

Route Plans 2007
Route 4
Wessex Routes

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Route 4 Wessex Routes

4 4

Today's route

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

- the core corridor from Worting Junction to Exmouth Junction via Salisbury and Yeovil (04.01, 04.02), linking Exeter with London Waterloo;
- the line from Salisbury to Romsey, where it splits into separate lines to Redbridge and Eastleigh (04.03);
- the line from Salisbury to Trowbridge, where it splits into separate lines to Bathampton and Thingley Junctions (04.04);
- the line from Castle Cary to Dorchester West via Yeovil (04.05); and
- the freight-only line to Ludgershall (04.06).

Route context

The Wessex route provides a long distance link between the West of England and London Waterloo, accommodating regular passenger services as well as offering significant diversionary capability for the Great Western Main Line (GWML). In addition the route also includes cross-country links between the South Coast and Wiltshire/Somerset which are invaluable to freight services as well as passenger services. The Exeter to London line via Salisbury is capable of accommodating an alternative passenger service at times of disruption on the GWML or when certain infrastructure is out of use due to engineering

works, therefore providing an important function for Exeter and those travelling from further west. Network Rail has published its first Route Utilisation Strategy (RUS) on the South West Main Line (SWML), covering the period up until 2017. The RUS contains detailed analysis about this route, and has considered options to accommodate future growth. The RUS conclusions are reflected within this route plan. The DfT's Southern Regional Planning Assessment (RPA) for the Railway was published in January 2007. It will be followed by the South West RPA.

Route 4 Wessex Routes



Key	
—	Secondary
—	London & SE Commuter
—	Rural
—	Freight only

Passenger and freight demand

The SWML RUS has shown that the number of passenger journeys per year on South West Trains (SWT), the route's main operator, has risen by 22 percent in the last six years. Commuter travel in the peaks has risen by around 20 percent in the same period, leading to overcrowding on some services. On the core route passengers travelling to and from London Waterloo are seeing some standing from Andover at present, although the majority of the overcrowding is seen on the section of Route 3 that the services run on. The main line to Exeter parallels the A303 trunk road for much of its route, which also suffers from increasing levels of congestion and is in some way contributing to the increased demand on rail services.

As well as the demand for commuting and other travel to London, destinations away from London also have seen considerable increases in passenger flows. These flows are focused on the major towns of Salisbury and Exeter, as well as journeys from the route to Southampton, Portsmouth and Bristol.

Exeter Airport attracts an increasing number of rail passengers, and there is strong off-peak demand for leisure and tourism activities across much of the area.

The majority of freight demand to and from the route is centred on aggregates and Ministry of Defence (MoD) flows, with the line from Eastleigh to Salisbury and Andover also acting as a diversionary route for freight flows to and from Southampton.

Current services

SWT is the principal operator with a regular service from London Waterloo to Salisbury with some trains continuing to Gillingham (Dorset), Yeovil Junction, Exeter and Plymouth, or Bristol. Other services run by SWT on Route 4 include Romsey to Totton via Chandlers Ford.

First Great Western operates Cardiff and Bristol services to Southampton, Portsmouth and Brighton via Westbury and services to Weymouth via Yeovil on the Dorchester West to Castle Cary line.

The main freight flows over this route are:

- quarried aggregates (from Somerset) via Westbury to the South coast conurbation;
- traffic from the Southampton area to London and the Midlands as a diversionary route for Route 3; and
- other local terminals served including the MoD at Ludgershall (near Andover) and Imerys at Quidhampton (near Salisbury).

Figure 1 shows the current level of service.

The Wessex routes carry a variety of traffic, with all passenger services being provided by diesel multiple units. The routes are a mixture of double track stretches of line and single track sections with passing loops. Freight services on the route mainly run to and from the West Country carrying aggregates traffic, the Eastleigh and Southampton traffic as a diversionary route and MoD traffic, all of which is hauled by diesel locomotives.

Figure 1 Current train service level

Route section	Average tph
Exeter – Basingstoke	1 every two hours
Yeovil Junction – Basingstoke	1
Salisbury – Basingstoke	2
Westbury – Weymouth	1 every two hours
Salisbury – Westbury	1
Salisbury/Romsey – Eastleigh/Redbridge	2

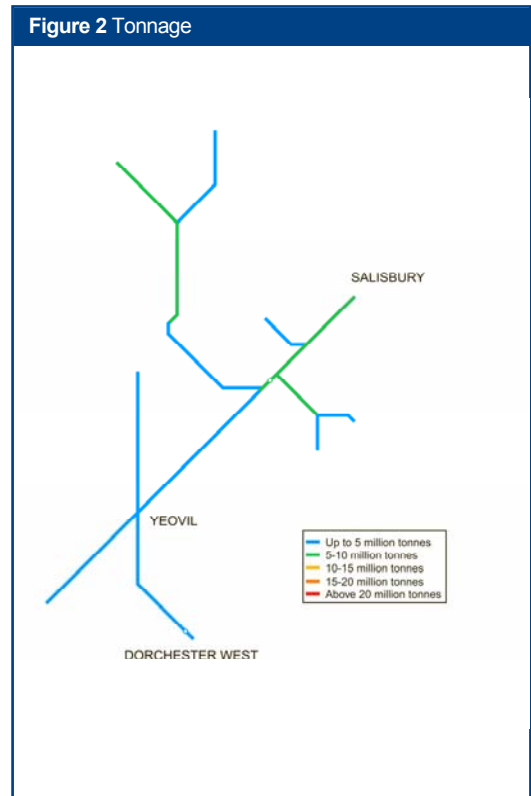


Figure 2 shows the tonnage levels on the route.

Traffic volumes are summarised in Figure 3.

Figure 3 Current use

	Passenger	Freight	Total
Train km per year (millions)	6	1	7
Train tonne km per year (millions)	982	395	1,376

Current infrastructure capability

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

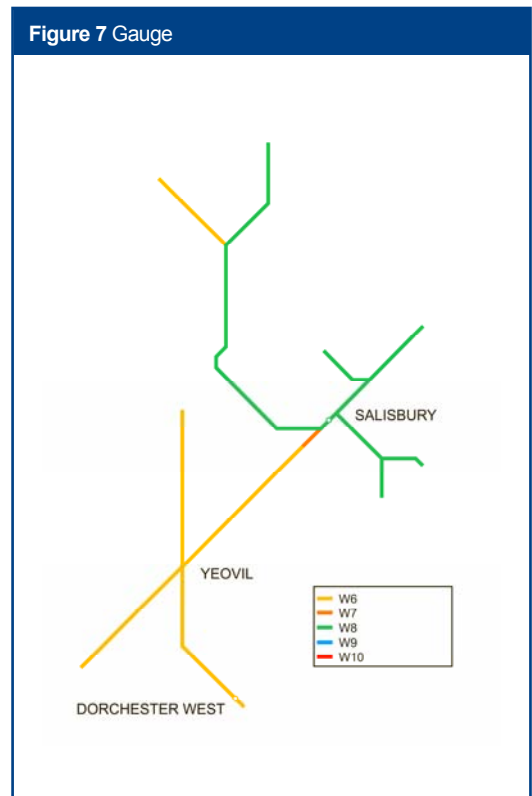
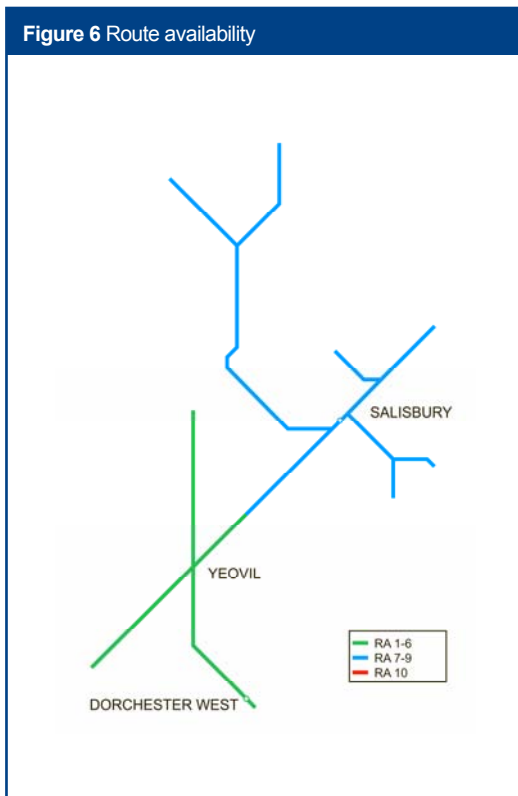
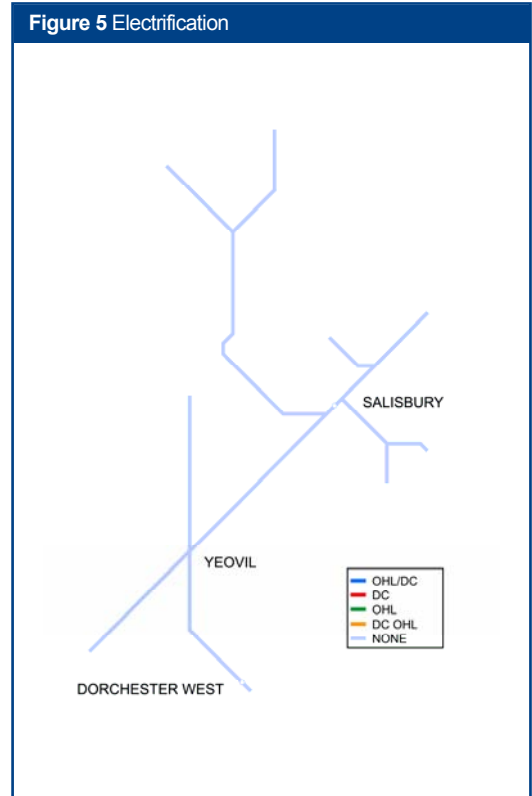
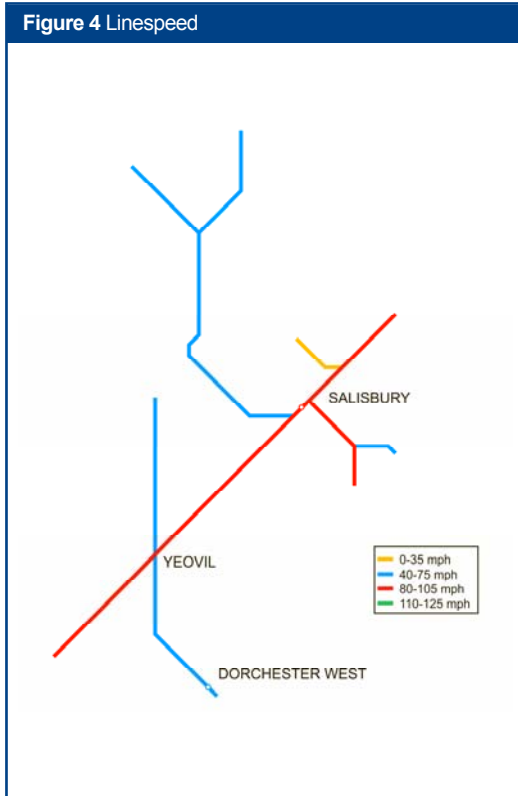


Figure 8 Current train service level (trains per peak hour)

Route Section	Number of trains
Salisbury – Basingstoke	2
Salisbury Tunnel Junction – Wilton Junction	5
Salisbury – Yeovil Junction	2
Salisbury – Warminster	3
Westbury – Bath	4
Romsey – Southampton	3

Current capacity

The Wessex routes are not used intensively, but still run close to capacity in several key locations. The long single track sections of line considerably constrain the available capacity and limit the amount of paths that can be utilised across the route. The use of available capacity is complicated by the existence of two key demand drivers, i.e. the commuting traffic towards London and the shorter distance commuting traffic into the regional centre of Exeter. This combined with the infrastructure characteristics and the long journey duration of some of the services results in challenges for rolling stock utilisation and service planning, although the location of the depot for SWT services at Salisbury does reduce the requirement for running empty trains over long distances.

The capacity utilisation for the lines that cross the main West of England line is affected by the larger towns and cities that they pass through which are off the route, such as Southampton and Bristol. The service planning is also influenced by the long duration of the journeys, and this combined with the interaction with the other relevant routes makes it difficult to achieve higher levels of capacity utilisation.

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

Current performance

The December 2004 timetable introduced a more robust timetable for SWT services that has improved industry performance, but the routes still suffer from reactionary delay as whenever a train is late, it is likely to delay another train due to the single track sections of line.

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

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

Figure 9 Current PPM MAA (2006/07)

TOC	MAA	As at period
South West Trains	89.7%	11
First Great Western	83.4%	11

Future requirements

Strategic direction

The SWML Route Utilisation Strategy was published on 23 March 2006 and was established by the Office of Rail Regulation in May 2006. This details the strategic direction for the route across the period 2007 to 2017, although it also provides a foundation for further development beyond these dates. The area covered by Route 4 is partly contained within the SWML RUS, but the lines from Dorchester Junction to Castle Cary Junction, Wilton Junction to Westbury South Junction and Westbury North Junction to Thingly Junction/Bathampton Junction are not.

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 some peak-time passenger services to/from London and to/from Exeter, will get much worse unless growth is accommodated. Other parts of the Wessex Route have capacity and capability constraints that prevent certain service enhancements that are aspired to from operating.

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

Measures to 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 Wessex Route, evidence supports the view that the current rules represent a robust balance, allowing maximum exploitation of capacity while establishing minimum acceptable performance standards from an operational and scheduling perspective;
- 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 will be progressed by Network Rail in conjunction with the franchise holder; and

- service alterations in the Southampton - Salisbury - Weymouth area have been developed with DfT and ATOC. The alterations include a rebalancing of service groups and stopping patterns to better match resources to demand, with only a minimal impact on service for specific stations.

Measures to develop capacity in the South West:

- capacity enhancements on the single track Salisbury to Exeter line would be required to meet aspirations for frequency increases. The priority service enhancement is the proposed hourly London Waterloo – Exeter service. This would require the provision of an enhanced passing loop in the area of Chard Junction. This infrastructure enhancement would also increase the diversionary capability of the route for GWML services. The proposal is currently being developed by Network Rail in accordance with the GRIP process; and
- as an element of its franchise commitments, SWT is developing plans to operate 10 car services between London Waterloo and Salisbury.

Measures to develop freight capability:

- there is a case for enhancing the rail freight route between Southampton container terminals and Reading to provide W10 capability, which would enable the retention and expansion of rail market share by accommodating the growing proportion of large containers. Gauge enhancement proposals have been further examined in the Freight RUS as the route continues beyond Reading to the West Midlands and North of England. While the preferred routing is via the SWML (Route 3) the provision of a diversionary route is likely to affect Route 4.

Future demand

The high volume of demand for peak commuter services to London is expected to continue. General demand growth over the ten year period of the RUS is modelled to be in the region of 20 percent but certain services are predicted to see higher levels, with commuting to London from west of Yeovil expected to rise by 38 percent by 2017 for example. While this is a relatively modest flow it does indicate the increasing propensity for commuters to travel longer distances. Demand for travel to and from Exeter is also expected to rise considerably, particularly as much of the housing development in the area is scheduled to occur along the corridor followed by the West of England line.

In terms of freight, demand market studies undertaken over the last few years forecast aggregate traffic tonnage will grow by 1 percent to 2 percent per year in the period 2007 to 2017, and this is likely to be reflected within the Wessex routes.

If a W10 diversionary route is established that runs through Route 3 then container traffic from Southampton will continue to grow, but if the strategy does not include this diversionary route then overall freight traffic is likely to diminish as the percentage of 9' 6" containers continues to increase. The W10 gauge scheme between Southampton and WCML has been taken forward for business case development and appraisal for Transport Innovation Fund (TIF) funding.

Exeter Skypark is a proposed new freight intermodal site near to Pinhoe on the Worting Junction to Exeter line. The proposal will require a new private siding connection to allow the interchange of goods from railway to road transportation.

Future services

Operator responses to the predicted increase in demand will generally be to lengthen trains which will involve the provision of additional rolling stock, changes in rolling stock utilisation and platform lengthening projects.

A series of enhancements are being investigated in order to provide an expanded maintenance, cleaning and berthing facility at Salisbury depot to reflect the fleet requirements in this area.

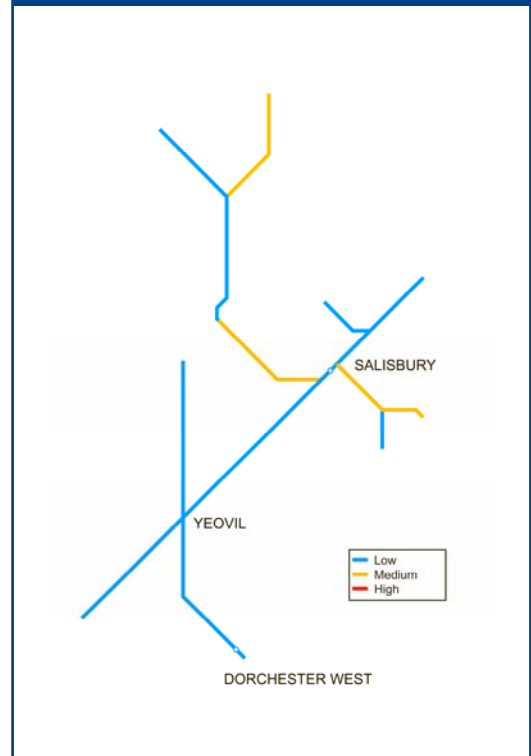
SWT is committed through the new franchise to a number of 'Performance Management' items relating to signalling, line speeds and other infrastructural upgrades.

Figure 10 indicates the forecast percentage change in tonnage to 2016.

Future capability

Linespeeds on the route are generally considered adequate. No change is therefore required to this characteristic, although any renewal opportunity will be assessed to see if small improvements can be delivered at the same time. This may provide opportunities to further enhance performance and reduce journey time, taking advantage of the capabilities of the rolling stock that operates on the route, but no specific opportunities have been identified at present.

Figure 10 Tonnage growth



As outlined above, if the works to upgrade Route 3 to W10 gauge take place, it may be necessary to upgrade those parts of Route 4 that act as a diversionary route. This is examined in the Freight RUS.

Future capacity

Providing enough capacity to meet increasing demand for journeys to and from Exeter is the key challenge for the route. The SWML RUS has set out the strategy to provide the infrastructure enhancement required in order to allow an hourly service from London Waterloo to Exeter. This is predicted to provide adequate capacity to enable operation of the required services for the foreseeable future.

The long single track sections of line across the route are the key driver to the capacity of the infrastructure. The proposal contained within the SWML RUS will see an enhancement to the existing passing loop at Chard Junction, involving the extension of the loop south to Axminster. This would provide the necessary capability to enhance the service, allowing the line to address the expected growth in demand. It is not expected that any service enhancements are required on the line from Castle Cary to Dorchester (although journey time reductions are aspired to by local stakeholders and opportunities will be sought to achieve this in conjunction with other activity).

Figure 11 Forecast reduction in delay minutes

	2007/08	2008/09
% reduction in delay minutes	17%	23%

Capacity on the line that stretches from Southampton (Route 3) to Reading (Route 13) via Laverstock Junction is also expected to be adequate for the required quantum of freight and passenger traffic, but this is to some extent dependent on routeing choices for future freight flows and the implementation of a W10 diversionary route.

Future performance

Performance has markedly improved with the new timetable, although is still relatively fragile because of the single track sections of line. The expected continued improvement in asset reliability will further strengthen the trend of better performance over the route.

Also there will be secondary benefits from the re-signalling schemes at Portsmouth and Basingstoke.

Figure 11 shows the forecast reduction in Network Rail delay minutes compared with 2006/07.

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

Engineering access

Route 4 is characterised by the single line sections on the Salisbury to Exeter and Dorchester to Castle Cary lines, which limit operational flexibility for gaining engineering access. Since the Salisbury to Exeter line is a diversionary route for the Reading to Penzance line (route 12) engineering access has to be planned in conjunction with this route.

All lines within Route 4 are more heavily used during the summer and planned disruptive access is therefore constrained to the winter period.

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

Opportunities and challenges

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

Successfully accommodating the expected growth of around 20 percent more passengers over the next ten years (for the area covered by the SWML RUS) is clearly the key challenge for the Wessex Routes. The recommended initiatives to address this growth and meet other aspirations are outlined above.

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

Figure 12 Forecast PPM MAA

TOC	2007/08	2008/09
South West Trains	91.2%	91.8%
First Great Western	86.2%	86.7%

Delivering future requirements Expenditure

Figure 13 shows the planned level of expenditure on renewals on this route over the next two years.

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

Figure 13 Forecast expenditure

£m (2006/07 prices)	2007/08	2008/09
Renewals		
Track		
Plain line	5	8
Track total	5	8
Civils		
Underbridges	1	1
Bridgeguard 3	1	0
Earthworks	3	0
Tunnels	0	–
Other	0	–
Civils total	5	1
Signalling		
Resignalling	1	1
Minor works/other	6	7
Over-planning	(1)	–
Signalling total	6	7
Telecoms		
Concentrators		
Large	0	–
Small	–	0
Customer information systems (CIS)	–	0
Telecoms total	0	0
Operational property		
Stations		
Franchised	0	0
Lineside buildings	0	–
Operational property total	1	0
Plant and machinery		
Fixed plant		
Point heating	–	0
Other	0	0
Plant and machinery total	0	0
Total Renewals	16	18

Enhancements (funded by)		
Network Rail (RAB)		
Planned		
Yeovil - Exeter frequency enhancement	1	15
Other	0	-
Total	1	15
Potential schemes		
Total	4	20
Other third party		
Planned		
Other	0	0
Total	0	0
Potential schemes		
Total	0	1
Total Enhancements	4	21

Figure 14 Forecast volumes

	2007/08	2008/09
Track		
Plain line (km)		
Rail	9	12
Sleepers	8	11
Ballast	8	11
Total	26	35
Civils		
Underbridges (m ²)	277	2,080
Bridgeguard 3 (m ²)	137	–
Earthworks (m ² slope surface)	28,850	20
Tunnels (m ²)	764	–
Signalling		
Resignalling (SEUs)	–	1
Telecoms		
Concentrators		
Large (no.)	2	–

The planned volume of renewals is detailed in Figure 14.

It should be noted that in order to manage the deliverability of our Civils, Signalling and Electrification plans we have included an element of over planning in our work banks. As a consequence the sum of our route plans exceeds our plan for the network as a whole. It is likely that a small proportion of the activities in these areas will slip to subsequent years

Maintenance

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

Figure 15 Forecast expenditure

£m (2006/07 prices)	2007/08	2008/09
Maintenance	16	14

Infrastructure investment

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

Figure 16 Planned infrastructure investment						
Project	Project Description	Output change	Main asset type(s)	Funding	GRIP stage	Completion year
A River Axe – Flood opening works (04.02)	Renewal of structural equipment	Renewal	Structures	Network Rail	5	2008
B West of England Passing Loop (04.02)	Reinstate a short section of double track in the Axminster/Chard area	This would allow trains in opposite directions to pass each other, allowing the proposed hourly Waterloo-Exeter service to run	Structures and track	Network Rail	2	2008
C Salisbury plain line track renewals	Renewal of plain line track	Renewal. Options for additional small and medium sized enhancements are being considered	Track	Network Rail	2	2007
D Yarnbrook embankment stabilisation (04.04)	Stabilisation of embankment to prevent risk of asset failure	Improved asset reliability	Earthworks	Network Rail	1	2007/08

Figure 17 highlights other schemes under consideration.

Figure 17 Infrastructure investment under consideration						
Project	Project Description	Output change	Main asset type(s)	Funding	GRIP stage	
E Southampton-Basingstoke gauge enhancement (04.01,04.03)	Works to allow W10 gauge trains to run from Southampton to the West Coast Main Line	The line would be cleared to W10 gauge to allow larger freight services to run without specialist wagons	Structures and track	Under consideration by Transport Innovation Fund	Under consideration	
F Measures to allow 10 car trains to call at Overton, Whitchurch, Andover and Grateley	Platform extensions or selective door operation	Additional capacity at these stations	Structures	South West Trains	Under consideration	

Figure 17 Infrastructure investment under consideration

Project	Project Description	Output change	Main asset type(s)	Funding	GRIP stage
G	Test Valley AHB renewals	Improved line speeds	Track, signalling	Network Rail	Under consideration
C	Salisbury East carriage sidings	Enhancement to berthing facilities	Track, signalling	South West Trains	Under consideration
C	Salisbury platform 3 extension	Platform extension to 10 car capability	Structures, signalling	Potential Network Rail Discretionary Fund scheme	Under consideration
C	Salisbury platform 1 reinstatement for passenger use	Reinstatement of platform capability	Structures, signalling, station	Potential Network Rail Discretionary Fund scheme	Under consideration

Non-infrastructure developments

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

Description	Key issues	Actions or options being developed	Benefits	Target timetable implementation
Portsmouth Harbour workings	The interaction of the different TOCs at Portsmouth Harbour causes delay	Being addressed by the Portsmouth area infrastructure upgrade	Improved performance	December 2007
Southampton area workings	The interaction of the different TOCs at Southampton can cause delay	Changes to the service pattern in the Southampton area have been developed through the SWML RUS and SW franchise process	Improved performance and rolling stock utilisation	December 2007
Resilient timetable review	Performance	Review the Rules of the Plan to ensure more accurate timetables	Improved performance	Ongoing

Appendix

Figure 19 Strategic route section

Predominant aspect recorded (secondary aspects recorded in brackets). ELR is Engineers Line Reference, RA is Route Availability.												
SRS	SRS Name	ELR	Classification	Funding	Community Rail	Freight Gauge	RA	Speed	Electrification	Signalling Type	Signalling Headway	No of Tracks
04.01	Worting Jn – Wilton Jn	BAE1,2	London and SE	DfT	No	W8	8	50 –90	None	TCB	2 – 8 mins	2
04.02	Wilton Jn – Exmouth Jn	BAE2	Secondary	DfT	No	W7 and W6	6 and 7	85 (70)	None	TB (TCB)	N/A	1 (2)
04.03	Redbridge/ Eastleigh – Salisbury	RT,J,ECR	Secondary	DfT	No	W8	8	30 –85	None	TCB	4 – 14	1 and 2
04.04	Salisbury – Bathampton/ Thingley Jn	SAL,WEY, WYL,BFB	Secondary	DfT	No	W8 (W7)	8	60 –70	None	TCB	5 – 6	1 and 2
04.05	Castle Cary – Dorchester	WEY	Rural	DfT	Yes	W6	6 (8)	75	None	Various	14	1
04.06	Freight Lines	Various	Freight	DfT	No	Various	Various	Various	None	Various	Various	Various

Capacity and Operational Constraints

- A** Salisbury – Exeter: single line sections prevent significant increases in train service frequency
- B** Dorchester West – Castle Cary: single line sections prevent significant increases in train service frequency

Note

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

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

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

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

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

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

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



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