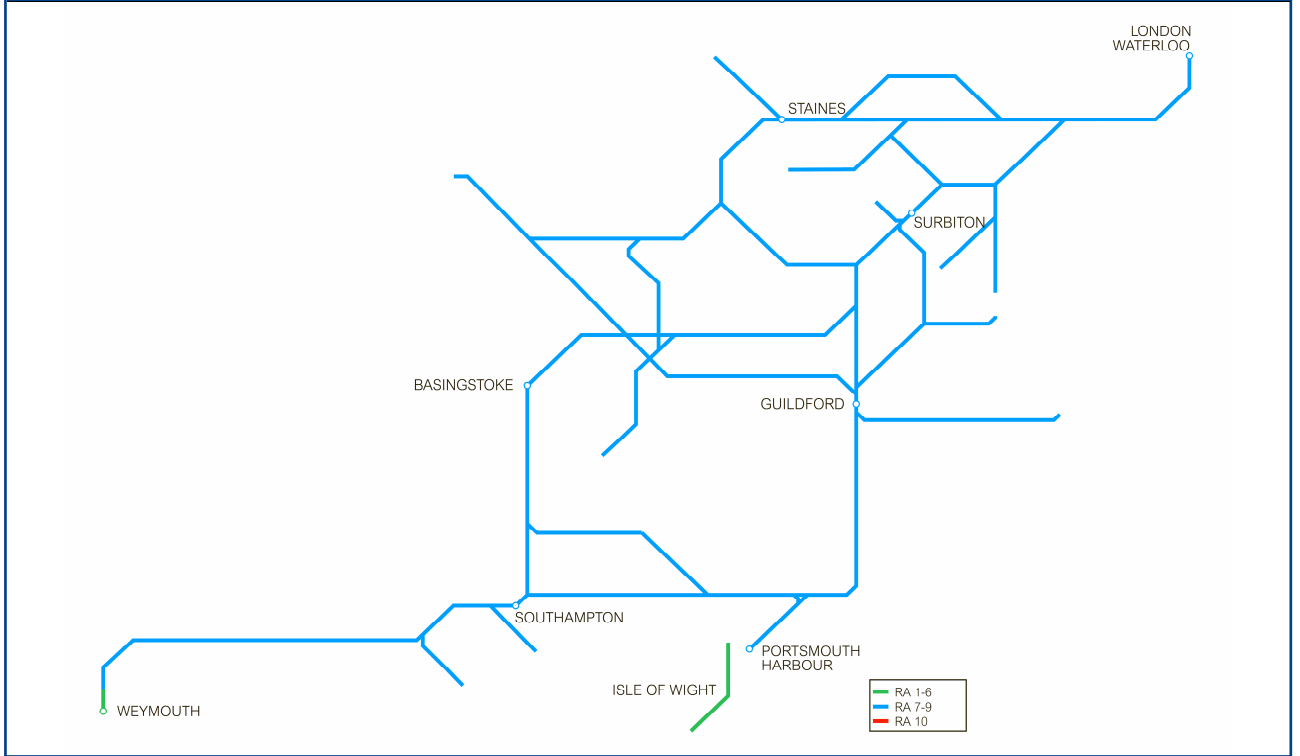
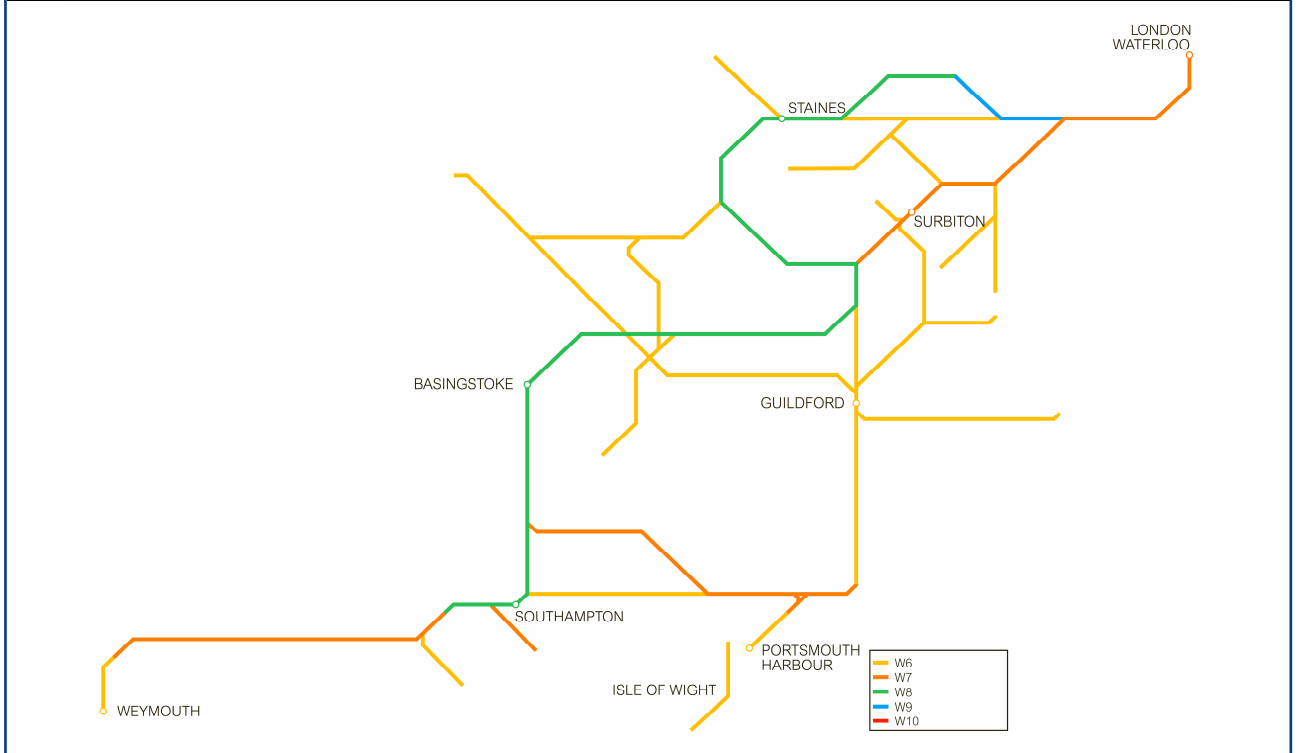


Figure 7 Gauge



Current capacity

The SWML is used intensively, especially close to London. During peak periods the fast lines from Woking to Waterloo and the slow lines from Wimbledon to Waterloo are operating at capacity so no additional train movements can be accommodated in the high peak hour between 08.00 and 09.00. The route between Twickenham and Waterloo is also operated intensively during peak periods and this reduces short term options to relieve overcrowding. Waterloo has 19 platforms available for domestic traffic and these are also very highly used at peak times. During the off-peak, the approaches to Waterloo are still operating close to capacity and additional train movements would have a severe impact on performance, particularly as the high peak service can only be accommodated because of a lower service level in subsequent hours.

The RUS has highlighted the following key constraints:

- the layout of the Waterloo throat restricts the number of services that can access the platforms at any one time;
- the layout at Clapham Junction does not allow all trains that currently pass through the station to stop there;
- flat junctions at Woking, Basingstoke and Eastleigh combine to limit available pathways throughout the route;
- single line sections of track restrict capacity on the line between Frimley and Ash Vale, Farnham and Alton, Botley and Fareham, Moreton and Dorchester South, and the approaches to Weymouth and Reading stations; and
- the suburban network is limited to 8-car operation due to platform lengths.

Key constraints for freight services also include:

- limited paths for freight services across the entire route;
- there are few locations on the route where it is possible for freight services to be looped or regulated; and
- freight services are restricted by the loading gauge and trailing load limits on certain lines.

Figure 8 shows the current train service level in key sections of the route

Figure 8 Current Train Service Level (trains per peak hour)

Route Section	Maximum tph
Waterloo-Clapham Junction (Main Lines)	42
Waterloo-Clapham Junction (Windsor Lines)	16
Barnes to Barnes	14
Woking to Hampton Court Junction	20
Southampton Central to St Denys	10
Portsmouth & Southsea to Portcreek Junction	10

Current performance

Figure 9 Current PPM MAA (2005/06)

TOC	MAA	As at period
South West Trains	89.1%	10
Southern	86.6%	10
First Great Western Link	83.0%	10
Virgin Cross Country	80.2%	10
Wessex Trains	84.6%	10
Island Line	97.4%	10

SWML route performance continues to improve with the prediction for 2005/6 showing a 14% improvement on last year's result. This is the third year in a row of sustained performance improvement in Wessex – delay minutes are now 50% less than in 2002/03.

SWT related minutes delay also continue to see year-on-year improvements with, in particular, the Desiro fleet performing better than expected. As a result of both companies' good performance, the SWT PPM has risen 12% during the past year.

Performance improvements have been delivered by analysing the root causes of train delay and taking the appropriate action to redress, through process control, people management or investment. Additionally the route has gained significant benefit through the introduction of the new SWT timetable, creating the network's first Integrated Control Centre and aligning its maintenance and operations teams.

Figure 9 shows the current PPM for the main TOCs running along the route.

Future requirements

Strategic direction

The SWML Route Utilisation Strategy was published on 21 March 2006 and is currently subject to review by the Office of Rail Regulation. This details the strategic direction for the route across the period 2007 to 2017, although it also provides a foundation for further development beyond these dates.

Continued strong growth in both passenger and freight demand is predicted to be a key feature of the next ten years. The areas that are currently most congested, such as peak-time passenger services to and from London, will get much worse unless growth is accommodated. Other parts of the SWML network also have certain key capability and operational weaknesses.

A range of measures has been identified to make effective and efficient use of railway capacity and to develop additional capacity. They are based on a number of key gaps between what the route is capable of delivering and those outputs that are desired to accommodate the predicted growth in demand. These measures have been selected on the basis of their value for money and potential affordability across the ten-year period of the RUS. These are summarised below and, in some cases, explained in more detail in subsequent sections.

Measures to address overcrowding in the peak period:

- certain longer-distance shoulder-peak services currently run at less than the permitted maximum length. High priority cases have been identified that should be lengthened as soon as practicable;
- the proposed redevelopment of Waterloo station, including the International Terminal (WIT), would double the concourse capacity and extend all platforms to accommodate at least ten-car trains. Remodelling of the station and, eventually, its approach is recommended as the cornerstone of the rail industry's strategy for the SWML;
- the redevelopment of Waterloo station is a key step towards the operation of longer trains – first ten cars, later twelve – across the suburban network. It is recommended that the entire suburban network is extended for ten-car operation by 2014, beginning with the Windsor and Reading lines which are the most crowded;
- short term measures to improve the effectiveness and capacity of the concourse at Waterloo station, primarily gating the platforms and reducing the space reserved for retail, will be progressed as necessary in the run up to the redevelopment of Waterloo. In order to provide the operational capacity and flexibility necessary for the redevelopment project, the Waterloo International Terminal (WIT) should be reserved for this use when Eurostar services transfer to St Pancras; and

- work has begun on the development of sophisticated but practical 'peak management' techniques. An opportunity exists with the development of new ticketing technology to introduce more flexible and sophisticated pricing in the peak and peak shoulders. The strategy aims to manage both supply and demand to meet forecast growth efficiently rather than suppress it.

Measures to improve the effective use of capacity:

- the timetable 'Rules of the Plan' will be continuously reviewed in the light of new rolling stock and infrastructure capabilities in order to achieve and maintain the most effective balance between performance and capacity. In the majority of locations across the SWML, evidence supports the view that the current rules represent a robust balance, allowing maximum exploitation of capacity while establishing minimum acceptable performance standards from an operational and scheduling perspective. A limited number of small improvements have been identified for implementation from the December 2007 timetable;
- station facilities should be developed to improve access by appropriate modes of transport. As a priority, development of the best value car park expansion schemes, such as Southampton Airport Parkway and Winchfield, will be progressed by Network Rail in conjunction with the franchise holder. Opportunities to improve cycle storage facilities, pedestrian access and bus stops will be explored through the South Western franchise competition;
- service alterations in the Southampton-Salisbury-Weymouth area have been developed with DfT and ATOC. The alterations include a rebalancing of service groups and stopping patterns to better match resources to demand, with only a minimal impact on service for specific stations; and
- a revised platforming strategy at Portsmouth Harbour will improve performance and should be implemented in the December 2006 timetable. This has no impact on service levels to any stations.

Measures to develop freight capability:

- there is a strong case for enhancing the rail freight route between Southampton container terminals and Reading to provide W10 capability, which would enable the retention and expansion of rail market share by accommodating the growing proportion of large containers. The timing and form of the gauge enhancement is being further examined in the Freight RUS as the route continues beyond Reading to the West Midlands and North of England.

Future demand

As outlined above the high volume of demand for peak commuter services to London is expected to continue and to grow in line with increasing employment in London, as passenger kilometre growth of 23% between 2003 and 2016 is expected in the morning peak period. Due to a combination of factors (housing and economic development, congestion, both on the trains and the roads, and predicted passenger preferences) growth is strongest in the outer areas and weaker towards London. Increasingly crowded conditions are expected to limit growth to a 19% increase in passenger kilometres.

Our analysis suggests that while growth of peak London commuter demand will continue to be partly constrained by crowding there may be better growth opportunities for off-peak travel because the demand for leisure services to both London and coastal destinations remains strong.

The Olympics in 2012 will see events being held in Wimbledon and Weymouth but it is expected that travel demand in relation to these events can be broadly accommodated with the current network capability. Extra services may need to be provided at certain times, but, for example, Wimbledon already sees high demand during the Wimbledon fortnight so it is expected that regularly implemented service strengthening will apply.

The Rail Freight Industry in the form of the RFOA (Rail Freight Operators Association) and the RFG (Rail Freight Group), has produced 10 year Freight forecasts to 2014/15. The forecasts indicate that the majority of freight growth in the SWML area will be from two key commodity sectors:

- **Intermodal**
Despite planning permission having been rejected for the new deep-sea port development at Dibden Bay, intermodal growth is forecast to continue subject to W10 gauge clearance between the Port of Southampton and the WCML. If W10 gauge is delivered, the forecasts identify growth of 6 to 8 trains per day in each direction to and from the Port by 2014/15. Without gauge clearance, growth is not expected to exceed 1 train per day; and
- **Aggregates/Construction**
Up to 1 additional train per day is projected from the Mendip quarries to terminals in the SWML area. Up to 1 additional service per day is expected between the SWML area and London.

Growth is also anticipated in other types of freight but this will have a more limited impact on the utilisation of train paths on the network.

Figure 10 Tonnage growth



Figure 10 indicates the forecast percentage change in tonnage to 2015. (Note this does not include the tonnage effects of the SWML RUS proposals).

Future capability

The current freight container market is seeing a significant growth in the percentage of 'high cube' 9'6" containers. The proportion of Twenty-foot Equivalent Units (TEUs) that is carried as 9'6" containers currently stands at approximately 20%. This is expected to rise to approximately 45% by 2011 and to circa 60% by 2020, resulting in pressure to examine the most appropriate way to carry these containers to protect the freight market by rail, utilise train paths efficiently and to facilitate the predicted levels of growth.

This arises because the 9'6" containers cannot be carried on standard height platform wagons (1000mm) on most of the network without structure gauge enhancement to a capability known as 'W10'. Where this is not provided they have to be carried on specialist wagons which have a reduced payload of up to 33%, resulting in inefficiency in the use of paths on the network and possible pressure on capacity.

Currently all of the container traffic that traverses the SWML RUS area originates from Southampton Docks, and none of the routes away from the docks towards the primary destination – the West Coast Main Line – has been upgraded to W10 gauge. This growth leads to the recommendation outlined above, i.e. to develop at least one line, and ideally a diversionary line as well, that is cleared for

W10 traffic between Southampton and the West Midlands.

Linespeeds on the route are generally considered adequate, as journey times are primarily dependent on stopping patterns rather than maximum speeds. Some journey times were extended as a result of the December 2004 timetable change and improved linespeed may allow some of this additional time to be reclaimed.

The recommendation to review the timetabling rules, as outlined above, has already resulted in some proposed minor changes to sectional running times (the time taken for a train service to traverse a specific section of line). This will result in some small improvements in journey time, primarily for the Alton line services, when the December 2006 timetable is implemented.

There are a number of stations on the SWML that have platforms shorter than would be ideal. In particular the suburban network generally has platforms that can only accommodate 8-car trains. The requirement to lengthen the services, and platforms where necessary, is phased across a number of years:

- Windsor line platforms to 10 car by 2012;
- other suburban platforms to 10 car by 2014; and
- all platforms to 12 car by the time of Waterloo resignalling, currently expected in the 2020s.

The implementation of the lengthened train service is required across the same timescales. Some platforms will be lengthened to accommodate 12

car trains while the 10 car facility is being constructed to minimise later disruption.

The recently completed Power Supply Upgrade allowed new rolling stock to replace the older slam door stock that had been a mainstay of the route since the 1950s. Further upgrade work will probably be necessary for the train lengthening project and investigatory work will be required as it is developed. Given the lead time for development of this project and the time constraint on analysis for the RUS the level of enhancement necessary is not yet confirmed.

Future capacity

Providing enough capacity to meet increasing demand is the key challenge for the route. The route is operating close to the maximum number of trains that can be run into Waterloo, around Woking Junction, from/to Portsmouth and in the entire inner suburban area.

The SWML RUS proposes to increase the number of people carried on some services by lengthening the trains. However, most trains already operate at the maximum length for the platforms they call at, so this is not a straightforward step to take. The strategy outlined above will provide additional on-train capacity by lengthening the few services that run shorter than their maximum length, mostly in the shoulder peak. The subsequent train and platform lengthening programme will generate the greater step change in capacity provision on the SW London commuter network, providing approximately 15,000 additional seats in the am peak when 10 car operation is possible.

The number of train paths that the network can accommodate is dependent on physical features such as signalling headway, and on the mix of service types (fast and slow, express and stopping) using each line. In the case of the SWML, the mix of services is most challenging between London and Woking. However, this section of line has at least four tracks available throughout, and for most of the distance these are arranged in pairs by direction. This permits services to 'weave' between fast and slow lines at the points most appropriate to their stopping pattern. Consequently, the RUS did not identify any capacity 'gap' that could be addressed by changing the mix of services.

Physical constraints were considered that prevent additional services from running on the network. A number of options are outlined in the SWML RUS to increase track capacity at four key locations on the SWML suburban network: London Waterloo, Clapham Junction, Woking Junction, and the approach to platforms 4a and b at Reading. It has become clear through the analysis of these options that, without the provision of extra capacity into and at London Waterloo, the value of costly infrastructure enhancements at the other locations

is limited. The concept of a hierarchy of infrastructure capacity constraints has been developed, as follows:

Priority Constraint

1. London Waterloo station and approaches
2. Clapham Junction station and approaches
3. Woking Junction
4. Reading station and approaches

Each constraint may be resolved (i.e. removed, at least temporarily) or accommodated (i.e. operations modified to make the best of the constraint). Resolving a constraint would yield at best minor benefits unless the constraints above it have also been resolved. The resources should be directed at first with the recommendations outlined above being the most effective way to deliver the necessary improvements.

Freight demand on the route is forecast to grow at a rate that does not require additional capacity within the ten year period of the RUS. However, in the longer term such capacity may be required, particularly on the corridor between Southampton and Basingstoke, where the major flows leave the SWML route.

Future performance

Current analysis suggests that the most appropriate way to achieve the targeted level of train performance on the SWML is to concentrate on preventing infrastructure failures, particularly as the December 2004 timetable rewrite addressed most of the operationally focused weaknesses. As a result Infrastructure Improvement Plans have been implemented at five key locations within the route. At these locations key infrastructure components will be enhanced or overhauled and the standard and frequency of maintenance will be heightened. These locations are: Waterloo to West Crossings, Basingstoke, Cosham/Havant/Portsmouth, Alton Line and St. Denys to Redbridge. Other plans are based around preventing track faults, broken rails, track circuit and signalling incidents, as well as reducing the number of trains delayed by overrunning possessions.

There continues to be close working between Network Rail and its customers under the 'Joint Performance Improvement Plan' process. During 2006/7 this will focus on leveraging even greater PPM results through collaborative understanding and solving of performance opportunities.

Portsmouth and Basingstoke area re-signalling schemes will provide a significant risk to performance as they progress over the next 2-3 years and work continues to ensure that this is minimised. When the infrastructure is finally commissioned there will be a significant reduction in infrastructure failure in these areas because the projects are focused on renewing equipment that is reaching the end of its effective life.

Figure 11 shows the forecast reduction in Network Rail delay minutes compared with 2005/06.

Figure 12 shows the forecast PPM for the main TOCs running along the route.

Engineering access

The density of service and predominant two-track layout restricts arrangements for engineering access on this route. The layout of the inner Reading lines from London out to as far as Teddington and Hounslow offer a number of diversionary alternatives although use of these rely on replacement bus services to connect affected stations. The multi-track layout between Clapham Junction and Waterloo, which extends over approximately 3.5 miles and includes a number of significant overbridges and complex junctions, present a number of particular practical problems due to the difficulty of obtaining physical access and the intensity of services. The South West Main Line has four-tracks between London and Worting Junction (near Basingstoke) but the degree of operational flexibility that this railway provides is severely compromised because the layout is paired by direction west of Wimbledon. The Effingham Junction line provides an alternative means of reaching Guildford from Surbiton. From Woking it is possible to reach Southampton and stations further west via the Portsmouth line.

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 3hrs in the Portsmouth Harbour area, to as much 7hrs on a number of branch and country lines. On the main line possessions of less than 4hrs are available between Waterloo and New Malden and 5-6hrs on the section between New Malden and Basingstoke.

Figure 11 Forecast reduction in delay minutes

	2006/07	2007/08	2008/09
% reduction in delay minutes	5%	11%	16%

Figure 12 Forecast PPM MAA

TOC	2006/07	2007/08	2008/09
South West Trains	90.3%	90.5%	90.6%
Southern	87.4%	88.3%	89.2%
First Great Western Link	84.4%	85.5%	86.4%
Virgin Cross Country	81.6%	83.5%	84.3%
Wessex Trains	86.0%	86.7%	87.4%
Island Line	97.4%	97.4%	97.4%

On the Staines to Reading line the operator needs to take out late trains and freight services require diversion to provide possessions in excess of 5hrs access. On the North Downs Line 4hr 30min possessions are available. Most of these periods are sub-optimal in terms of delivery efficiency and cost.

At complex locations use of the short available weeknights is impractical and therefore maintenance of such sites tends to rely solely on weekend access opportunities.

A sequence of weekend 'Golden' possessions for most critical locations/junctions has been developed and agreed with operators. This typically provides fifty-five 10-28hr possessions per year. Over the next two years this regime will provide essential access to the entire route for maintenance work including at the 15 critical junctions.

Opportunities and challenges

The SWML RUS has identified the key opportunities and challenges for the route.

Successfully accommodating the expected growth of around 20% more passengers over the next ten years, with little available capacity, is clearly the key challenge for the SWML. The RUS has concluded that this growth can be met with a combination of several initiatives, as outlined above.

The demand forecasts used in the SWML RUS are a consensus among the rail industry stakeholders. However there are a number of uncertainties that require the consideration of alternative growth rates. In developing the strategy, it was agreed that growth is unlikely to be significantly lower than the forecast, but a number of factors (e.g. road congestion or pricing) could drive passenger rail demand to be higher than the forecast. A sensitivity test concluded that if demand were to rise by 50% higher than the rate predicted over the ten-year period of the RUS, then the proposed train and platform lengthening facilitated by the redevelopment of Waterloo station would still be the most appropriate approach, but might need to be brought forward in time.

The extent to which this is possible is constrained by the lead time of the projects. The Waterloo redevelopment scheme could start as early as 2008, with ten-car capability being delivered on the Windsor and Reading routes in 2010 and the other suburban routes two years later.

Finally, if growth is sustained at a level substantially higher than the base case forecast, then there could be a case to bring forward the Waterloo area signalling renewal (and the associated proposals to introduce twelve-car suburban trains, and to remodel Clapham Junction) to a date before 2020. Even in the sensitivity case, these longer term changes would only be justified at the very end of the ten-year period of the RUS.

Delivering future requirements

Expenditure

Figure 13 shows the planned level of expenditure on renewals on this route over the next three years. However, the precise timing and

scope of renewals remains subject to review to enable us to meet our overall obligations as efficiently consistent with the reasonable requirements of operators and other stakeholders.

Figure 13 Forecast expenditure

£m (05/06 prices)	2006/07	2007/08	2008/09
Renewals			
Track			
Plain Line	25	22	20
S&C	34	36	33
Track Total	59	58	54
Civils			
Underbridges	3	15	2
Overbridges	–	–	–
Bridgeguard 3	0	1	2
Footbridges	–	–	0
Earthworks	1	0	–
Other	0	–	–
Civils Total	5	16	3
Signalling			
Resignalling	73	41	21
Minor works/other	9	12	8
Signalling Total	82	52	29
Electrification			
DC Systems			
HV switchgear	3	7	7
HV cables	0	1	1
LV switchgear	4	3	2
Transformers/rectifiers	0	1	1
Grid supply points	–	–	0
Conductor rail	2	1	1
Other	1	1	1
Electrification Total	10	13	13
Telecoms			
Concentrators: large	0	0	2
CIS systems	–	–	0
Other	–	–	0
Telecoms Total	0	0	3

Plant and machinery			
Fixed plant	0	1	2
Signal supply point	–	–	0
Point heating	1	2	1
Plant and machinery Total	1	2	4
Operational property			
stations	13	1	8
Light maintenance depots	1	–	–
Lineside buildings	0	–	–
Operational property Total	14	1	8
Other Renewals			
Maintenance delivery unit depots	0	–	–
Other Renewals Total	0	–	–
Total Renewals	171	143	114
Enhancements (funded by)			
Network Rail			
Other	0	–	–
Network Rail Total	0	–	–
Network Rail (RAB)			
Alton Line re-doubling (linked with Fanham resignalling project)	1	1	8
Basingstoke resignalling enhancement options	–	0	3
Other	0	–	–
Network Rail (RAB) Total	1	1	11
Other Third Party			
Southern New Trains, South West Trains element	12	–	–
Other	1	0	0
Other Third Party Total	13	0	0
Total Enhancements	14	1	11

Figure 14 Forecast volumes

	2006/07	2007/08	2008/09
Track			
Rail (km)	38	36	36
Sleepers (km)	38	36	36
Ballast (km)	38	36	36
Switches & crossings (no)			
Complete renewal	75	86	86
Drainage (km)	0	0	0
Civils			
Underbridges (square metres)	772	7,005	2,748
Overbridges (square metres)	293	403	329
Footbridge (square metres)	–	–	80
Embankments (square metres)	4,150	5,940	–
Signalling			
Resignalling (SEUs)	251	225	193
Electrification			
DC Systems			
HV switchgear (CBs)	15	36	54
HV cables (km)	0	9	10
LV switchgear (CBs)	34	49	30
Transformers/rectifiers (no)	2	2	6
Conductor rail (km)	5	12	8
Telecoms			
Concentrators: large (no)	1	–	5
Voice recorders (no)	1	–	–
Plant and machinery			
Signal supply point (no)	–	–	1
Point heating (point end)	79	179	189

The planned volume of renewals is detailed in Figure 14.

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

Maintenance

Figure 15 shows the planned level of expenditure on maintenance on this route over the next three years.

Figure 15 Forecast expenditure

£m (05/06 prices)	2006/07	2007/08	2008/09
Maintenance	55	51	47

Infrastructure investment

Figure 16 highlights committed schemes that are planned for completion in the financial year shown.

Project	Scope	Enhancement or output change	Main asset type(s)	Third Party funding	GRIP stage	Completion year	
A	Bookham structural works (03.07)	Arrest of sidewall movement	Improved asset condition and performance	Civils	None	3	2006
B	Basingstoke canal bridge (Aldershot) works (03.13)	Renewal of structural equipment	Improved asset condition	Civils	None	2	2007
C	Portsmouth area signal renewals (03.06)	Renewal of signal and track equipment	Improved asset condition and performance. Provides additional capability with reversible working from Havant to Portsmouth Harbour and some linespeed increases. Removal of the through track at Havant	Signalling and track	None	6	2007
D	Weybridge track works (03.01)	Renewal of S&C equipment	Improved asset condition and performance	Track	None	2	2007
E	Ryde Pier structure renewal (03.10)	Renewal of structural equipment	Improved asset condition	Civils	None	1	2008
F	Barnes river bridge renewal (03.12)	Renewal of structural equipment	Improved asset condition	Civils	None	1	2008
G	Farnham area signal renewals (03.13)	Renewal of signalling equipment	Improved asset condition and performance. Options for additional small and medium sized enhancements are being considered	Signalling	None	2	2008

Figure 16 Planned infrastructure investment

Project	Scope	Enhancement or output change	Main asset type(s)	Third Party funding	GRIP stage	Completion year
H Clapham Junction track works (03.01)	Renewal of S&C equipment	Improved asset condition and performance	Track	None	1	2008
I St Denys track works (03.03)	Renewal of S&C equipment	Improved asset condition and performance	Track	None	1	2008
J Wimbledon track works (03.01)	Renewal of S&C equipment	Improved asset condition and performance	Track	None	1	2008
L Guildford station Redevelopment (03.06)	Major development and improvement of the station and immediately surrounding area	Enhancement to station facilities, platform capability and car park	Station, track and signalling	None	1	2012
M Basingstoke area signal renewals (03.02)	Renewal of signal and track equipment	Improved asset condition and performance. Provides improved headways between Basingstoke and Reading	Signalling and track	None	5	2009



Figure 17 highlights uncommitted schemes under development.

Project	Scope	Enhancement or output change	Main asset type(s)	Status
N	Waterloo Masterplan (03.01,03.12)	Redevelopment of Waterloo station	Longer platforms, greater station capacity, better track layout and improved access and egress from the station	Station and track Recommended by the SWML RUS
N	Waterloo International Terminal (03.01,03.12)	The future operational use of Waterloo International	Greater capacity could be provided for domestic services with the use of the International Terminal	Station Proposals under development
H	Clapham Junction passenger congestion relief (03.01, 02.01)	A new station entrance to provide access onto the footbridge from St Johns Hill to the platforms. Lifts to platforms could be provided to enable DDA compliance	Congestion relief in the subway and step free access to platforms	Station Awaiting third party funding
E	Southampton-Basingstoke gauge enhancement (03.03)	Works to allow W10 gauge trains to run from Southampton to the West Coast Main Line	The line would be cleared to W10 gauge to allow larger freight services to run without the requirement for specialist wagons	Civils and track Recommended by the SWML RUS (for further development through the Freight RUS)
F	Southampton Airport Parkway footbridge and car park extension (03.03)	Provision of an extended car park and covered footbridge	Enlarged car park capacity and DDA compliant station facilities	Station Under development
E	Ryde Esplanade interchange (03.10)	Improved interchange at Ryde Esplanade	Improved station capacity and DDA Compliant station facilities	Station Under development

Figure 17 Infrastructure investment under consideration

Project	Scope	Enhancement or output change	Main asset type(s)	Status
Ⓡ Epsom platform 4 turnback (02.08.03.07)	New crossover on Motpur Park lines. Signalling changes to allow trains to reverse in platform 4	Enables services to reverse at Epsom without conflicting with Southern services. Improved performance	Track, signalling	Under consideration
Ⓢ Swanage line reconnection (03.04)	New route	There is a local aspiration to reconnect the Swanage branch to the mainline at Worgret Junction	Track, signalling	Awaiting design work and third party funding
Ⓣ Holybourne freight terminal (03.13)	Provision of a run-round facility for freight services	Improved capacity at Alton as the current freight service runs round there. Improved operational performance and stock utilisation	Track	Under consideration
Ⓤ Dorchester South station (03.04)	Station redevelopment	Station redevelopment and additional facilities	Station	Under consideration
Ⓥ Farncombe platform extension (03.06)	Extend platforms	Removes need to use SDO when calling at this station. Reduced station dwell times	Platforms	Under consideration
Various Car Park expansion schemes	Car park expansion schemes such as Southampton Airport Parkway, Winchfield and Esher	Increased car parking provision. Scope to be agreed with Train Operating Company and Local Planning Authority	Station	Recommended by the SWML RUS
Various Platform Lengthening schemes	Platform lengthening of some suburban stations to 10 and 12 car length	Enables the lengthening of suburban trains to provide additional capacity	Stations and signalling	Recommended by the SWML RUS

Figure 17 Infrastructure investment under consideration

Project	Scope	Enhancement or output change	Main asset type(s)	Status
  AirTrack (03.12, 03.13, 03.06)	Rail access to Heathrow Airport from the south	Enables new services to Heathrow Airport from Waterloo, Reading and Guildford via Staines	New line	Under consideration

Non-infrastructure developments

Figure 18 highlights significant timetable schemes for the route are under development.

Figure 18 Timetable development

Description	Key issues	Actions or options being developed	Benefits	Target timetable implementation
Portsmouth Harbour workings	The interaction of the different TOCs at Portsmouth Harbour causes delay	Altering the platforming arrangements at Portsmouth Harbour is being considered by the SWML RUS	Improved performance	December 2007
Southampton area workings	The interaction of the different TOCs at Southampton can cause delay	Changing the service pattern in the Southampton area is being considered by the SWML RUS	Improved performance and rolling stock utilisation	December 2007
Resilient timetable review	Performance	Review the Rules of the Plan to ensure more accurate timetables	Improved performance	Ongoing

Figure 19 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	TBC

Figure 20 Strategic route sections

Predominant aspect recorded (secondary aspects recorded in brackets) Note: ELR is Engineers Line Reference and RA is Route Availability

SRS	SRS Name	ELR	Classification	Funding	Community Rail	Freight Gauge	RA	Speed	Electrification	Signalling Type	Signalling Headway	No of Tracks
03.01	Waterloo – Woking (main lines)	BML1	Primary	DfT	No	W7 (8)	8	55 – 100	Third rail	TCB	2 – 3.5 mins	4
03.02	Woking – Basingstoke	BML1	Primary	DfT	No	W8	8	100	Third rail	TCB	2 – 3.5	4
03.03	Basingstoke – Southampton	BML1,2	Primary	DfT	No	W8	8	100	Third rail	TCB	2 – 3.5	2 – 4
03.04	Southampton – Weymouth	BML2,3	Secondary	DfT	No	W8 (7)	8	55 – 100	Third rail	Various	2 – 8	2
03.05	Lymington Branch	BLP	Secondary	DfT	Yes	W6	8	60	Third rail	OTW (w/o)	N/A	1
03.06	Woking – Portsmouth	WPH	London & SE	DfT	No	W6 (7)	8 (7)	85	Third rail	TCB	2 – 4.5	2
03.07	Main Line Suburban Lines	RPE,MPC, LEJ,NGL, HAM	London & SE	DfT	No	W6	8	45 – 70	Third rail	TCB	2 – 5.5	2
03.08	Redhill – Guildford	RSJ	Secondary	DfT	No	W6	8	70	None	TCB	4 – 7	2

Figure 20 Strategic route sections

Predominant aspect recorded (secondary aspects recorded in brackets) Note: ELR is Engineers Line Reference and RA is Route Availability

SRS	SRS Name	ELR	Classification	Funding	Community Rail	Freight Gauge	RA	Speed	Electrification	Signalling Type	Signalling Headway	No of Tracks
03.09	Guildford – Wokingham	GTW,NSA	Secondary	DfT	No	W6	8	70	Third Rail (None)	TCB	2.5 – 11	2
03.10	Isle of Wight	IOW	Rural	DfT	Yes	W5	1	45	Third rail	Various	N/A	1
03.11	Cosham Junction – St Denys/ Eastleigh	SDP,ETF	London & SE	DfT	No	W7 (6)	8 (7)	70	Third rail	TCB	2 – 6	2 (1)
03.12	Inner Windsor Lines	RDG1, HOU,NMS, TSJ	London & SE	DfT	No	W6 (8)	8 (7)	60	Third rail	TCB	2 – 5.5	4
03.13	Outer Windsor Lines and Alton	SWE, RDG1,2, AAV,VVVV, PAA	London & SE	DfT	No	W6 (7)	8 (7)	55 – 70	Third rail	Various	2 – 6.5	2 (1)
03.14	Freight Lines	Various	Freight	DfT	No	Various	Various	Various	None	Various	N/A	Various

Capacity and other operational constraints

- A** Waterloo station: all domestic platforms operate at capacity during peak, approaches close to capacity all day
- B** Waterloo – Wimbledon: slow lines at capacity during peak
- C** Waterloo – Woking: fast lines at capacity during peak
- D** Waterloo – Twickenham: operates close to capacity with passenger overcrowding
- E** Woking, Basingstoke and Eastleigh Junctions: crossing moves over flat junctions restrict capacity
- F** Worting Junction – Southampton: traffic mix and two track sections restrict capacity
- G** Reading station: only two platforms available for electric trains and short single track section leading to both
- H** Reading – Redhill: mix of traffic restricts capacity, predominantly two track with no passing loops limits ability to run faster services
- I** Wokingham – North Camp: signaling headway restricts capacity

Other issues on the route

- I** All routes: new timetable introduced by South West Trains in December 2004