Route 4 Wessex

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).

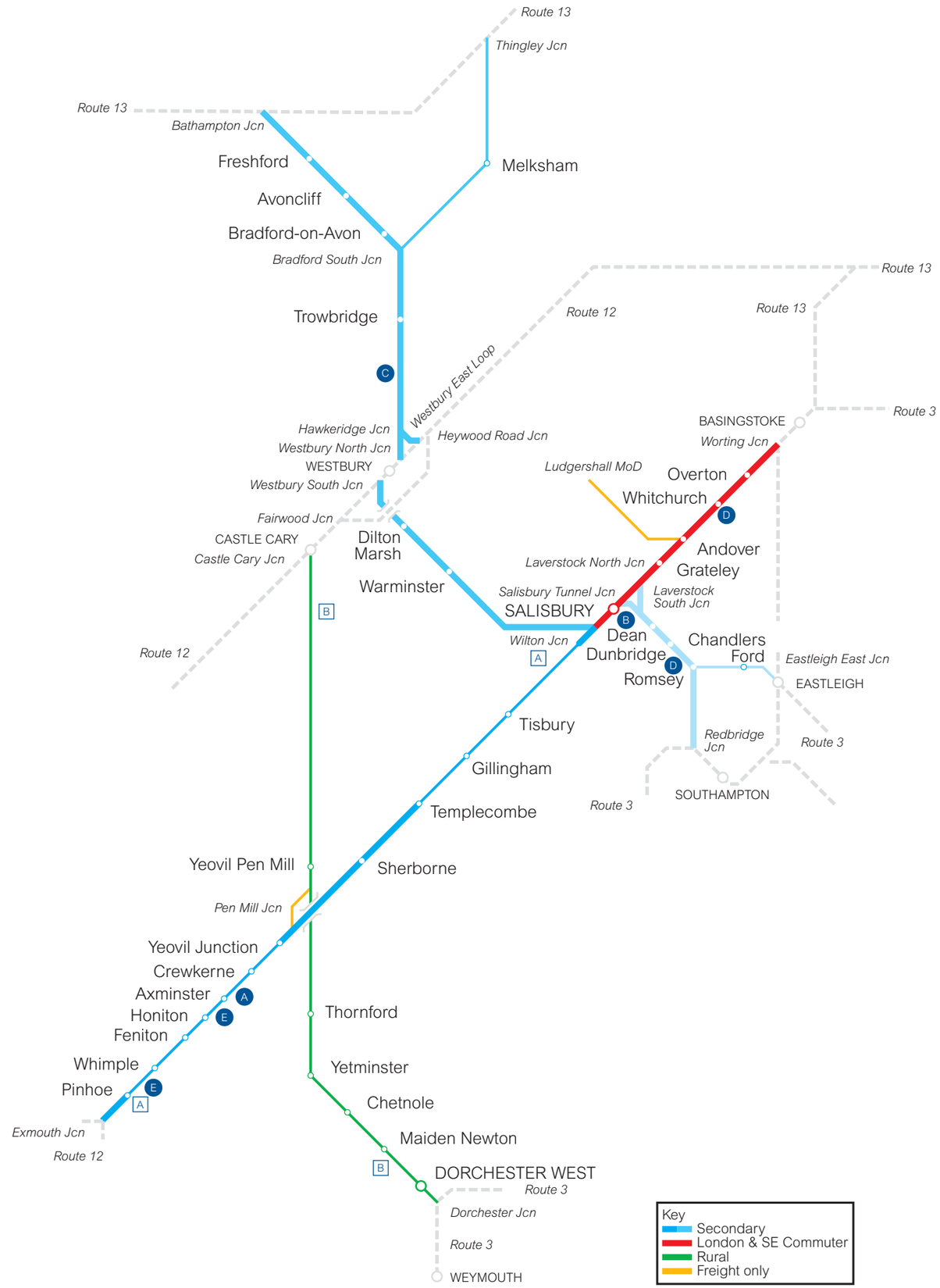
Route context

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) is currently under development and is due for publication in 2006. It will be followed by the South West RPA.

Route 4 Wessex



Passenger and freight demand

The SWMLRUS has shown that the number of passenger journeys per year on South West Trains (SWT), the route's main operator, has risen by 22% in the last six years. Commuter travel in the peaks has risen by around 20% 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.

Wessex Trains 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.

Current traffic

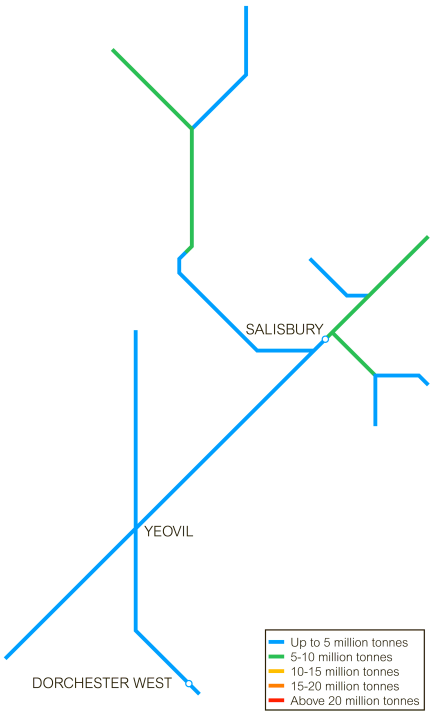
The Wessex routes carry a variety of traffic, with all passenger services being provided by diesel multiple units. The routes are a mixture of double track stretches of line and single track sections with passing loops. Freight services on the route mainly run to and from the West Country carrying aggregates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

Figure 2 Tonnage



Traffic volumes are summarised in Figure 3.

Figure 3 Current use

	Passenger	Freight	Total
Train km per year (millions)	6	1	6
Train tonne km per year (millions)	959	416	1,375

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

Figure 4 Linespeed

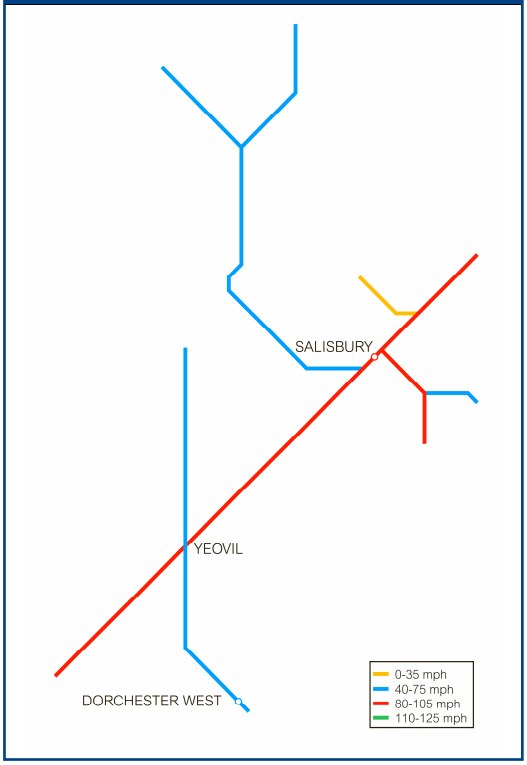


Figure 5 Electrification

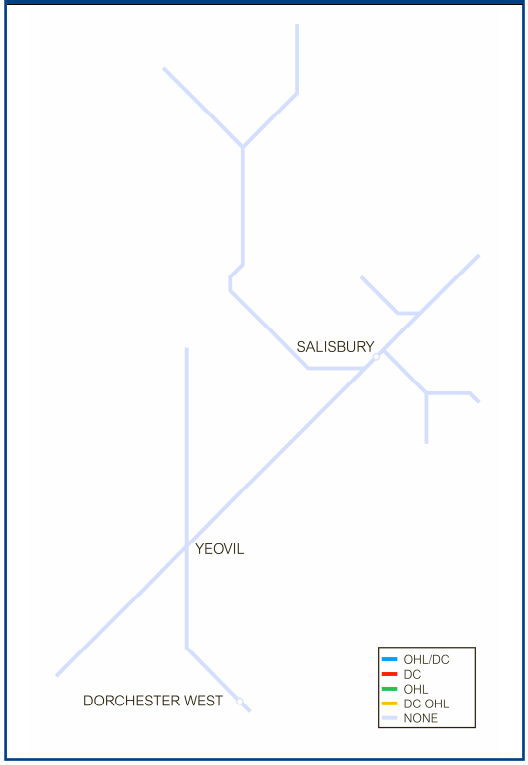


Figure 6 Route availability

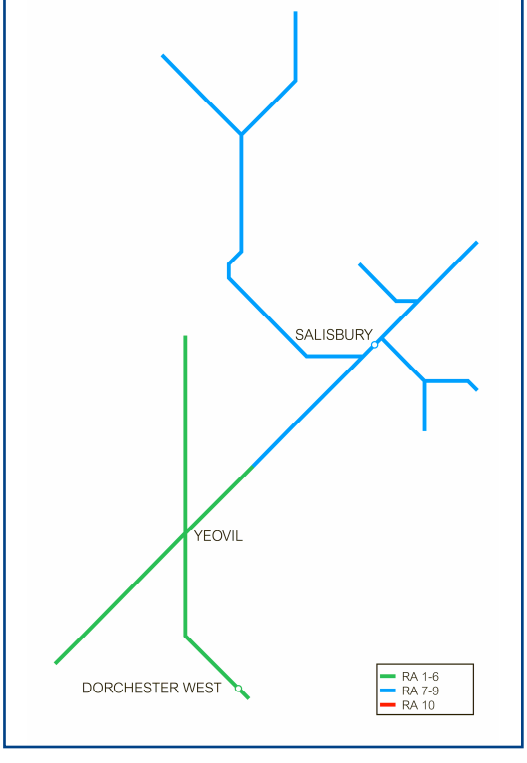


Figure 7 Gauge

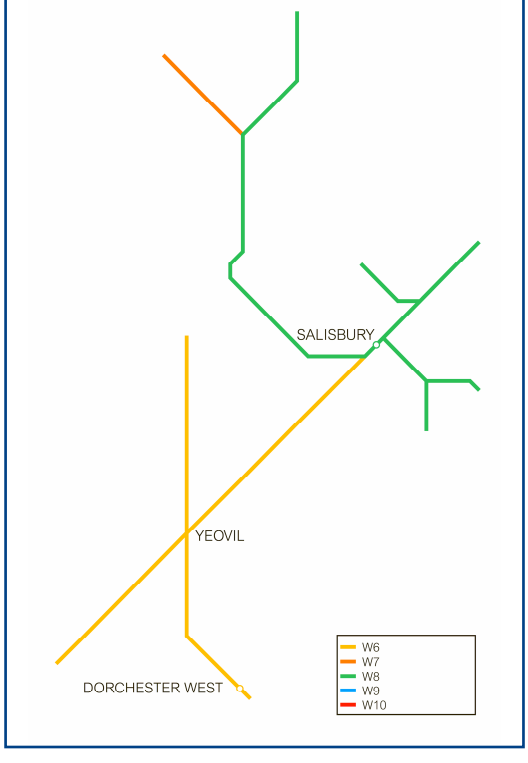


Figure 8 Current train service level (trains per peak hour)

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 (above) 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 (below) shows the current PPM for the main TOCs running along the route.

Figure 9 Current PPM MAA (2005/06)

TOC	MAA	As at period
South West Trains	89.1%	10
Wessex Trains	84.6%	10

Future requirements

Strategic direction

The SWML Route Utilisation Strategy was published on 23 March 2006 and is currently subject to review by the Office of Rail Regulation. This details the strategic direction for the route across the period 2007 to 2017, although it also provides a foundation for further development beyond these dates. 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 Routes, 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. Opportunities to improve cycle storage facilities, pedestrian access and bus stops will be explored through the South Western franchise competition;
- service alterations in the Southampton-Salisbury-Weymouth area have been developed with DfT and ATOC. The alterations include a rebalancing of service groups and stopping patterns to better match resources to demand, with only a minimal impact on service for specific stations; and
- a revised platforming strategy at Portsmouth Harbour will improve performance and should be implemented in the December 2006 timetable. This has no impact on service levels to any stations.

Measures to develop 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, 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 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 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'.

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 are being further examined in the Freight RUS as the route continues beyond Reading to the West Midlands and North of England. While the preferred routeing 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 modeled to be in the region of 20% but certain services are predicted to see higher levels, with commuting to London from west of Yeovil expected to rise by 38% 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

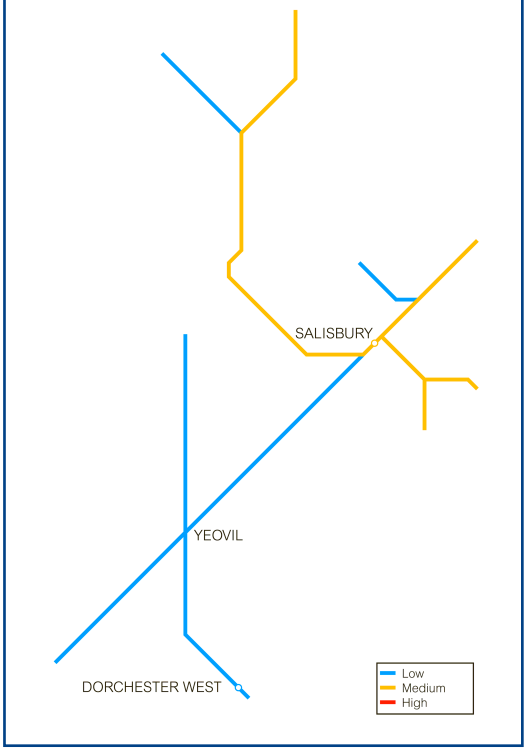
along the corridor followed by the West of England line.

In terms of freight, demand market studies undertaken over the last few years forecast aggregate traffic tonnage will grow by 1% to 2% 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.

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.

Figure 10 indicates the forecast percentage change in tonnage to 2015.

Figure 10 Tonnage growth



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.

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 will be further examined by the ongoing Freight RUS process.

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 proposed strategy to allow an hourly service from London Waterloo to Exeter in addition to a new hourly Axminster-Exeter local service. This is predicted to provide adequate capacity to enable operation of the required services for at least the next ten years.

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 two additional loops constructed, one involving the extension of the Chard Junction loop south to Axminster, the other creating a new loop at Whimple (totalling eight miles in length). This would provide the necessary capability to enhance the service, allowing the line to address the expected growth in demand.It 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). Capacity on the line that stretches from Route 13 to Route 3 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. Specific schemes to improve train performance during 2006/07 include: the installation of Uninterruptible Power Supplies at Templecombe signal box, improvements to power supplies and treadles at level crossings, and a review of fencing to reduce animal incursion.

Figure 11 Forecast reduction in delay minutes

	2006/07	2007/08	2008/09
% reduction in delay minutes	6%	12%	17%

Figure 12 Forecast PPM MAA

TOC	2006/07	2007/08	2008/09
South West Trains	90.3%	90.5%	90.6%
Wessex Trains	86.0%	86.7%	87.4%

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 2005/06.

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.

The 'Golden' possession regime described in Route 3 also operates on these lines.

Opportunities and challenges

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

Successfully accommodating the expected growth of around 20% more passengers over the next ten years (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% 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.

Delivering future requirements

Expenditure

Figure 13 shows the planned level of expenditure on renewals on this route over the next three years. However, the precise timing and scope of renewals remains subject to review to enable us to meet our overall obligations as efficiently as possible consistent with the reasonable requirements of operators and other stakeholders.

Figure 13 Forecast expenditure

£m (05/06 prices)	2006/07	2007/08	2008/09
Renewals			
Track			
Plain Line	5	4	4
S&C	1	1	1
Track Total	6	5	5
Civils			
Underbridges	1	1	1
Bridgeguard 3	0	0	0
Earthworks	0	2	–
Tunnels	–	0	–
Retaining walls	–	0	–
Other	0	–	–
Civils Total	2	4	1
Signalling			
Minor works/other	2	6	2
Signalling Total	2	6	2
Plant and machinery			
Fixed plant	–	0	0
Point heating	–	0	0
Plant and machinery Total	–	0	0
Operational property			
Stations	1	–	–
Operational property Total	1	–	–
Total Renewals	10	14	9
Enhancements (funded by)			
Network Rail			
Other	0	–	–
Network Rail Total	0	–	–
Total Enhancements	0	–	–

Figure 14 Forecast volumes

	2006/07	2007/08	2008/09
Track			
Rail (km)	8	8	8
Sleepers (km)	9	8	8
Ballast (km)	9	8	8
Switches & crossings (no)			
Complete renewal	2	2	2
Abandonment	2	2	2
Civils			
Underbridges (square metres)	195	357	2,122
Overbridges (square metres)	86	40	–
Embankments (square metres)	370	16,700	–
Tunnels (square metres)	–	764	–
Retaining walls (square metres)	–	20	–
Plant and machinery			
Point heating (point end)	12	19	40

The planned volume of renewals is detailed in Figure 14.

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

Maintenance

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

Figure 15 Forecast expenditure

£m (05/06 prices)	2006/07	2007/08	2008/09
Maintenance	16	15	14

Infrastructure investment

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

Figure 16 Planned infrastructure investment

Project	Scope	Enhancement or output change	Main asset type(s)	Third Party funding	GRIP stage	Completion year
A River Axe – Flood opening works (04.02)	Renewal of Structural equipment	Improved asset condition	Civils	None	5	2008
B Salisbury plain line track renewals (04.01)	Renewal of track	Improved asset condition and performance	Track	None	2	2007
C Yarnbrook embankment stabilisation (04.04)	Stabilisation of embankment to prevent risk of asset failure	Improved asset reliability	Civils	None	1	2007/08

Figure 17 highlights uncommitted schemes under development.

Figure 17 Infrastructure investment under consideration

Project	Scope	Enhancement or output change	Main asset type(s)	Status
D 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	Civils and track	Being considered by the SWML RUS – The diversionary capability of Route 4 may be necessary
E West of England Passing Loops (04.02)	Reinstate short sections of double track on existing single track sections of route	This would allow trains in opposite directions to pass each other, allowing more services to be run	Civils and track	Being considered by the SWML RUS

Non-infrastructure developments

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

Figure 18 Timetable development

Description	Key issues	Actions or options being developed	Benefits	Target timetable implementation
Portsmouth Harbour workings	The interaction of the different TOCs at Portsmouth Harbour causes delay	Altering the platforming arrangements at Portsmouth Harbour is being considered by the SWML RUS	Improved performance (affecting the Wessex Routes as some relevant services terminate at Portsmouth Harbour)	December 2007
Southampton area workings	The interaction of the different TOCs at Southampton can cause delay	Changing the service pattern in the Southampton area is being considered by the SWML RUS	Improved performance and rolling stock utilization (affecting the Wessex Routes as some relevant services pass through the Southampton area)	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 & SE	DfT	No	W8	8	50 –90	None	TCB	2 – 8 mins	2
04.02	Wilton Jn – Exmouth Jn	BAE2	Secondary	DfT	No	W7 & W6	6 & 7	85 (70)	None	TB (TCB)	N/A	1 (2)
04.03	Redbridge/ Eastleigh – Salisbury	RTJ,ECR	Secondary	DfT	No	W8	8	30 –85	None	TCB	4 – 14	1 & 2
04.04	Salisbury – Bathampton/ Thingley Jn	SAL,WEY, WYL,BFB	Secondary	DfT	No	W8 (W7)	8	60 –70	None	TCB	5 – 6	1 & 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

Other Issues on the Route

1 All routes: new timetable introduced by South West Trains in December 2004.