

Route Plans 2008
Route 4
Wessex Routes



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Route 4 Wessex Routes



Section 1: Today's railway

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 links to Bristol and Cardiff for 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 owing 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 the Wessex route, and has considered options to accommodate future growth. The RUS conclusions are reflected within this document. The Department for Transport's Southern Regional Planning Assessment (RPA) was published in January 2007, and the South West RPA in May 2007.

Today's route

The route contains a mixture of double track stretches of line and single track sections with passing loops.

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 4 Wessex Routes



Current passenger and freight demand

The SWML RUS has shown that the number of passenger journeys per year on Stagecoach South Western Trains (SWT), the route's main operator, had risen by 22 percent in the previous six years. Commuter travel in the peaks rose 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 to some extent 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.

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

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 a 'b'-shaped service from Romsey to Salisbury via Eastleigh, Southampton and back through Romsey.

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 operated by English, Welsh and Scottish Railway (EWS) and Freightliner over this route are:

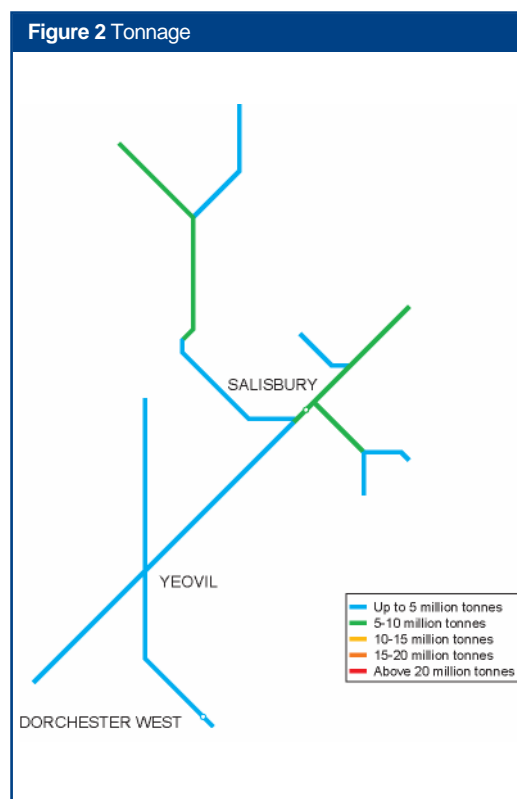
- quarried aggregates (from Somerset) via Westbury to the South coast conurbation;
- traffic from the Southampton area to London and the Midlands as a diversionary route for Route 3; and
- other local terminals served including the Ministry of Defence (MoD) at Ludgershall (near Andover) and Imerys at 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. 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 2 shows the total annual tonnage levels on the route.

Traffic volumes are summarised in Figure 3.

Figure 2 Tonnage**Figure 3** Current use

	Passenger	Freight	Total
Train km per year (millions)	6	1	67
Train tonne km per year (millions)	948	397	1,346

Current infrastructure capability

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

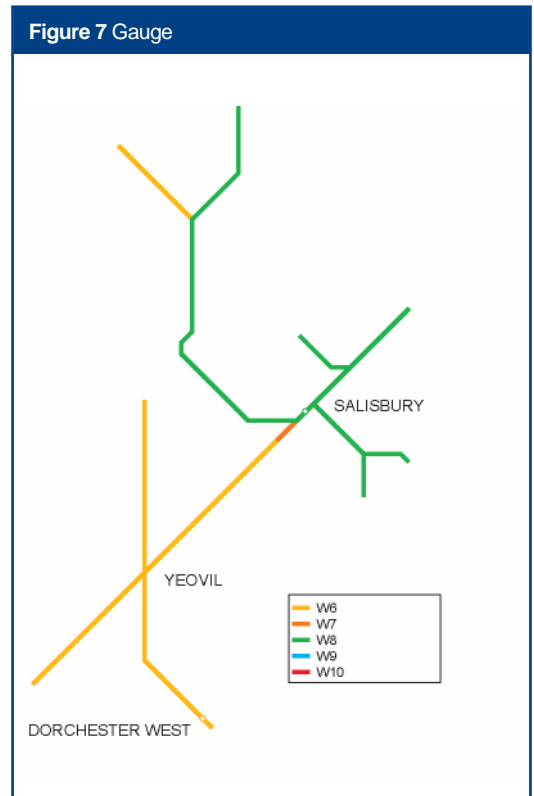
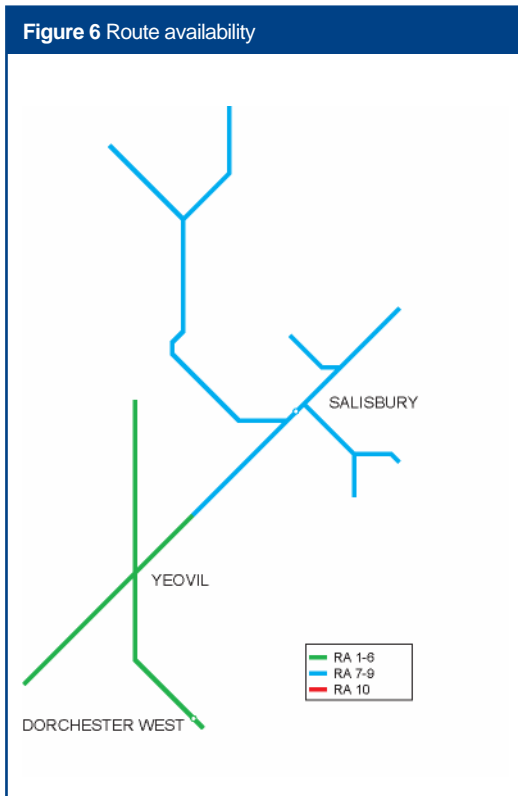
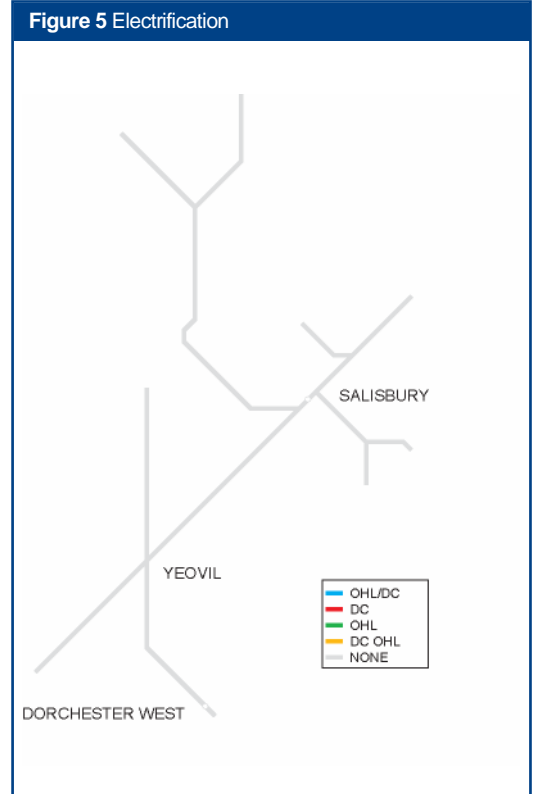
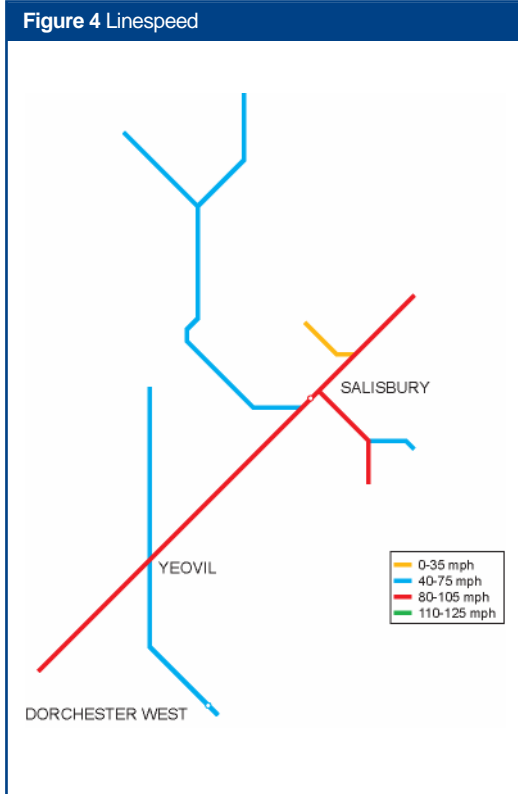


Figure 8 Current train service level (trains per peak hour)

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.

Note: from Period 1 2007/08 PPM figures are produced for Stagecoach SWT which also include Island line.

Figure 9 Current PPM MAA (2007/8)

TOC	MAA	As at period
Stagecoach South Western Trains	92.2%	12
First Great Western	83.0%	12

Section 2: Tomorrow's railway

HLOS output requirements

Figure 10 Total demand to be accommodated by Strategic Route

Routes	Annual passenger km forecast in 2008/09 (millions)	Additional passenger km to be accommodated by 2013/14 (millions)
Wessex Routes	431	58

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.

The Freight Route Utilisation Strategy was published by Network Rail in March 2007 and established by the Office of Rail Regulation in May 2007. A key input to the strategy was a set of ten year demand forecasts that were developed and agreed by the industry through the RUS Stakeholder Management Group.

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.

The W10 gauge enhancement scheme on Route 3 between Southampton and the West Coast Main Line has now been granted Transport Innovation Fund (TIF) funding. This is likely to encourage growth in container traffic from Southampton, but if a suitable diversionary route is not provided then such growth could well be choked off given the increasing usage of 9' 6" containers. Providing a W10 route via Laverstock (and thence via Andover or via Melksham) is therefore seen as crucial, not only to cater for freight growth, but also to ensure robust performance for all operators in the event that the main W10 route on Route 3 is blocked for any reason. Clearing the route via Melksham would avoid the need for trains to travel via Reading.

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.

Section 3: Proposed strategy

Figure 11 summarises the key milestones during CP4 in delivering the proposed strategy for the route. Further explanation of the key service changes and infrastructure enhancements are set out in the following sections.

Figure 11 Summary of proposed strategy milestones

Implementation date	Service enhancement	Infrastructure enhancement	Expected output change
By 2014		Works to allow W10 gauge trains to run from Southampton to the WCML via Andover	Provides a diversionary route for the movement of 9'6" containers from Southampton on conventional wagons and improves route capacity

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 Thingley Junction/Bathampton Junction are not.

Continued strong growth in both passenger and freight demand is forecast 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; three stations (Salisbury, Honiton and possibly Andover) are the subject of proposed NSIP schemes; and

- service alterations in the Southampton - Salisbury – Weymouth area have been developed with DfT and Association of Train Operating Companies (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 Axminster. 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, with a target implementation date of December 2009; 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:

- TIF funding has been granted for enhancing the main rail freight route (on Route 3) between the Southampton container terminals and Reading (and onwards to the WCML) in order to provide W10 capability. This would enable the retention and expansion of rail market share by accommodating the growing proportion of large containers. While the preferred routeing is via the SWML (Route 3) the provision of a diversionary route on Route 4 via Andover or via Melksham is also important, for which development work will continue.

Future train service proposals

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.

From 2009, SWT intend to operate a broadly hourly service from London Waterloo to Exeter, for which a new passing loop at Axminster will be provided.

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.

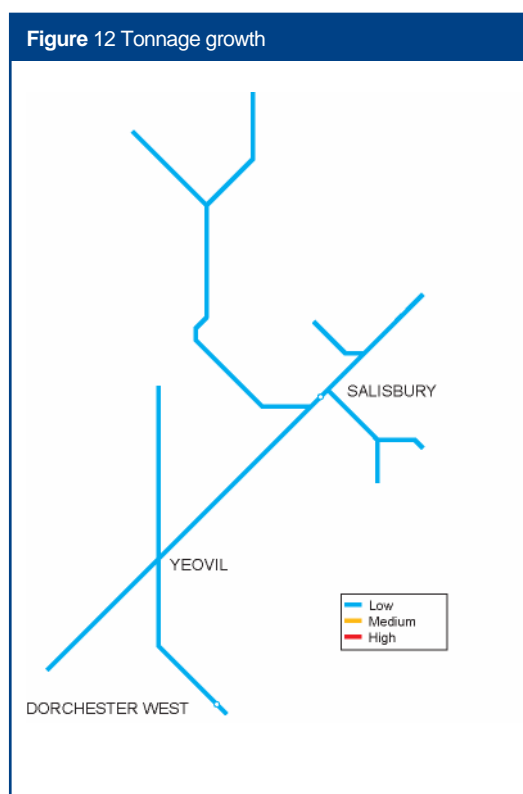
Figure 12 indicates the forecast percentage change in tonnage to 2017.

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, once the works to upgrade Route 3 to W10 gauge take place, it would be desirable to upgrade those parts of Route 4 that act as a diversionary route. An increment to this would be to electrify the route from Basingstoke to Southampton via Andover in order to give electric passenger trains a diversionary route as well.

An opportunity exists to increase linespeeds when the Test Valley AHB level crossings come up for renewal during CP4.



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 the provision of a new, extended passing loop at 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).

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 via Andover or Melksham.

Future performance

Figure 13 sets out the planned PPM for each train operator. Figure 14 sets out the trajectory we propose as local commitments with each operator. These are lower than planned given the need for flexibility in achieving the HLOS targets and to reflect the greater uncertainty and risk associated with projecting performance at a disaggregated level. Reasonable requirements will finally be established for CP4 in our 2009 Business Plan.

Stagecoach South Western Trains

The performance of the Stagecoach South Western Trains (SWT) franchise is currently 92.2 percent PPM and this is forecast to remain the same performance in April 2009. The Joint Performance Improvement Plan (J-PIP) is supported by the Right Time Railway approach, a joint Network Rail and SWT plan to focus on the measure of Right Time Arrival and Departure, which is delivered through 9 local groups. This has proved a highly effective driver for performance improvement.

The key performance issues and opportunities for this TOC have been identified as:

- mitigating the main risk to performance of passenger growth;
- managing and reducing the propagation of Rolling Contact Fatigue;
- improving the holistic planning process for infrastructure maintenance and renewal;
- continued reduction in TSRs/ ESRs;
- continued improvement at Clapham Maintenance Delivery Unit;
- improving the delivery of the Train Service Recovery Plan during periods of disruption; and
- undertaking small scale enhancements to improve performance.

The route plan is being developed around these key points and currently suggests that performance on SWT will be around 93.3% by April 2014, although this target has not been endorsed by SWT.

The other operator on this route is FGW. The future

Figure 13 Forecast PPM MAA- CP4 plan

	2009/10	2010/11	2011/12	2012/13	2013/14
Stagecoach South Western Trains	92.5%	92.8%	93.1%	93.2%	93.3%
First Great Western	87.0%	88.2%	89.1%	89.7%	90.1%

Figure 14 Forecast PPM MAA - proposed local commitments

	2009/10	2010/11	2011/12	2012/13	2013/14
Stagecoach South Western Trains	90.7%	91.0%	91.2%	91.4%	91.5%
First Great Western	86.1%	87.3%	88.2%	88.8%	89.2%

performance section for FGW can be found in the plans for Routes 12 and 13.

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.

Long-term 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.

Enhancements to be completed by end of CP3

Figure 15 CP3 enhancements

Implementation date	Project	Project description	Output change	Funding	GRIP stage
2009	Ⓐ West of England passing loop	Reinstate a 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	Network Rail Discretionary Fund	4
2008	Ⓑ Salisbury Platform 3 extension	Platform extension to 10-car capability	Enables longer trains to call without SDO	TOC	4
2008	Ⓒ 10-car capability at Overton, Whitchurch, Andover and Grateley	Platform extensions or the provision of SDO	Enables longer trains to call	TOC	4

Proposed enhancements in CP4

Figure 16 Proposed enhancements in CP4

Implementation date	Project	Project description	Output change	Funding	GRIP stage
By 2014	Ⓣ Southampton to Basingstoke W10 gauge clearance-diversionary route	Works to allow W10 gauge trains to run from Southampton to the WCML via Andover	Provides a diversionary route for the movement of 9'6" containers on conventional wagons, improves route capacity	Periodic Review 2008/ Third Party	–

NRDF candidate schemes in CP4

Figure 17 Candidate NRDF schemes in CP4

Implementation date	Project	Project description	Output change	Funding	GRIP stage
2009	Ⓔ Salisbury Platform 1 reinstatement and other works	Reinstatement of platform for passenger use	Improves operational flexibility and increases platform capacity	Network Rail Discretionary Fund	3
By 2014	Ⓕ Test Valley AHB Renewals	Opportunity to increase linespeed from 85mph to 90/100mph	Improves performance	Network Rail Discretionary Fund	–
2009-2014	Various locations	Gauge clearance for Class 165/166 units	Would enable deployment of this rolling stock on Cardiff to Portsmouth and Westbury to Weymouth services	Network Rail Discretionary Fund	–

Maintenance and renewals activity

Figure 18 shows the estimated maintenance and renewal costs and activity volumes.

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

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

Figure 18 Summary of estimated maintenance & renewals costs and activity volumes									
£m (2006/07 prices)	2009/10	2010/11	2011/12	2012/13	2013/14	Control Period Totals			
						CP4	CP5	CP6	CP7
Maintenance expenditure									
Track	7	7	6	6	6	32	28	27	27
Signalling	1	1	1	1	1	7	6	6	6
Electrification	0	0	0	0	0	0	0	0	0
Telecoms	1	1	1	1	1	4	4	4	4
Plant and Machinery	0	0	0	0	0	1	1	1	1
Other (overheads / indirect)	6	5	5	5	5	26	24	23	23
Total	15	15	14	14	13	71	62	60	60
Renewals									
Track	13	12	11	10	10	56	32	24	38
Signalling	3	2	2	2	1	11	40	17	3
Civils	5	4	4	4	4	21	19	19	18
Operational Property	3	2	2	2	2	12	12	12	12
Electrification	0	0	0	0	0	0	0	0	0
Telecoms	4	3	2	2	1	12	4	4	5
Plant and Machinery	1	1	1	1	0	4	4	4	4
Total	29	25	22	21	19	116	111	78	80
Renewals Volumes									
Rail (KM)	9	10	9	9	9	45	48	22	25
Sleepers (KM)	17	17	17	17	17	86	51	48	87
Ballast (KM)	16	16	16	16	16	82	46	44	83
S&C Units	6	6	3	2	3	20	5	14	16
SEUs commissioned	0	0	0	0	8	8	204	82	0

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 (mins)	No of Tracks
04.01	Worting Jn – Wilton Jn	BAE1,2	London and SE	DfT	No	W8	8	50–90	None	TCB	2–8	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	RTJ,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

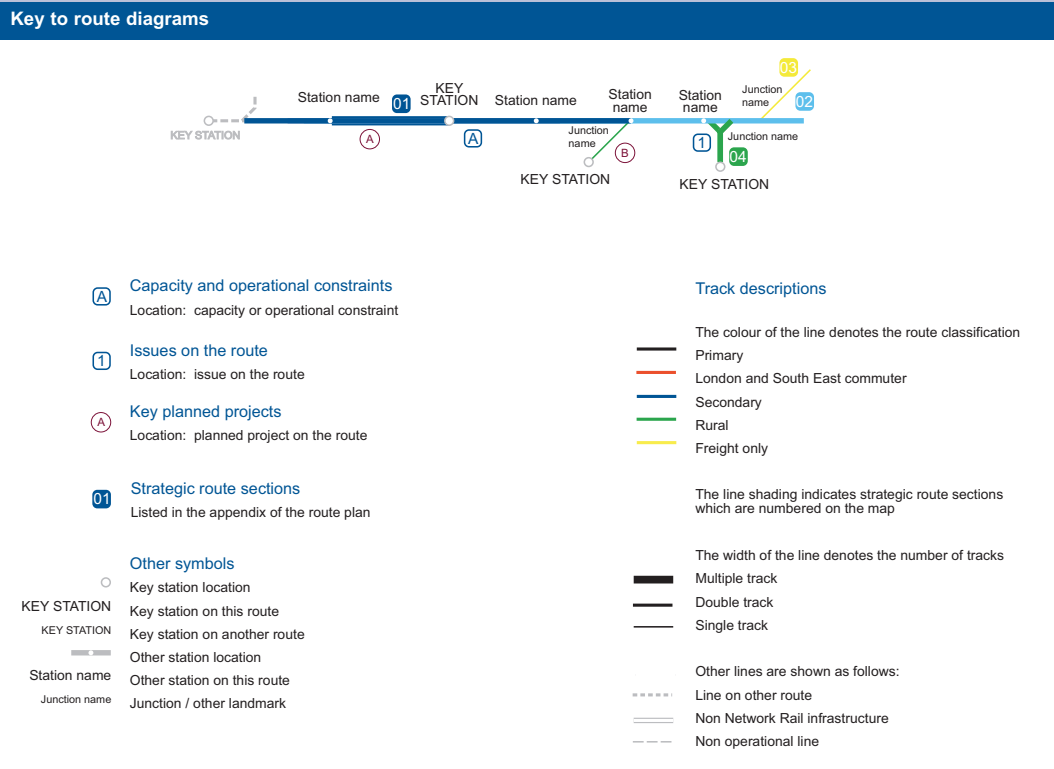
Capacity and Operational Constraints

- A** Salisbury – Exeter: single line sections prevent significant increases in train service frequency, and effective use as a diversionary route
- B** Dorchester West – Castle Cary: single line sections prevent significant increases in train service frequency

Note

This Route Plan forms part of the April 2008 update of Network Rail's Strategic Business Plan. The Route Plan supersedes the version published on 1 November 2007.

Other documents in the Strategic Business Plan can be found on the Network Rail website www.networkrail.co.uk



GRIP stages

1	Output definition
2	Pre-feasibility
3	Option selection
4	Single option selection
5	Detailed design
6	Construction, test and commission
7	Scheme hand back
8	Project close out

**This Route Plan is part of a set.
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Network Rail
40 Melton Street
London NW1 2EE
Tel: 020 7557 8000
www.networkrail.co.uk

CDS001/April 2008