

South West Main Line

Route Utilisation Strategy

March 2006





Foreword

I am pleased to introduce the first Route Utilisation Strategy (RUS) published by Network Rail, which covers the South West Main Line and includes the lines into London Waterloo.

Following the Government White Paper, 'The Future of Rail', Network Rail was charged with developing Route Utilisation Strategies on behalf of the rail industry, following on from the previous work of the Strategic Rail Authority. It is a task we have taken forward in a consultative way, involving key stakeholders such as train and freight operators, local authorities and passenger groups at every step of the way. As such, this RUS for the South West Main Line should be seen as the product of the rail industry, not just of Network Rail.

This strategy was consulted upon in November 2005, and since then has been subject to a period of intensive discussion with stakeholders. As well as this consultative process, further study and analysis has been undertaken on each of the options set out in the Draft for Consultation.

Network Rail is ambitious for the South West Main Line. The line has witnessed considerable growth in demand in recent years, and this is forecast to continue in the future. The strategy responds to this by recommending a programme of improvements which will grow capacity on the route, seeking to meet the needs of both passengers and freight.

The strategy recognises that some major improvements will take time to deliver and these will need to be discussed with the Department for Transport as part of the

regulatory process for determining Network Rail's income between 2009 and 2014. These longer-term improvements include a requirement for significant additional rolling stock to meet the growth in passenger demand.

However, there are some improvements which are urgently needed and could be delivered within the next three years. I am particularly pleased that amongst these early improvements recommended is the gauge enhancement of the route from Southampton to Reading to carry the larger W10 containers preferred by many of our freight customers. This would be excellent news for the rail freight market, and allow them to build upon the considerable growth seen in recent years.

Another early improvement proposed by the RUS is the introduction of an hourly service between London Waterloo and Exeter, something much demanded by regional stakeholders in the south west. This would require significant infrastructure works on the line, but would mean a big improvement in services to passengers.

These improvements, amongst the many others proposed by the strategy, reflect Network Rail's ambitions to grow the South West Main Line. I am proud to present this as the first Route Utilisation Strategy developed by Network Rail.

John Armitt
Chief Executive

Executive summary

The South West Main Line (SWML) Route Utilisation Strategy (RUS) is the first to be published in Network Rail's RUS programme. In addition to ongoing informal consultation with a wide group of stakeholders throughout the process, a formal consultation was undertaken between November 2005 and January 2006. The resulting strategy is outlined in this document and supported by appendices containing information on accepted and rejected options, consultation responses and other supporting data. These appendices are available on the Network Rail website at www.networkrail.co.uk.

A range of measures has been identified to make effective and efficient use of railway capacity and to develop additional capacity. These measures have been selected on the basis of their value for money and potential affordability across the ten-year period of the strategy.

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 addressed. Unlike some other routes, there is no clear sub-optimal use

of network capacity on London peak services requiring correction. Other parts of the SWML network also have capability and operational weaknesses that, without action, would result in a shortfall from the desired outputs across the RUS timeframe.

A few of the measures proposed have no material cost; some will cover their costs financially within a few years; and some require investment that is justified by wider benefits to the economy. Where appropriate, the train service changes associated with these measures will be included in the Department for Transport's Invitation to Tender for the South Western franchise; either in the base specification or as priced options.

Measures to address overcrowding in the peak period

- 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 high peak hour and peak shoulders. The strategy aims to manage both supply and demand to meet forecast growth efficiently rather than suppress it.
- There is no practical scope to run additional trains into London Waterloo in the high peak, and the existing trains are at their maximum permitted length. Over the whole peak period, some crowded trains in the peak shoulders can be lengthened. High priority cases have been identified that should be lengthened as soon as practicable.
- The proposed redevelopment of Waterloo station, including the Waterloo International Terminal, would double the concourse capacity and extend all platforms to accommodate at least ten-car trains. Remodelling of the station and, eventually, the track on 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 station. 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.

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 utilisation 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 2006 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 the Department for Transport and the Association of Train Operating Companies. The alterations include a rebalancing of service groups and stopping patterns to better match resources to demand, with only a very minimal impact on service levels for specific stations.
- 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 the 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.

Measures to develop capacity in the south west

- Regional stakeholders on the West of England line seek an hourly London Waterloo to Exeter service and an additional hourly Axminster to Exeter service. This would require additional infrastructure and would provide an enhanced service level in an area of the network where capacity is heavily constrained. Network Rail is working with stakeholders to identify funding solutions for part or all of this proposal, including the possible use of the Network Rail Discretionary Fund.

Contingent projects

The RUS includes consideration of the relationship between the strategy proposals and three major projects: AirTrack, Thameslink Programme and Crossrail.

The longer term

The steps proposed will close the gaps identified on the SWML over the ten-year scope of the strategy. The RUS also sets out a framework for investment to address growth over the next twenty years or more, such as progressively lengthening trains and platforms to twelve cars throughout the SWML suburban network. Integration with forthcoming major renewal schemes in the Waterloo – Clapham Junction area will establish the foundation for a long-term strategy.



Contents

Document Guide

The South West Main Line Route Utilisation Strategy consists of a strategy document and appendices.	The printed document contains the context and scope, an overview of the consultation responses and the Route Utilisation Strategy conclusions.
This document is the Route Utilisation Strategy, which is also available online at www.networkrail.co.uk	The web based appendices have been set out relative to the list of options identified in the Draft for Consultation, and explain the analysis and conclusions for each.
Extensive supporting documentation, as outlined in the contents list below, is available only on the website.	

Contents

1	Background	10
2	Context and scope	12
2.1	Purpose	12
2.2	Stakeholders	12
2.3	Linkage to other work streams	12
2.3.1	South Western franchise replacement	12
2.3.2	Other refranchising processes	12
2.3.3	The future of Waterloo International Terminal	12
2.3.4	Freight Route Utilisation Strategy	13
2.3.5	Interfaces with other Route Utilisation Strategies	13
2.3.6	Regional Planning Assessments and Regional Strategies	13
2.3.7	Transport for London's Rail Corridor Plans	14
2.3.8	Other plans and strategies	14
2.4	Scope	14
2.4.1	Geography	14
2.4.2	Timeframe	15
3	Consultation process and overview	18
3.1	The Draft for Consultation	18
3.2	Consultation responses	18

4	Strategy	20
4.1	Overview	20
4.2	Key strategic considerations	23
4.2.1	Passenger demand	23
4.2.2	System capacity	24
4.2.3	Engineering access	25
4.3	Better use of current industry resources	26
4.3.1	Lengthening trains	26
4.3.2	Review of timetable principles	26
4.3.3	London Waterloo	28
4.3.4	Other stations	29
4.3.5	Change to services west of Southampton	29
4.3.6	Change to operations at Portsmouth Harbour	30
4.4	Investment to address forecast growth	31
4.4.1	London Waterloo	31
4.4.2	Train and platform lengthening	34
4.4.3	Loading gauge for freight trains	35
4.4.4	The route to Exeter	35
4.5	Conclusions	38
4.5.1	Until March 2009 (Control Period 3)	38
4.5.2	April 2009 to March 2014 (Control Period 4)	40
4.5.3	From April 2014 (Control Period 5)	40
4.5.4	Summary of effects	41
4.5.5	Alternative growth scenarios	42
4.6	Contingent projects	42
4.6.1	AirTrack	42
4.6.2	Crossrail	43
4.6.3	Thameslink Programme	43
5	Next steps	45

Appendices available at www.networkrail.co.uk

- Draft for Consultation (published November 2005)
- Option analysis
- Background information including:
 - Baseline
 - Drivers of change
 - Committed schemes
- Consultation responses

1 Background

The Route Utilisation Strategy (RUS) process was established by the Strategic Rail Authority (SRA). The initial programme of RUSs was focussed on areas of the network where there was seen to be a potential to generate greatest benefits, where there was seen to be a significant mix of traffic causing issues not capable of resolution within a single passenger franchise specification or track access variation, and where congestion existed with significant levels of reactionary delay. To do this the analysis and appraisal sought to capture the impacts on all industry parties and the wider societal effects. The purpose was to understand which options maximised the net industry and societal benefits rather than that of any individual organisation or group affected.

A RUS is defined in Condition 7 of the network licence as, in respect of the network or a part of the network*, a strategy which will promote the route utilisation objective. The route utilisation objective is defined as:

“The effective and efficient use and development of the capacity available, consistent with funding that is, or is reasonably likely to become, available during the period of the route utilisation strategy and with the licence holder’s performance of the duty”.

*The definition of network in Condition 7 of Network Rail’s network licence includes, where the licence holder has any estate or interest in, or right over a station or light maintenance depot, such station or light maintenance depot.

ORR guidelines on Route Utilisation Strategies, June 2005

Following the Rail Review in 2004 and the Railways Act 2005, The Office of Rail Regulation (ORR) modified Network Rail’s network licence in June 2005 to require the establishment of Route Utilisation Strategies across the network. Simultaneously, the ORR published RUS guidelines.

The “duty” referred to in the objective is Network Rail’s general duty under Licence Condition 7 in relation to the operation, maintenance, renewal and development of the network.

The ORR guidelines identify two purposes of RUSs, and state that Network Rail should balance the need for predictability with the need to enable innovation.

Such strategies should:

- (a) enable Network Rail and persons providing services relating to railways better to plan their businesses, and funders better to plan their activities; and
- (b) set out feasible options for network capacity, timetable outputs and network capability, and funding implications of those options for persons providing services to railways and funders.

ORR guidelines on Route Utilisation Strategies, June 2005

The guidelines also set out principles for RUS development and explain how Network Rail should consider the position of the railway funding authorities, the likely changes in demand and the potential for changes in supply. Network Rail has developed a RUS Manual, consisting of a consultation guide and a technical guide, to explain the processes it will use to comply with the Licence Condition and the guidelines. These and other documents

relating to the programme and individual RUSs are available at www.networkrail.co.uk.

The process is designed to be inclusive. Joint work is encouraged between industry parties, who share ownership of each RUS through its Industry Stakeholder Management Group, and there is extensive informal consultation outside the rail industry by means of a Wider Stakeholder Group.

The ORR guidelines require options to be appraised using, initially, the SRA’s (now DfT’s) appraisal criteria and, in Scotland, the Scottish Executive’s STAG appraisal criteria.

RUSs occupy a particular place in the planning activity for the rail industry. They utilise input, where available, from processes such as the DfT’s Regional Planning Assessments (RPAs) and Wales Planning Assessment, and Transport Scotland’s Planning Assessment. The recommendations of a RUS, and the evidence of relationships and dependencies revealed in the work to reach them, will in turn form an input to decisions made by industry funders and suppliers, e.g. on franchise specifications, investment plans or the High Level Output Specifications (HLOSs). Network Rail will take account of RUSs when carrying out its activities.

RUSs also help to inform the allocation of capacity on the network through application of the normal Network Code processes. The ORR will take account of established RUSs when exercising its functions.

2 Context and scope

2.1 Purpose

The development of a Route Utilisation Strategy (RUS) for the South West Main Line (SWML) area is required for a number of reasons. The primary drivers of the SWML RUS are to:

- inform the development of the Government's specification for the South Western franchise
- inform the required outputs for infrastructure renewals
- inform the High Level Output Specification to be produced in 2007.

2.2 Stakeholders

The Department for Transport (DfT), Transport for London (TfL), the Association of Train Operating Companies, South West Trains and the freight operating companies that operate on the route have been represented on the SWML RUS Industry Stakeholder Management Group throughout its development. The Office of Rail Regulation has participated in this group as an observer.

A series of wider stakeholder briefings have been held in London, Exeter and Southampton to explain the context and scope and invite correspondence on local issues.

2.3 Linkage to other work streams

2.3.1 South Western franchise replacement

The new South Western franchise is scheduled to commence in February 2007. The replacement combines the existing South West Trains and Island Line franchises, both of which are currently operated by Stagecoach Group plc. The new franchise will run for 10 years. The specification on which the DfT is to invite tenders has been developed

alongside and informed by the RUS. The DfT issued a consultation document in November 2005, shortly after the SWML RUS Draft for Consultation. Many of the responses to the RUS consultation were sent as a joint submission to the DfT also. Following review of the responses, there was again close liaison during the finalisation of the RUS and the franchise specification. It is anticipated that the Invitation to Tender will be issued to prospective bidders in March this year and that the franchising process will be complete by the latter part of 2006.

2.3.2 Other refranchising processes

The successful bidder was announced for the Greater Western franchise in December 2005. Services within this franchise that are relevant to the SWML RUS include those at Exeter, Salisbury – Portsmouth/Brighton, Reading – Basingstoke and Reading – Guildford – Redhill (the North Downs line). This franchise will begin in April 2006.

A new Cross Country franchise specification is in development. This specification is expected to be consulted with stakeholders in summer 2006, and the franchise to start in autumn 2007. This will affect services that currently operate on the SWML area between Reading and the south coast, and some services over the North Downs line.

The next South Central franchise is not yet in development. It will interface with the SWML RUS at Epsom, Clapham Junction and Havant and is expected to begin in 2009.

2.3.3 The future of Waterloo International Terminal

Waterloo International Station is to be vacated by Eurostar when the service transfers fully via the Channel Tunnel Rail Link to St Pancras in

2007. This strategy considers the appropriate future use of the facility.

2.3.4 Freight Route Utilisation Strategy

The rail industry is undertaking a Freight Route Utilisation Strategy led by Network Rail. The study commenced with the first stakeholder consultation meeting in October 2005. The initial phase of the Freight RUS will involve establishing nationwide demand forecasts and preferred routing statements for the freight industry for the next 10 years. Subsequent work will then focus on key capacity, capability and gauge constraints on the network over the same time period.

The study is planned to be published, following full consultation, in early 2007. However, key outputs from the work may be implemented before its conclusion.

2.3.5 Interfaces with other Route Utilisation Strategies

- Great Western Main Line RUS (produced by the Strategic Rail Authority), which interfaces with the SWML RUS at Reading and Exeter. This RUS was published in June 2005
- Brighton Main Line RUS (published by the Department for Transport in February 2006), which interfaces with the SWML RUS at Epsom, Havant, Dorking and Clapham Junction

The SWML RUS and the three detailed below are part of the new programme of RUSs developed by the rail industry following 'The Future of Rail' White Paper¹.

- Cross London RUS (led by Network Rail), which interfaces with the SWML RUS at Clapham Junction and Richmond, was published for consultation in November

2005. It is expected to publish its conclusions in May 2006

- South London RUS (led by Network Rail), due to start in summer 2006 and conclude during 2007, will interface with the SWML RUS at Epsom and Clapham Junction
- Network RUS (led by Network Rail), due to start in the second quarter of 2006 and conclude during 2007, will include long distance services and cross-RUS issues.

2.3.6 Regional Planning Assessments and Regional Strategies

The objective of the Regional Planning Assessments (RPAs) is to develop understanding of the priorities for development of regional transport over the next 5-20 years in the wider context of planning policy and strategy at the regional scale. The RPAs have a longer time horizon than RUSs and aim to establish the objectives for the railway within the wider transport system in meeting regional needs.

The South West Main Line scope area will be covered in three RPAs: the Southern RPA (covering South London, Surrey, part of Berkshire, Sussex and Hampshire), the Thames Valley RPA (covering part of Berkshire) and the South West RPA (covering Wiltshire, Somerset, Dorset and Devon). The Southern RPA is in preparation. Work on the South West and Thames Valley RPAs will commence in due course.

RPAs are the interface between the railway planning framework and the regional planning strategies. In the case of the SWML RUS scope area, the relevant regional strategies are the London Plan/Mayor's Transport Strategy, the South East Plan/Regional Transport Strategy and the South West Regional Spatial Strategy/Regional Transport Strategy.

¹ Published by The Stationery Office July 2004.

2.3.7 Transport for London's

Rail Corridor Plans

Rail Corridor Plans (RCPs) are designed to set out Transport for London's strategy for the development of the rail network in the Greater London Authority area, to provide adequate capacity for passengers and freight and to support the spatial development objectives within the London Plan.

These objectives are to:

- accommodate London's growth within its boundary without encroaching on open spaces
- make London a better city for people to live in
- make London a more prosperous city with strong and diverse economic growth
- promote social inclusion and tackle deprivation and discrimination
- improve London's accessibility
- make London a more attractive, well designed and green city.

TfL's Rail Corridor Plan for London and the South West has examined in detail a range of options, and has concluded that the corridor is best served by a significant capacity enhancement, involving lengthening suburban trains to twelve cars, and the main line services to fifteen. In addition, it has developed a strategy for improving interchange opportunities on the route, especially at Clapham Junction, a range of measures designed to improve the accessibility of the network and stations, and a programme of enhancements to improve the security of stations on the South Western network.

The RCP is an input to the DfT's franchise specification and Regional Planning Assessments, and this final SWML RUS document.

There has been, and will continue to be, close co-operation and information exchange between the teams responsible for the South Western refranchising, the Rail Corridor Plan and the RUS.

2.3.8 Other plans and strategies

Published Local Implementation Plans, Local Transport Plans, Regional Spatial Strategies and Multi-Modal Studies have been considered in the development of this strategy.

2.4 Scope

2.4.1 Geography

The strategy covers the South West Main Line from Waterloo (Network Rail's Strategic Route 3), and much of the West of England Line (Network Rail's Strategic Route 4). It includes most subsidiary routes along this corridor. The SWML RUS broadly encompasses those routes that the DfT intends to include within the new South Western franchise.

The area includes the main lines from Waterloo to Portsmouth, Southampton, Bournemouth, Weymouth, Salisbury and Exeter, and the line from Waterloo to Reading.

The south west London sections form a tight network serving many busy commuter stations in the London Boroughs of Wandsworth, Merton, Richmond upon Thames, Kingston upon Thames, and Hounslow.

The area encompasses a number of other routes including the line from Redhill to Guildford and Wokingham (where it joins the line from Waterloo to Reading) and the Netley and Botley lines, which extend the coastal route west of Havant.

The routes from Reading to Basingstoke and Southampton / Eastleigh to Salisbury are also included.

The Southampton to Basingstoke section is part of the strategic freight route from the south to the midlands and the north. The major freight flows within the scope of the RUS are those along the South West Main Line via Basingstoke and Reading (though some traffic continues on the main line through Woking and Virginia Water into London).

Freight traffic from the South Coast to Bristol and Wales is transported on the route via Redbridge Junction near Southampton and Eastleigh East Junction. Clapham Junction to Old Kew Junction on the Hounslow loop is a diversionary route for freight traffic into North London from Kent, Sussex and the Channel Tunnel.

The strategy considers all services that use these routes for part or all of their journeys to the extent necessary to achieve the route utilisation objective.

This strategy does not include the Island Line, which is included within the list of proposed Community Rail lines.

Figure A illustrates the scope of the SWML RUS

2.4.2 Timeframe

This strategy primarily covers the anticipated duration of the South Western franchise, 2007 to 2017, although it looks further into the future to identify the major factors that will influence route strategy over the franchise period and the longer-term capacity requirements of freight.

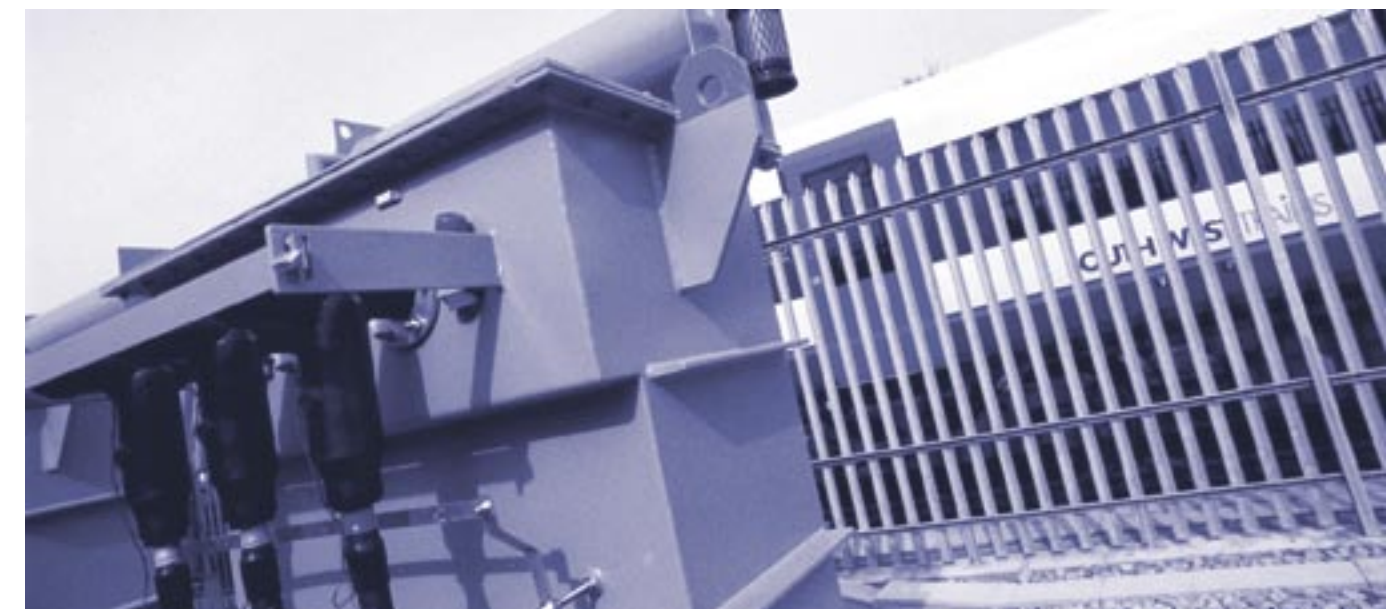
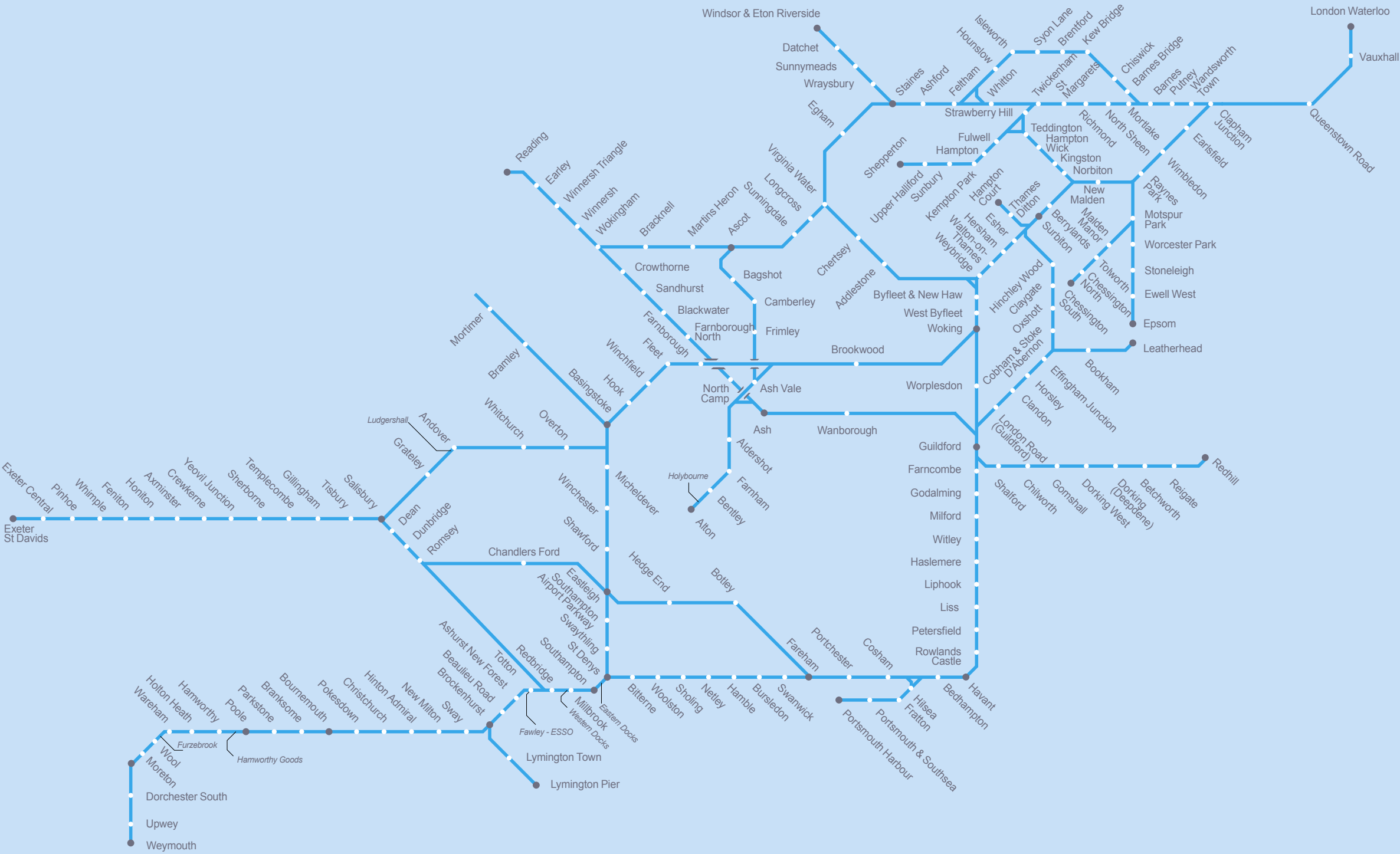


Figure A: The scope of the SWML RUS.



3 Consultation process and overview

3.1 The Draft for Consultation

The South West Main Line (SWML) Route Utilisation Strategy (RUS) is the pilot for the new process established following the rail review. The Draft for Consultation, published in November 2005, sets out the relevant background information on the SWML RUS area, outlining the issues that are faced currently and those that are predicted in the period 2007 to 2017. The document then outlined the options to be developed within the strategy and the next steps that would be taken in each case.

Issues from the Draft for Consultation were presented to stakeholders at briefing sessions held in London, Southampton and Exeter.

3.2 Consultation responses

A total of 109 responses have been received by post and electronic mail. The responses have come from a variety of sources and include rail industry partners, regional and local government, Members of Parliament, rail user groups and members of the public.

A list of consultation respondents and their responses (Appendix 15) can be viewed at www.networkrail.co.uk.

The majority of contributions were extremely positive. All responses have been acknowledged by the RUS Consultation Manager and reviewed by the SWML RUS team. The following summarises the key points made by consultees:

- Considerable support for the options to enhance capacity on the West of England line. While most respondents expressed a preference for the complete double tracking of the line, many noted that the provision of extra passing loops offers a more realistic value for money solution.

- The strategy should clearly identify which of its proposals refer to maximising the use of existing network capacity and which require the provision of additional capacity, along with the recommended implementation timescales for each. This is reflected in the structure of section 4 of this document.
- Support for the consultation document in its analysis of the hierarchy of constraints on the route and the primacy of the terminus at London Waterloo.
- The option to improve the capacity of certain car parks should be expanded to include other modes used to access stations, such as cycling, bus and foot. The proposals have subsequently been expanded to include station facilities associated with other modes of access.
- A contrast emerged between London based respondents who felt that too much emphasis was placed on long distance or regional considerations and those from outside the London area who felt that their local services had been neglected. The strategy seeks to balance the needs of all parts of the SWML network. The final strategy includes a number of proposals outside the London area but the most significant investment required is at the approaches to central London - where the predicted gap between supply and demand is greatest.
- The West of England line is a key diversionary route for Great Western line services west of Yeovil.

- The list of new station proposals contained within Appendix B of the Draft for Consultation was seen to be incomplete. Respondents have brought several additional proposals to our attention including Wilton, Porton, Boscombe and Hampton Hill as well as the proposed Exeter freight terminal on the West of England line. While these points are welcomed, the list was not intended to be a comprehensive catalogue of stakeholder aspirations, nor do we consider that the RUS should address the case for individual stations, except where a proposal meets a gap identified within the RUS. The RUS will set the strategy for the route which in turn will influence the feasibility and desirability of individual new station proposals. Consultees seeking further information on new station proposals should refer to the guidance produced by the Strategic Rail Authority² (SRA).
- The Southern and South West Regional Planning Assessments remain works in progress. Therefore the SWML RUS had not been able to draw on these assessments, as was expected in the planning process laid out in the White Paper of 2004.
- Since the publication of the Draft for Consultation, the rail freight industry (operators and users' representatives) has agreed a common set of freight demand forecasts for the use of the Freight RUS. An updated comment on freight demand can be found in Appendix 13 to this strategy document published on the Network Rail website.
- A number of the issues predicted in the scoping document were not addressed in the Draft for Consultation. This was

as a result of our intention to capture as many perceived issues as possible in the initial scope document for this pilot RUS. Subsequent analysis and consultation refined the list of gaps and resulted in the prioritisation of the eleven gaps addressed by the Draft for Consultation.

- The North Downs line section of the route was not addressed by the Draft for Consultation. A number of respondents identified gaps concerning long-distance services on this route, for example issues around access to Gatwick Airport. These have not been addressed because the main demand generators are outside the area of this RUS and options to address such gaps would necessarily involve a number of complex cross-boundary issues. It is an example of an issue that may best be addressed by the Network RUS in its consideration of national long-distance cross-route services.
- Proposed major schemes could affect the proposals in this RUS. Their fit with the strategy should be considered by the proposers of these schemes (as explained in Appendix B to the Draft for Consultation). Several respondents asked questions about AirTrack, and some referred to Crossrail. The impact of these two aspirations is discussed in section 4.6.

A number of consultees included comments relating to proposals made only in the Department for Transport's (DfT) South Western franchise consultation document (issued shortly after the RUS Draft for Consultation), particularly in regards to detailed proposed service alterations. These comments have been drawn to the attention of the DfT.

² "New Stations: a guide for promoters" SRA, September 2004. This guide is under revision and will be reissued by Network Rail during 2006.

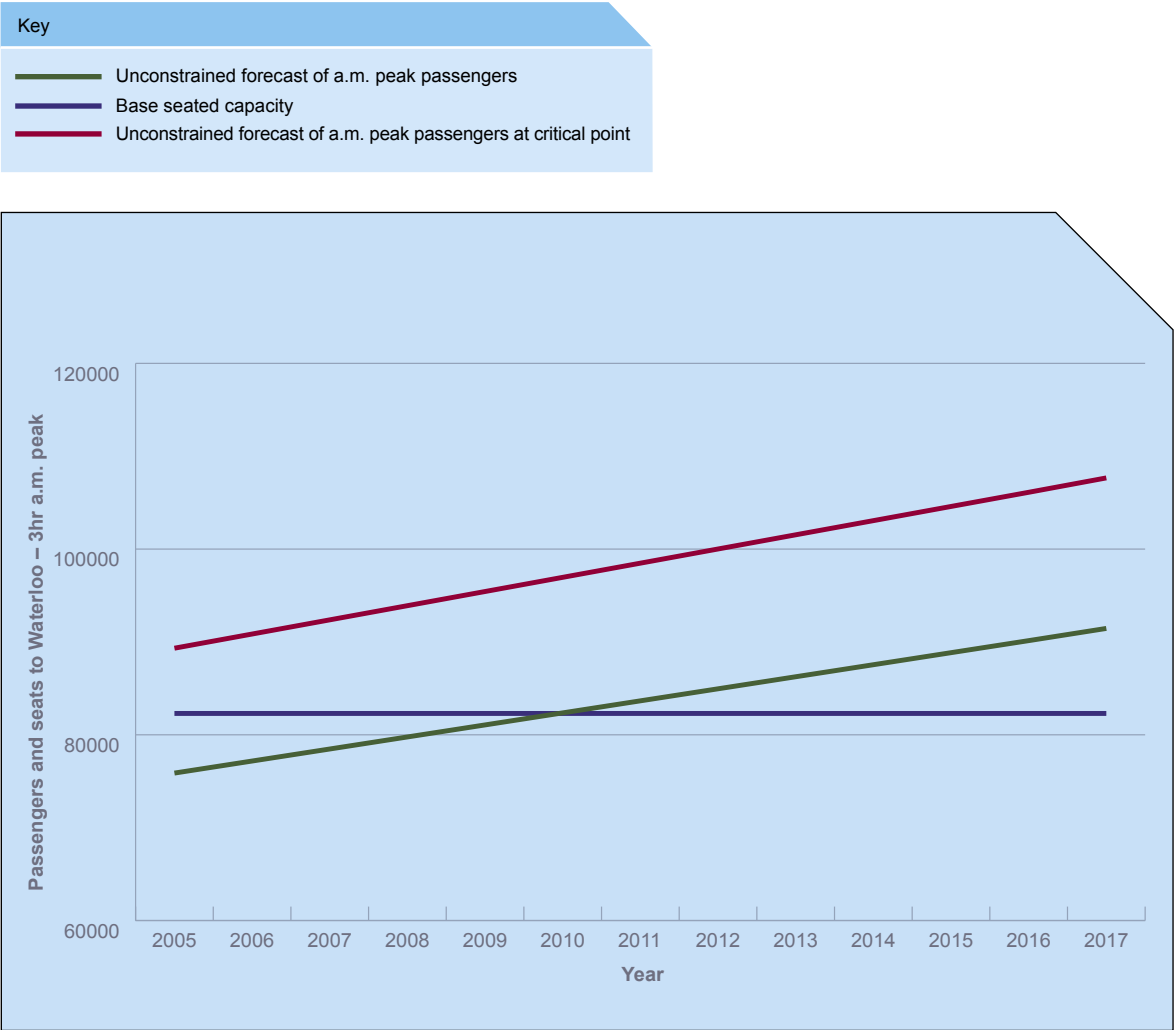
4 Strategy

4.1 Overview

The South West Main Line (SWML) network includes a variety of stations and services. Passengers travel to and from locations as varied as Dunbridge and Clapham Junction. There are significant freight flows, including the strategic Southampton traffic to the midlands and the north. In developing this strategy, Network Rail and its industry stakeholders

undertook to review the whole SWML network in terms of capacity usage, capacity availability, performance and the functionality of the network against stakeholder aspirations. The SWML has over the last few years benefited from new rolling stock, which has greatly improved and modernised the travelling experience, and (in December 2004) a new timetable which updated the operating

Figure B: AM peak base capacity against demand on SWML into London.



rules, resulting in a notable improvement in performance. However, the key issue that remains to be addressed is that of the popularity of the line and the sheer number of people who wish to travel by train, particularly to and from London Waterloo in the morning and evening peaks.

Clearly, this is not an issue restricted to the SWML; indeed it could accurately be labelled an issue for the entire South East England area. For most commuters, there is no realistic alternative to the railway for the journeys they need to make at the times they need to make them. The pressure on the capacity of the major London terminals, including London Waterloo, intensifies year after year.

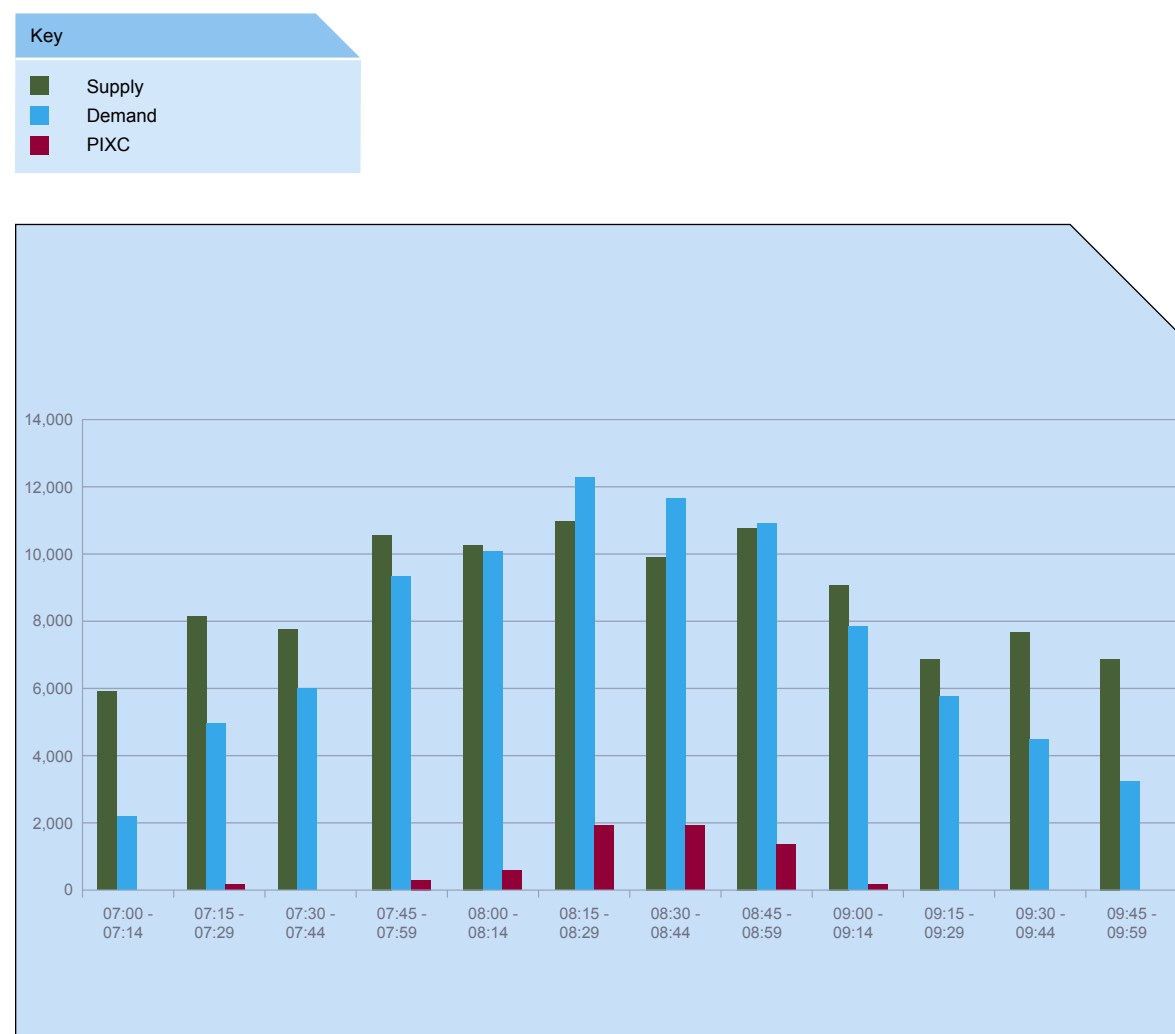
In developing Route Utilisation Strategies (RUSs), Network Rail is required to have due regard to statements published by railway funding authorities concerning available funding and outputs being sought. The Department for Transport (DfT) will provide this guidance in the High Level Output Specification (HLOS) and Statement of Funds Available (SoFA) during 2007 in order to inform the Access Charges Review for Network Rail's Control Period 2009 to 2014. In the meantime this RUS seeks to accommodate predicted demand efficiently, but has had to make assumptions about affordability.

Figure B illustrates the growing number of people travelling into London on the South Western routes each morning. The two rising demand lines show the predicted numbers arriving at London Waterloo and at the highest load point (the critical point, often Clapham Junction) between the hours of 07:00 and 10:00 each weekday morning. This demand line assumes that growth continues without being constrained by capacity. The horizontal supply line indicates current total capacity in terms of seats on trains arriving at Waterloo over this three-hour period. The approximate date at which this capacity will be exceeded by the forecast demand at Waterloo is 2010; taking the various critical loading points together, overall seated capacity is already exceeded. By 2017, it is anticipated that overall demand at Waterloo will exceed total capacity by around 9,000 people per am peak (11%).

It should be noted that because these figures are simply three-hour totals they do not adequately reflect the overcrowding in the high peak period, nor localised overcrowding on particular routes or service groups. Figure C shows that within the high peak hour, on average about 5,000 people each morning already experience crowding greater than the level specified in the Government's 'PIXC' targets³. Ways of addressing this overcrowding are discussed in section 4.2.1.

It is clear that substantive measures are required if Government and other funders wish to accommodate the forecast number of commuters to central London from locations in the area covered by this document. The net subsidy requirement for the whole railway system must be considered, taking account of the effect of changes to farebox revenue and operating cost.

Figure C: Distribution of AM peak period demand, capacity and passengers in excess of capacity, Spring 2005



A RUS seeks to attain effective and efficient use and development of railway capacity, commensurate with funding and other constraints⁴. This strategy is therefore laid out to differentiate between:

- measures that contribute to the objective and that are financially neutral or beneficial (4.3)
- measures that contribute to the objective that have a net financial cost but are value for money when their wider economic effects are considered (4.4).

This is preceded by consideration of three overriding strategic factors (4.2). Section 4.5 then summarises all the recommendations in a single coherent strategy for implementation over the coming decade.

4.2 Key strategic considerations

4.2.1 Passenger demand

The greatest priority for this RUS is how to address peak passenger demand to/from central London. There are 'supply-side' solutions set out in sections 4.3 and 4.4 below, but first it is necessary to consider what scope there is to influence the pattern of demand.

Within limits, passengers adjust their travel patterns to reflect timetable changes or to secure a faster or more comfortable journey. The limits within which these adjustments are made are determined by both willingness and ability. One way to accommodate growth in demand could be to provide both the motivation and the ability to travel earlier, or later, thereby flattening the demand profile.

Figure C shows how capacity and the number of passengers at the point of highest demand vary throughout the morning peak period. It can be seen that at either end of this period, the capacity exceeds the number of passengers. However, for trains arriving in London between 0800 and 0900, demand is well in excess of capacity, sometimes by almost 20%.

Some demand could be managed by introducing differential levels of fare in the morning peak. The rail industry has very limited experience and understanding of the effects on demand of differential fares within the peak period. It is known that commuter demand is relatively inelastic to fare differentials – the majority of passengers prefer to arrive in London to begin the working day between 0800 and 0900 – but insufficient research evidence exists to forecast actual passenger responses.

Appendix 1.3 presents some examples of hypothetical responses to different systems of peak pricing. The intention of this analysis was to explore at a simple level the potential opportunities for and issues around managing peak demand on the SWML.

The analysis concluded that using pricing to match current demand to current supply would be very difficult, as anything other than a very sophisticated pricing policy is likely to create a minor peak just before the full fare restrictions take effect. This could be partially mitigated if the cut-off time when the fare level changes is carefully chosen and linked to appropriate increases in train capacity.

Observed experience (most recently on the c2c network) is that a straightforward 'early bird' cheap season ticket is unsuccessful at encouraging people to change their time of travel because it restricts the commuter to travelling before a certain time each day. If someone on this type of ticket wishes to travel after the cut-off time on a particular day, they must buy a one-off full-fare ticket. It appears, and is understandable, that very few will commit to never travelling in the high peak hour, however much it saves them. People travelling in the high peak might travel earlier or later occasionally (or maybe often) if it would proportionally reduce their travel costs. Only a much more sophisticated pricing mechanism can provide this flexibility.

Providing incentives for passengers to travel outside the high peak appears to lead

³ Targets are defined in Appendix 12

⁴ The route utilisation objective is set out in section 1.

to marginal benefits. If, for example, each traveller during the high peak hour could be persuaded to travel outside that hour on one occasion out of ten, then in total half of the growth forecast over the RUS period could be accommodated without changing the current high peak crowding level. It is a strategy worth considering and developing, but one that will not provide a panacea to the issue of growth. If this approach is combined with investment in capacity (additional and/or lengthened services) then the benefits could be magnified.

This strategy aims to manage both supply and demand to meet forecast growth efficiently rather than suppress it. It recommends that early attention is given to the development of flexible, sophisticated pricing mechanisms and products for the peak commuter market. The rail industry, working with users' and employers' representatives and government⁵, will conduct research into consumer preferences and the role that business can play in encouraging flexible working hours. New technologies will be examined and developed to enable ticketing methods that support this initiative, such as the installation of automatic ticket gates. Modern automatic ticket gates are planned to be introduced for all platforms at Waterloo station from 2008. These will protect railway revenue, and are the first step towards the technology required for advanced ticketing systems.

4.2.2 System capacity

The capacity of the railway system to deal with peak passenger demand into central London is a combination of two factors: the ability of the trains to carry people and the ability of the network to carry trains. Onward distribution from the London terminal is also relevant. SWML, unlike some other routes, has no clear sub-optimal use of network capacity on London peak services requiring correction.

Train capacity

This strategy 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 at which they call, so this is not a straightforward step to take. Sections 4.3 and 4.4 set out recommendations in this regard.

Train capacity can also be increased by changing the internal layout of the coaches. The current refurbishment and internal reconfiguration programme led by South West Trains for the class 455 rolling stock fleet establishes an appropriate mix of seating and standing capacity for the current demands of the SWML inner suburban services.

The revised layout is approved by all key stakeholders and is viewed as correctly balancing the desire to provide seats with the need to carry large numbers of passengers for short distances in the peak periods. This programme will be complete in 2007.

The other types within the SWT fleet mainly operate on longer distance routes where the target is to provide seating for all passengers. An exception could be some of the class 450 units that operate predominantly on the shorter distance Windsor lines services, but to maintain maximum rolling stock flexibility it is not recommended that any changes are made to the internal configuration to reflect this usage. These units also regularly operate on longer distance services, and they would no longer be appropriate for this task if changes were made to reduce the seating level; fleet flexibility would be reduced and service reliability impaired.

Track Capacity

The number of train paths that the network can accommodate is dependent on physical features such as signalling headway and 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 that prevent additional services from running on the network were considered. A number of options were outlined in the Draft for Consultation to increase track capacity at four key locations on the SWML suburban network: London Waterloo (Appendix 4.2), Clapham Junction (Appendix 5.2), Woking Junction (Appendix 6.1), and the approach to platforms 4a and b at Reading (Appendix 11). 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 can be developed, as follows:

Figure D: Hierarchy of constraints	
Priority	Constraint
1	London Waterloo station and approaches
2	Clapham Junction station and approaches
3a	Woking Junction
3b	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 constraint⁶). Resolving each constraint will yield at best minor benefits unless the constraints above it have also been resolved. It is first at Waterloo that resources should be directed.

One further constraint that is anticipated to emerge beyond the period of the RUS is the track layout at Basingstoke. This does not fit immediately into the hierarchy outlined above because Basingstoke is a key node linking the London to Southampton / Bournemouth main line with the West Midlands to Southampton route. Freight demand on the latter 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. Freight stakeholders have suggested that capacity enhancements should be included in the scope of the Basingstoke signalling renewal (Appendix 14).

The strategy set out in the following sections is shaped by the findings detailed in this section.

4.2.3 Engineering access

The current engineering access regime within the SWML area has been arrived at over a number of years through a significant degree of iteration and evolution. Industry parties feel that the resulting situation provides an effective balance between the value of passenger and freight train services and the efficiency of maintenance and renewal activity. As identified in the Draft for Consultation, there are a few areas where engineering access is at a premium, but Network Rail and the industry stakeholders agreed that these do not constitute a strategic 'gap' that would require analysis through the RUS. Local issues will continue to be addressed through the standard annual industry Rules of the Route process as they arise.

5 The Mayor's Transport Strategy sets the statutory policy framework for transport in London. The integrated nature of transport services in London requires that initiatives to manage demand take a network view, considering the needs of all transport users and the implications for all modes of transport. It is therefore appropriate that peak management initiatives are developed in partnership with TfL and DfT, reflecting the statutory duties involved.

6 As an example of 'accommodation', the changes to the SWML timetable made in December 2004 aimed to optimise the train service around these key constraints so that when performance problems occur they have a minimal impact.

4.3 Better use of current industry resources

This section details RUS recommendations to meet the route utilisation objective which have a neutral or positive financial effect. Each recommendation is also value for money in wider economic terms.

4.3.1 Lengthening trains

Train operators naturally direct resources towards the busiest services, but the need to resource a standard service, and the constraints around where units should start and end the day, force compromises. South West Trains has identified a number of services that currently run shorter train formations than the maximum for the particular route. Conversely, some contra-peak train formations are longer than is necessary. There may be some scope to redistribute rolling stock so that peak direction formations are maximised at the expense of contra-peak capacity and/or frequency, but there has not

been time during the development of this RUS to explore this.

Based on observed crowding levels, Figure E lists the services that have been identified as priorities for lengthening.

Assuming that extra rolling stock would have to be provided to lengthen these services, a net increase of six four-car units would be required⁷. Subject to the availability of units, the extra costs incurred would be outweighed by the benefits (Appendix 1.2) and the lengthening should be introduced as soon as is practical. SWT has identified further services during the three hour peak period that could be lengthened, but these are of lower priority than those listed in Figure E.

4.3.2 Review of timetable principles

Overall train performance on the SWML since the introduction of the December 2004 timetable has been greatly improved, despite the introduction of additional peak services.

Figure E: Identified priority services for lengthening

	Current formation	Lengthened formation	Estimated Additional capacity (seats)
0550 Portsmouth Harbour to Waterloo via Guildford	10 (444 stock)	12 (450 stock)	142
0642 Hilsea to Waterloo	10 (444 stock)	12 (450 stock)	142
0654 Basingstoke to Waterloo	8	12	270
0739 Farnham to Waterloo	8	12	270
0752 Basingstoke to Waterloo	5	10	334
0802 Woking to Waterloo	8	12	270
AM Peak Total	49	70	1428
1605 Waterloo to Poole	5	10	331
1737 Waterloo to Hounslow via Brentford	4	8	270
1745 Waterloo to Hounslow via Twickenham	4	8	270
1752 Waterloo to Weybridge via Brentford	4	8	270
1802 Waterloo to Woking	8	12	270
1822 Waterloo to Weybridge via Brentford	4	8	270
PM Peak Total	29	54	1681

The basic rules of the timetable ('Rules of the Plan'), and in particular the length of time that trains dwell at platforms, were updated to match reality more closely and so contributed to the improvement in performance. Some journey times were extended by this process.

Figure F summarises the changes for six routes. It sets out the peak average journey times, numbers of trains per hour under the December 2003 and 2004 timetables and the average lateness⁸ for the peak service groups in which the routes are included. The table demonstrates how performance has improved significantly, while the journey times for some routes have been extended.

These findings have been echoed by those of Passenger Focus (previously known as the Rail Passengers Council), which stated in its RUS consultation response:

[Passenger Focus] ...acknowledges that SWT's December 2004 timetable has led to an increase in performance. However, the new timetable was not without its drawbacks in terms of restricted capacity for additional services and increased journey times.

Passenger Focus also referred to the results of the SRA's passenger priority research (May 2005), which are presented in this document as Figure G. The results show that punctuality and reliability are the highest priority across all sectors and regions.

Figure F – Scheduled journey time and lateness comparison, Dec 2003 and Dec 2004 timetables

	Average peak journey time (mins)		Average peak trains per hour		Average peak lateness (mins)	
	2004	2005	2004	2005	2004	2005
Alton - Waterloo	68	75	2	2	3.8	2.1
Reading - Waterloo	78	80	2	2	3.0	1.9
Basingstoke - Waterloo	46	47	4	5	3.7	2.7
Exeter - Waterloo	209	218	0.33	0.33	3.9	1.8
Shepperton - Waterloo	52	58	3	3	3.8	2.1
Portsmouth - Southampton	53	54	2	2	2.8	1.3

Figure G – SRA passenger priority research, May 2005

Passenger priorities - Factors	All	Long distance	Regional	London and SE	Commuter	Business	Leisure
	rank	rank	rank	rank	rank	rank	rank
Punctuality/reliability	1	1	1	1	1	1	1
Value for money for the price of ticket	2	2	2	2	2	2	2
Frequency of trains on route	3	3	3	3	3	3	6
Provision of information about train times/platforms	4	4	4	5	4	5	4

7 Fleet and depot implications are discussed in section 4.4.2
8 Data taken for 48 weeks from December timetable change each year, as remaining data not available at time of analysis.

During the RUS process, efforts have been made to analyse and refine the Rules of the Plan in the light of the actual performance of the new timetable. A number of locations have been identified where it appears possible to shorten the amount of time the rules expect trains to take travelling between stations. This information on proposed changes to sectional running times is presented in Figure H.

It can be seen that there are several locations at which running times can be reduced, including Alton to Farnham and Farnham to Bentley, where a longer journey time had resulted from the introduction of the December 2004 timetable. These alterations have been discussed with SWT and are planned for implementation from December 2006.

4.3.3 London Waterloo

Waterloo station currently handles in the region of 85,000 passengers in each peak three hour period. Passenger congestion on the main concourse and the links to and from the London Underground lines is becoming a significant problem. A number of steps will be required in the short term, before major investment is necessary:

- free-standing retail units on the concourse may be relocated progressively from 2007 concomitant with the footfall increases at Waterloo
- Customer Information Systems (CIS) and other information sources will have to be repositioned around the concourse as passenger numbers increase and flows change

- Network Rail and Transport for London (TfL) have jointly identified ways to improve access and interchange between the main station and London Underground facilities.

Some or all of these improvements should be implemented, dependent on the timing and phasing of the proposed major development scheme (Section 4.4.1).

The International Terminal

Waterloo International Terminal (WIT) is anticipated to become available for other uses when Eurostar services transfer to St Pancras in 2007.

The Secretary of State for Transport announced in October 2005 that the WIT platforms will be reserved for the use of domestic rail services.

The five WIT platforms could be used to provide only very limited additional capacity in the SWML morning peak for two reasons: the track layout approaching Waterloo restricts access to WIT from the SWML because of conflicting moves with Windsor line services; and the level of peak traffic elsewhere on the network makes it almost impossible to create a train path from a worthwhile origin. TfL's South Western Rail Corridor Plan analysed the potential short-term use of WIT for South Western services and reached similar conclusions.

Despite the limited short-term potential of the WIT for the use of South Western services, the site is of obvious strategic significance to any future development of Waterloo station.

Figure H: Review of the rules of the plan

Location	Current timing (min/sec)	Actual average timing (min/sec)	New overall time (min/sec)
Woking to Brookwood	5.30	4.44	5.00
Brookwood to Ash Vale	7.30	6.26	7.00
Farnham to Bentley	6.30	6.02	6.00
Alton to Farnham	10.00	8.24	9.30
Winchester to Basingstoke	17.00	15.17	16.30

4.3.4 Other stations

Access to stations has been identified as an issue at certain locations. The Draft for Consultation made a number of proposals regarding car park expansion, but consultation responses showed that whilst these were generally supported, other modes of transport should not be forgotten. RUS analysis has confirmed that, closer to London, the private car is a relatively unattractive way of getting to stations. In rural areas it is dominant.

SWT has identified seven stations as a priority from those having an average weekday car park utilisation in excess of 90%. Plans to expand these facilities have been examined and prioritised as shown in Figure I.

Car park expansion schemes will be progressed as individual cases are developed, but station facilities to enable or improve access by other modes should also be developed. These include cycle storage facilities, bus stops/turning circles, and possibly pedestrian and cycle priority routes. The competition for the new South Western franchise is an opportunity for the new franchise holder to work with Network Rail in developing these facilities and others such as station security and Disability Discrimination Act compliance.

4.3.5 Change to services west of Southampton

Early analysis for the RUS identified that poor performance in the Southampton area was a result of an inappropriate mix of services, operated by a number of companies, which had developed over the years without a coherent plan.

Southampton to Salisbury

Following responses to the Draft for Consultation, an option was taken forward for appraisal which extended the hourly Totton to Romsey via Eastleigh service through to Salisbury, replacing the local services between Southampton and Salisbury. In some respects, this gave encouraging results (Appendix 10.2), and has been modified in discussion with DfT and the Association of Train Operating Companies (ATOC). The enhanced proposal is to operate an hourly service in each direction on the route Salisbury – Romsey – Southampton – Eastleigh – Romsey, again replacing the local services south of Salisbury (the hourly Portsmouth to Cardiff services would be unchanged).

This proposal is now being considered by the DfT, and is likely to be taken forward through the franchise processes.

Figure I: Priority car park extension schemes

	Current Capacity	Avg. 2005 Utilisation	Extra spaces planned	Priority
Egham	73	91%	Decision pending	7
Esher	237	99%	37	4
Fleet	411	99%	Decision pending	5
Guildford	406	91%	Decision pending	2
Southampton Airport Parkway	606	98%	406	1
Weybridge	105	93%	28	6
Winchfield	241	100%	28	3

Southampton to Weymouth

Analysis undertaken jointly with DfT and ATOC during the consultation period identified that significant improvements would result from a package of alterations to the standard pattern of services, including some revisions to stopping patterns (Appendix 10.2):

- extend the Waterloo to Poole services to Wareham
- extend the Waterloo to Southampton services to Poole
- discontinue the Brockenhurst to Wareham local services.

This proposal is now being considered by the DfT, and is likely to be taken forward through the franchise processes.

4.3.6 Change to operations at Portsmouth Harbour

Analysis of the options put forward in the Draft for Consultation concluded that some alteration to platform workings at Portsmouth Harbour can deliver an improved service, without alteration to public timings.

A number of different services use the station at Portsmouth Harbour for long layovers between workings. As a result, top train working is common, where the three and four car Southern services often share platform 1 with a Wessex three-car unit on the Cardiff service. This leaves insufficient flexibility to recover from delays.

Revisions to rolling stock diagrams to reduce layovers, permitting revised platform allocation to improve flexibility, will be discussed with train operators for implementation, possibly from the December 2006 timetable.

The effects on the Public Performance Measure (PPM) and occupancy levels predicted from the proposed change are as follows:

- the PPM figure improves by approximately 0.25% and 0.35% for right time to within three minutes and right time to within five minutes respectively
- the average occupancy level at Portsmouth Harbour increases by approximately 5%.

Figure J illustrates the strategy for the better use of current industry resources on SWML.

4.4 Investment to address forecast growth

This section details the RUS recommendations to meet the route utilisation objective which are not self-financing but are considered to be consistent with the funding that is likely to become available over the period of the RUS. Each recommendation is value for money in wider economic terms.

4.4.1 London Waterloo

The vacation of the Waterloo International Terminal (WIT) by Eurostar in 2007 presents a rare opportunity to create a step-change in the capacity and capability of Waterloo station. The footprint of the station and its approaches is severely constrained, even by the standards of central London terminals. Use of part of the footprint of the long international platforms would allow other platforms in the station to be extended and the track layout in the station's 'throat' to be remodelled for much greater flexibility. This would be most efficiently undertaken when the signalling of the Waterloo area is renewed in the 2020s.

Before this, though, a major property-driven development scheme has been identified that would lengthen the platforms so that all could accommodate at least ten cars, and reposition and expand the concourse area while improving access to bus and underground links. The result could double Waterloo's passenger throughput capability, resolving the principal constraint on this route for much longer than the period of this strategy.



Figure J: Summary map illustrating strategy for the better use of current industry resources on SWML.

Key

London Waterloo – short and medium term

Car park extension schemes

Changes to services in the Southampton, Salisbury and Weymouth areas

Change to operations at Portsmouth Harbour



Use of the WIT is necessary to allow such extensive works to go ahead without significant disruption to current services: the extra capacity from these platforms would be used so that sections of the current station could be taken out of use and rebuilt in turn.

Forecasts indicate that the capacity of the current station will be exceeded before 2017, even with the measures described in section 4.3.3. With the opportunities presented by property development and the availability of WIT, and the imperative for major investment in the station's capacity, the timing for this redevelopment is obvious.

It is noted that other parties have developed less optimal plans for extending the platforms without the proposed major property development. These plans will be considered during the development phase so that the capacity of the station is enhanced in the most effective way and at the appropriate time. A project team is being established to lead the consultation, design and implementation of the development. This RUS forms a key input into the project remit, which is to be developed in Spring 2006.

As part of their remit the project team will also be asked to further review how temporary use might be made of Waterloo station in order to facilitate construction of the Thameslink Programme (Section 4.6.3)

4.4.2 Train and platform lengthening

One of the outputs of the Waterloo redevelopment would be the removal of platform constraints on the length of suburban trains. The RUS considered the case for suburban train lengthening (Appendix 1.2). The analysis concludes in favour of

progressively lengthening trains and platforms to twelve cars throughout the SWML area. With the provision of some 310 additional coaches, this would provide a 50% increase in capacity; in the order of 300 additional seats on each suburban train.

However, twelve-car operation would require infrastructure alterations that would be justified most readily at the time of the Waterloo area signalling renewal in the 2020s. The station development would be much earlier than this, and provides an opportunity to deliver benefits of ten-car operation during the period of this RUS.

This would require a significant number of platform lengthening schemes at suburban stations, and the provision of approximately 160 extra coaches, but no work additional to the development scheme at Waterloo. This increase would create real improvements for commuters in the medium term, given growth forecast to be 23% over the ten-year period of the RUS. It is recommended that the first lengthening project should be the Windsor/Reading lines, which are the most crowded at present, and should be timed to make use of the first phase of the Waterloo station development project. This should be followed by the other suburban routes in accordance with the development of project business cases and the interface with the ongoing work at Waterloo, but all suburban routes should have ten-car trains in the peak by 2014. In view of the anticipated longer-term requirement for twelve-car operation, where appropriate the platform lengthening works for ten-car operation will include passive provision for further lengthening to twelve cars.

Lengthening of suburban trains during the period of this RUS would go some way towards relieving crowding on long distance services as they approach London, particularly if combined with revisions to the stopping pattern of long-distance services in the peak, but further measures such as peak management (section 4.2.1) will be required.

Fleet and depots

Light Maintenance Depots (LMDs) in some locations are already feeling pressure from the current fleet distribution. In general terms, it is strategically preferable to provide additional capacity away from London so that trains start the day in a convenient location for the morning peak. The developing LMD strategy on the SWML needs to provide for the overall rolling stock requirements set out in Figure K.

The industry will seek to utilise the available depot capacity as well as other sites suitable for stabling. The provision of any additional depot facilities required will be an integral part of any new rolling stock procurement strategy.

Power supply

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 appraisal has included no cost estimate for power supply enhancements, but the value for money case is sufficiently robust to withstand some capital cost for this item.

4.4.3 Loading gauge for freight trains

The future of the majority of freight traffic on the SWML is linked to the provision of a larger (W10) loading gauge to the midlands and the north. W10 is the gauge required to carry modern larger containers on standard railway wagons. If a W10 route is provided, then freight traffic can be carried efficiently,

with scope to expand where paths allow. Without a W10 route, freight will run less efficiently, and stagnate or decline. The most direct route, which crosses the SWML network from Southampton via Eastleigh, Basingstoke and Reading, is to be the subject of a bid for funding from the Government's Transport Innovation Fund (TIF). Whether or not this bid succeeds, it is recommended that funding should be found for this gauge enhancement (the benefits are further explored in Appendix 7).

Experience from operation of the first long-distance W10 route, Felixstowe to the West Midlands and North West via London, has revealed the disadvantages of operation without a diversionary route. The Freight RUS will be examining key strategic freight routing and loading gauge options (including potential for W12 and European gauge) and will consider the appropriate provision of gauge-cleared diversionary routes for these options.

4.4.4 The route to Exeter

The current service is timetabled around the existing single-track sections of the West of England line west of Salisbury. Stakeholder aspirations to increase the service frequency to Exeter cannot be met unless additional lengths of double track are provided. The analysis undertaken has indicated that London Waterloo to Exeter services could increase frequency to hourly with the provision of one additional double-track section. The aspiration to operate an additional hourly local service between Exeter and Axminster would require a further new section of double track.

The proposal has been appraised (Appendix 9.2) and demonstrates value for money on the established appraisal criteria (excluding regeneration effects). Network Rail is working with stakeholders to identify funding solutions for part or all of this proposal, including possible use of the Network Rail Discretionary Fund.

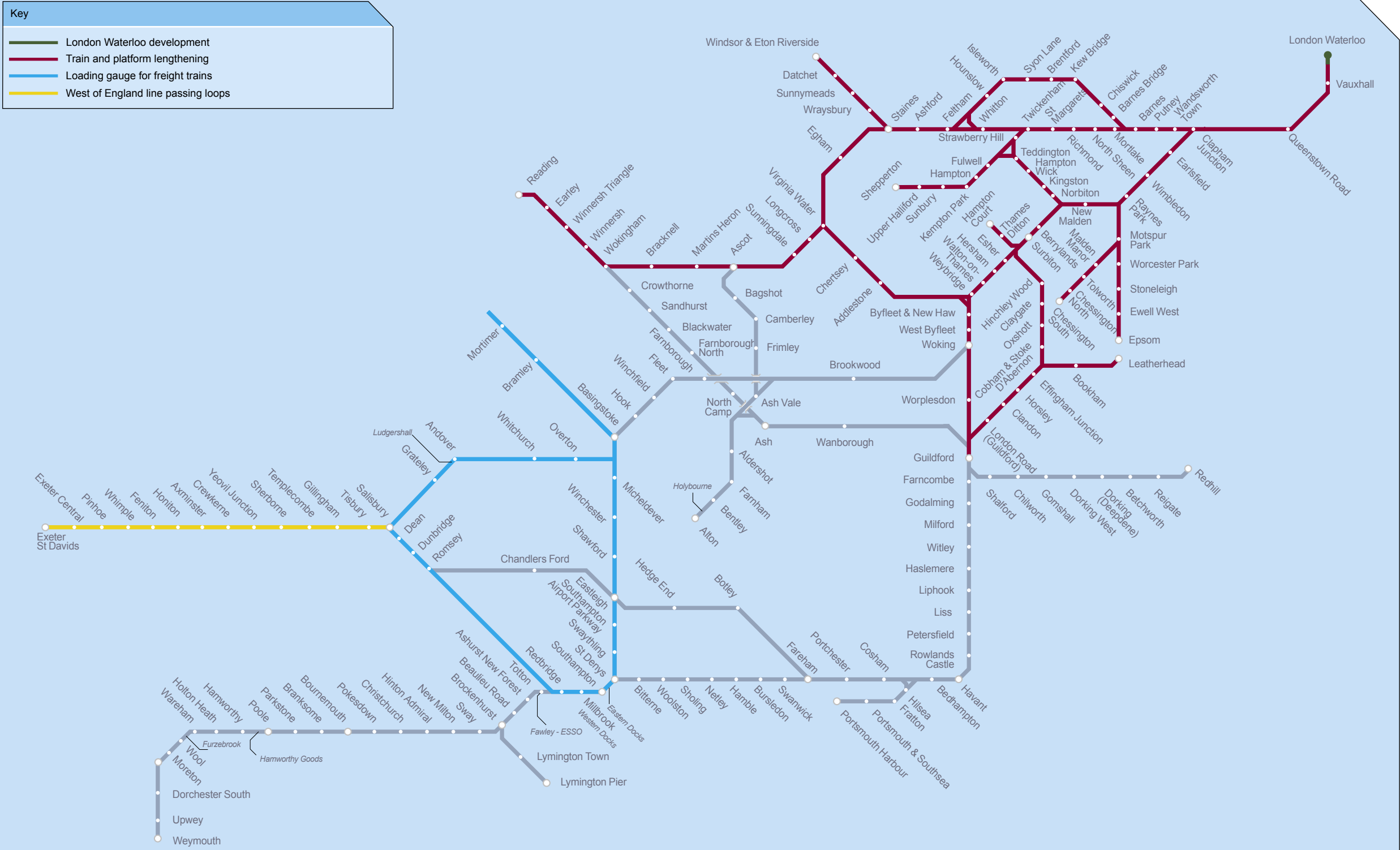
Figure L illustrates the strategy for investment to reflect forecast growth on SWML.

Figure K: South Western franchise suburban fleet increments

	Approximate date	Estimated incremental number of coaches ⁹
Short-term crowding relief ¹⁰	2007-9	+24
Ten-car suburban operation	2012-4	+160
Twelve-car suburban operation	2020s	+150

9 Estimate based on 'train hours' output from PLANET South model
10 Section 4.3.1

Figure L: Summary map illustrating strategy for investment to reflect forecast growth on SWML.



4.5 Conclusions

The recommendations set out in Section 4 are here structured by three implementation periods which align with Network Rail Control Periods so that funding arrangements can be suitably identified within the industry's financial framework.

4.5.1 Until March 2009 (Control Period 3)

- Some longer distance services in the peak three hours currently run at less than the permitted maximum length. High priority cases have been identified and Network Rail will work with the franchise holder and funders to facilitate the lengthening of these services as quickly as rolling stock can be sourced. This will provide over a thousand extra seats into London Waterloo in each peak period. It will increase rolling stock lease charges and other operating costs, but this rise will be outweighed by the revenue generated. Significant economic benefits will be generated without affecting performance.
- Work is already taking place to identify means to permit sophisticated but practical peak management techniques. Travel demand management covers a range of potential techniques including:
 - more sophisticated pricing strategies for public transport
 - road user congestion charging
 - Organisational Travel Plans and marketing initiatives
 - encouragement of cycling and walking
 - land use initiatives including development control and parking control.

Such initiatives are supported by the findings of the RUS, which show that within the ten year timescale covered, peak management is the only practical solution to crowding outside the London suburban network. Longer distance trains generally operate to the maximum length practical on each route and platform extensions to permit further lengthening would be prohibitively expensive. The

RUS examined crude pricing measures, such as an 'early bird' fare, but these were found to be ineffective and in some cases counter-productive. The development of new ticketing technology to introduce more flexible and sophisticated pricing in the high peak hour and peak shoulders should be accorded a high priority. This will build on the work already done at industry level to identify appropriate standards for the potential national application of future ticketing solutions and other demand management techniques. The lead time in developing and proving such solutions means that while the full benefits are unlikely to be realised in the short to medium term, some impact can be made.

- There is a strong case for enhancing the rail freight route between the 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 business case for this enhancement was identified by the SRA, and the South East England Development Agency (SEEDA) is preparing a bid for funding through the Transport Innovation Fund. The timing and form of the gauge enhancement is being further examined in the Freight RUS as the route continues beyond Reading to the midlands and to the north. A project team is being established to coordinate this and related gauging projects. Experience with other gauge cleared routes reinforces the need for consideration of diversionary capability, which will also be examined through the Freight RUS.
- The timetable 'Rules of the Plan' will be continually 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. Some improvements have been identified for implementation from the December 2006 timetable. These

would reduce a limited number of sectional running times by half a minute, with particular benefits for the Alton line. This is anticipated to marginally improve revenue and economic benefits without worsening performance or incurring any extra cost.

- Regional stakeholders on the West of England line seek an hourly London Waterloo to Exeter service and an additional hourly Axminster to Exeter service, to give a half-hourly frequency between Axminster and Exeter. The analysis undertaken has indicated that London Waterloo to Exeter services could increase frequency to hourly with the provision of one additional double-track section, and the additional hourly local service between Exeter and Axminster would require a second new section of double track. The proposal has been appraised (Appendix 9.2) and it is estimated that operating costs would increase by more than the revenue generated. The economic benefits improve this position to the extent that the scheme becomes value for money (excluding regeneration effects), although highly sensitive to the appraisal assumptions. The overall effect of the service improvements and infrastructure works is performance neutral. The infrastructure works would allow an enhanced service level in an area of the network where capacity is heavily constrained, and provide greater diversionary capability when the Great Western main line (GWML) is closed between Castle Cary and Exeter. Network Rail is working with stakeholders to identify funding solutions for part or all of this proposal, including possible use of the Network Rail Discretionary Fund. While the business case work continues, the service enhancements will be included in the South Western franchise Invitation to Tender as 'priced options'.
 - As a result of the RUS process, 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, although there is minimal impact on service levels for specific stations. This will require no capital and will be broadly neutral in terms of operating costs. There should be minor increases generated in revenue and economic benefits as well as performance improvements, although there may be an impact on freight capacity.
- Station facilities should be developed to improve access by appropriate modes of transport. The competition for the new South Western franchise is an opportunity for the new franchise holder to work with Network Rail in developing car parks, cycle storage facilities, pedestrian access and bus stops; and other facilities such as station security and Disability Discrimination Act compliance. As a priority, development of the best-value car park expansion schemes, such as Southampton Airport Parkway, Guildford, Winchfield, Esher and Fleet, will be progressed by Network Rail in conjunction with the franchise holder. Car park revenue will cover the capital and operating costs of these schemes.
 - Short-term measures to improve the effectiveness and operational 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 from 2009. In order to provide the capacity and flexibility necessary for the redevelopment project, the Waterloo International Terminal should be reserved for this use when Eurostar services transfer to St Pancras in 2007. The changes will involve capital and operating expenditure and there may be some loss of retail revenues. However, gating is essential to protect revenue and the concourse changes

are required to avoid increasingly frequent crowding-related closures of the station. The gating will be funded by Network Rail with recovery from the South Western franchise holder via the long term station access charge.

- A revised platforming strategy at Portsmouth Harbour improves performance and will be discussed with train operators for implementation, possibly from the December 2006 timetable. This has no impact on service levels to any stations, and there is no cost to obtaining these performance benefits.

**4.5.2 April 2009 to March 2014
(Control Period 4)**

- The proposed complete redevelopment of Waterloo station, including the whole of the WIT site, would double the concourse capacity and extend all platforms to accommodate at least ten-car trains. It would also allow for future remodelling of the track approaches to increase capacity and flexibility. The redevelopment is essential before long-term capacity improvements on the SWML can deliver real benefits. Remodelling of the station and, eventually, its approach is recommended as the cornerstone of the rail industry's strategy for the SWML. The capital cost of this station scheme is very large, and while over half is expected to be met by commercial property development, it will require a significant contribution from public funds. Other station passenger capacity solutions have been put forward, but do not achieve the required improvements.
- The redevelopment of Waterloo station discussed above 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 equipped for ten-car operation during Control Period 4, beginning with the Windsor and Reading lines which are the most crowded. This

coincides with the phased changes to the capability of Waterloo station as it is remodelled. Twelve-car operation would require changes to the Waterloo station throat and so are best implemented with the planned signalling renewal in the 2020s. This lengthening of suburban trains would go some way towards relieving crowding on long-distance services as they approach London, particularly if combined with revisions to the stopping pattern of long-distance services in the peak, but the long-term solution lies in a mixture of this approach and the peak management techniques discussed in section 4.2.1. Platform extensions, even for ten-car operation, would require significant capital from public funds, and operating costs (driven by fleet size and vehicle miles) would increase significantly. The generated revenue would not be enough to cover the operating costs, but the economic benefits are very large and make the proposal good value for money.

- The Reading area signalling renewal is currently planned to take place in 2013. This scheme could be scoped to deliver capacity and flexibility improvements between the GWML and the route to Wokingham, for example by reinstating the route under the GWML at the eastern end of the station. The signalling renewal will therefore be developed to take account of longer distance services and opportunities, some of which may be identified in the forthcoming Network RUS.

4.5.3 From April 2014 (Control Period 5)

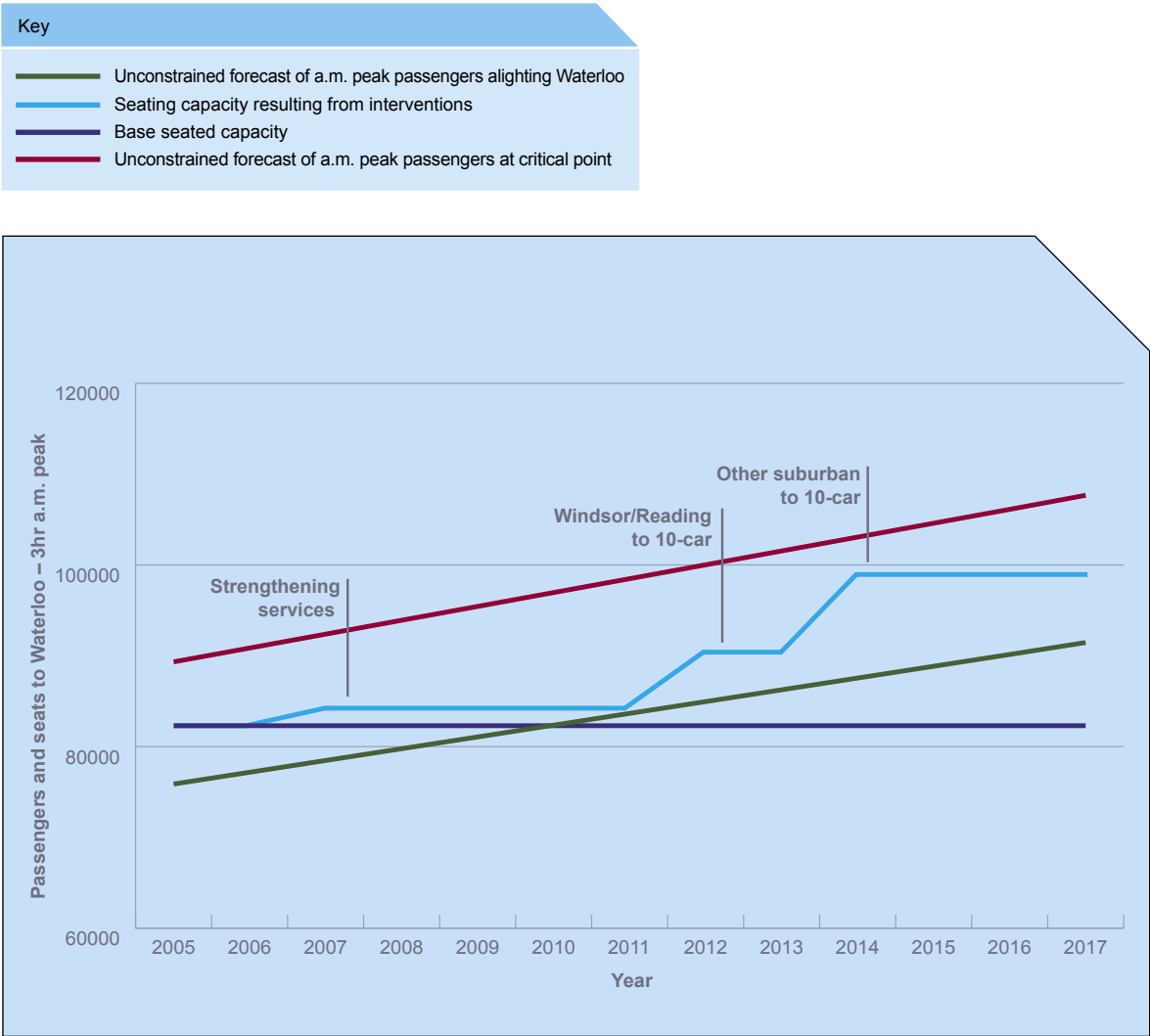
- The benefits of the peak management initiative referred to above are expected to be increasingly realised within this period.
- In the Draft for Consultation, the concept of the hierarchy of constraints was outlined. It is first at Waterloo that available resources should be directed because it is the primary capacity constraint on the route. Once the outline of the hub station has been developed, with the knowledge

of the number and length of platforms and the availability of access from the throat to the platforms, then the focus should be turned to Clapham Junction. The South Western section at Clapham Junction will be redesigned around the future layout of Waterloo to provide a fully integrated solution that allows the optimal use of capacity available at Waterloo. The Waterloo and Clapham Junction signalling renewal is at present proposed to take place in the 2020s and combining the renewal with any remodelling will provide a more cost-effective long-term strategy.

4.5.4 Summary of effects

Figure M illustrates how the RUS recommendations outlined above will provide the required capacity into Waterloo to meet forecast demand through the RUS period. As in Figure B, the two rising demand lines show the predicted numbers arriving at London Waterloo and at the highest load point (critical point) between the hours of 07:00 and 10:00 each weekday morning. The horizontal supply line indicates current total capacity in terms of seats on trains arriving at Waterloo over this three-hour period. The rising 'supply' line indicates the step-changes in seating capacity introduced by elements of this strategy. It should be noted that because these

Figure M: Combined effects of Route Utilisation Strategy recommendations on capacity of SWML into London



figures are simply three-hour totals, they do not adequately reflect the overcrowding in the high peak period, nor localised overcrowding on particular routes or service groups.

Figure M shows how a holistic approach to planning can deliver appropriate outputs over the ten-year period. However, the graph does not tell the whole story. Firstly, it only illustrates the principal issue of how to address peak demand into London; Figures J and L together illustrate all the RUS proposals. Secondly, the RUS proposes delivering the steps shown in the graph in a way which sets the framework for longer-term investments to meet anticipated growth over the next twenty years or more.

4.5.5 Alternative growth scenarios

The demand forecasts used in this RUS represent 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. This would provide for most of the growth, supported by further train lengthening of the type discussed in section 4.3.1 in the period before 2010.

Finally, if growth is sustained at a level substantially higher than the base case forecast, 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.

4.6 Contingent projects

4.6.1 AirTrack

The AirTrack project is promoted by the AirTrack Forum, comprising a group of local authorities, other Governmental organisations and private companies such as BAA. The proposal is for the operation of a service from Heathrow Airport, using new infrastructure where necessary, to London Waterloo, Guildford and Reading. This project is currently unfunded and uncommitted but the concept is supported by many rail industry and other bodies, subject to meeting certain criteria.

The capacity constraints at certain points in the SWML area identified in previous sections of this document are significant in relation to this proposal. Waterloo station and approaches, Reading station and approaches, and Woking Junction are all identified as points of capacity constraint and use of these parts of the network would be required to deliver the aspired train service. Implementation of the current AirTrack proposal would require the substitution of five 'regular' train services with AirTrack services in the am and pm peak periods. If the AirTrack service were to be provided by eight car trains, as currently proposed, there would be a likely impact on overall train capacity, because this would not be consistent with the planned move to ten/ twelve car trains on the SWML area.

The industry is currently conducting an operational feasibility study as part of the development of the AirTrack proposal. This involves further modelling of the impact of AirTrack and the identification of any possible changes to the associated level of infrastructure provision. For example, previous modelling work to support the AirTrack

service proposal has examined the need for grade separation at Woking and works in the Reading station area, and the inclusion of such enhancements might mitigate against the additional congestion that would otherwise be a problem. Further modelling and simulation work is also needed to identify how AirTrack could be accommodated at Waterloo. This is the primary area of capacity constraint on the SWML area as identified in section 4.2.2.

In summary, further feasibility work will determine how AirTrack could be accommodated through certain specific infrastructure enhancements and revisions to the service pattern.

4.6.2 Crossrail

Crossrail is a scheme to link the GWML with routes to the east of London through new tunnels under central London. It is the subject of a Hybrid Bill currently in Committee Stage in Parliament. The effect on the SWML of the proposals as currently detailed in the Crossrail Bill would be significant, and if enacted would almost certainly require the RUS to be reviewed.

Crossrail could impact on the SWML area during and after its construction phase. When it is built, the provisions in the Bill as drafted allow Crossrail to be timetabled first. Consultation responses highlighted that as a result freight traffic in particular might need to be diverted via SWML routes. One example among several is traffic of around four paths per hour in each direction between Reading and London via Wokingham, Ascot and Hounslow to Kew where trains would join the cross-London network.

4.6.3 Thameslink Programme

The Thameslink Programme is a strategic rail infrastructure project intended to enhance the busy Thameslink network across London and the south east of England. The project is designed to provide an expanded Thameslink network, linking more destinations, and resulting in quicker and easier journeys for passengers across the south east, also reducing overcrowding on the existing Thameslink route in peak periods.

The findings from the public inquiry reviewing the Thameslink Programme proposals are due to be published in the second quarter of 2006. Until this happens the impact of the proposals, including the construction programme, cannot be fully assessed. Nevertheless the proposals as they currently exist interface with the SWML RUS area at two locations. The first is in relation to the service that is proposed to run to Guildford on the line via London Road Guildford station. This service will not impact on the SWML RUS recommendations as there are no specific infrastructure requirements expected and it is planned that the service is either a substitution of, or complementary to, the services that currently run on this line.

The second area of interface is in relation to the potential use of WIT for the diversion of South Eastern franchise services during the period of Thameslink Programme construction with the aim of minimising overall disruption. The opportunities for this have not yet been fully assessed but due to the passenger constraints at Waterloo identified earlier in this chapter, it is clear that this cannot significantly benefit the enhancement construction works necessary for the programme implementation, as only a limited number of additional services can be accommodated at Waterloo.

Early views of the expected timing and nature of the construction programme for the Thameslink proposals suggest that the extra passenger and platform length capacity created at Waterloo after redevelopment and the integration of the WIT into the main station might well generate an opportunity for the short term diversion of some services during the construction period. The redeveloped station will be better placed to respond to this requirement without causing additional passenger and train congestion to the existing SWT services. If the Thameslink Programme is approved, the proposals would appear to be complementary; indeed there may be benefits to the Programme resulting from the Waterloo station development advocated within this strategy.

The sensitivity test for the Thameslink Programme therefore does not result in any change to the recommendations of the RUS.



5 Next steps

This Route Utilisation Strategy (RUS) will become established sixty days after publication unless the Office of Rail Regulation (ORR) issues a notice of objection within this period.

The recommendations of a RUS – and the evidence of relationships and dependencies revealed in the work to reach them – form an input to decisions made by industry funders and suppliers, for example, on franchise specifications or investment plans.

Network Rail Business Plan

The 2006 Business Plan, due to be published shortly after this document, includes Route Plans that integrate the RUS into Network Rail's ongoing planning process.

South Western franchise

The Department for Transport (DfT) will issue an Invitation to Tender (ITT) for the South Western franchise before the end of March 2006. Industry parties have worked closely with DfT while developing this RUS, so the ITT is informed by the RUS analysis, the RUS consultation responses and the conclusions drawn and recommendations made in the RUS.

Access Charges Review

The ORR review of Network Rail's funding requirements and access charges for the period 2009 to 2014 will conclude in 2008. This RUS will inform Network Rail's input to the review, the initial submission for which will take place in June 2006.

High Level Output Specification (HLOS)

Over the next 12 to 15 months, the Department for Transport will be preparing its HLOS to define the outputs it wishes to buy from the rail network during the next Control Period, i.e. 2009 to 2014. This HLOS, and an accompanying Statement of Funds Available, will be used by ORR to set the funding requirements of Network Rail over that period, taking into account other obligations and funders' reasonable requirements. The recommendations of this RUS, where they fall within the 2009 to 2014 period, are part of the rail industry's recommendations to be incorporated within the HLOS.

Ongoing access to the network

This RUS will also help to inform the allocation of capacity on the network through application of the normal Network Code processes.

Review

Network Rail is obliged to maintain a RUS once it is established. This requires a review which uses the same principles and methods used to develop the RUS when circumstances have changed, when so directed by ORR or (for whatever reason) the conclusions may no longer be valid.

