Route Plans 2007
**Route 12**
Reading to Penzance

Network Rail

# Delivering for you

# Network Rail brings the country together. We own, operate, maintain and invest in Britain's rail network. Increasingly we are delivering improved standards of safety, reliability and efficiency. This benefits our customers and society at large.

## Every day. Everywhere.


# **Route 12** Reading to Penzance

## Route context

The route links the south-western peninsula counties of Cornwall, Devon and Somerset with both the Midlands and the North and with London by feeding on to the core Great Western Main Line at Taunton and at Reading. In addition to the long spine of the main route from Reading through Westbury to Penzance, a number of branches enable many of the larger west of England coastal resorts to be rail-served, and holiday traffic is a significant element of the overall passenger market.

In June 2005 the Strategic Rail Authority published the Great Western Main Line Route Utilisation Strategy (RUS) for the period 2006-2012. The RUS identified continued growth at well above the national average at the eastern end of the route serving commuter towns in west Berkshire, and to a lesser extent in Wiltshire. The Regional Planning Assessment for the South West is due to be published during 2007.



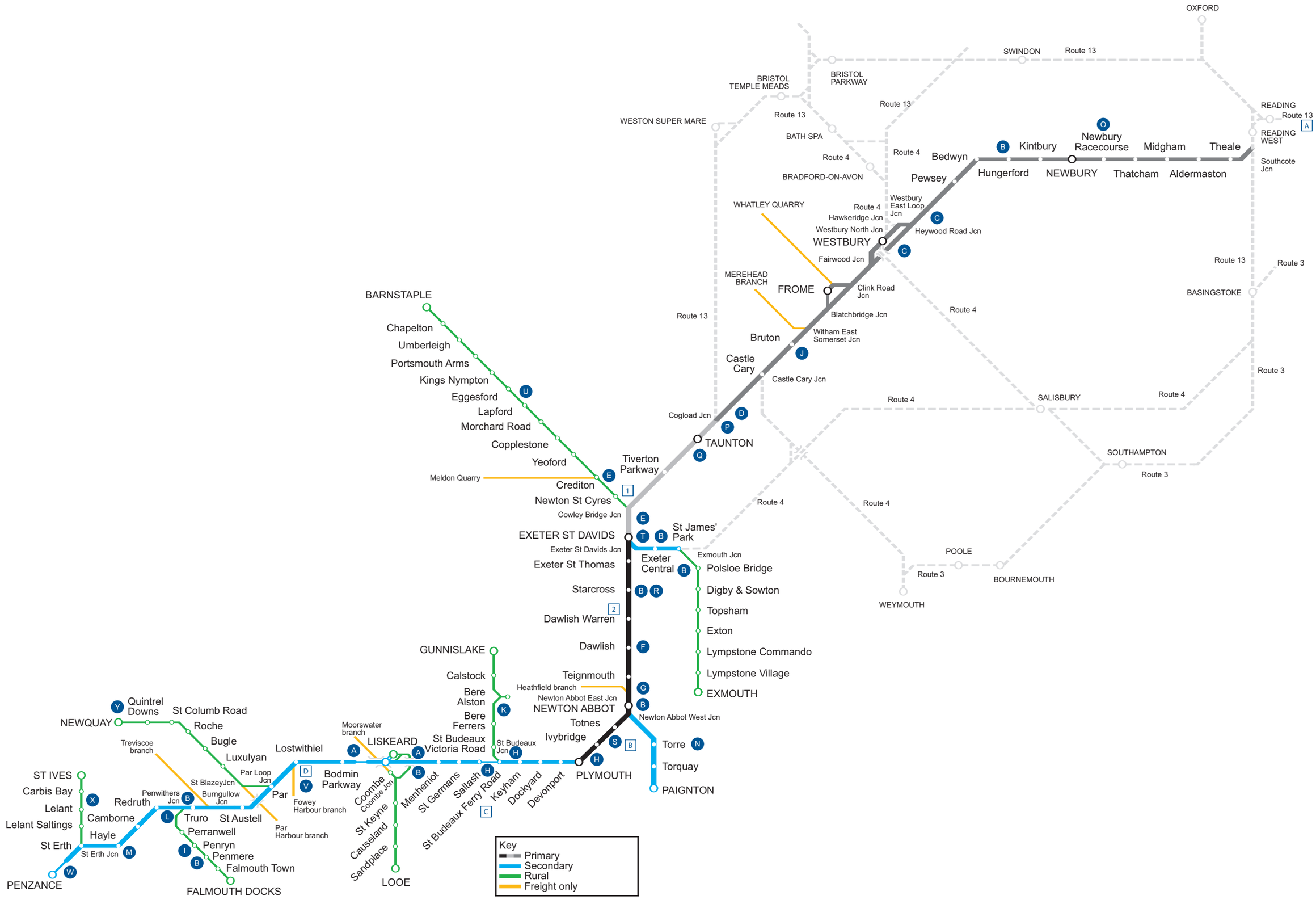
## Today's route

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

- the 270-mile long main line section from Reading to Penzance (12.01,12.02,12.03 and 12.04). Feeding this 'spine' are eight shorter branch lines in Devon and Cornwall:
- Exeter to Exmouth (12.05 and 12.10);
- Exeter (Cowley Bridge Junction) to Barnstaple (12.07);
- Newton Abbot (Aller Junction) to Paignton (12.06);
- Plymouth (St. Budeaux) to Gunnislake (12.13);
- Liskeard to Looe (12.09);
- Par to Newquay (12.12);
- Truro (Penwithers Junction) to Falmouth (12.11); and
- St. Erth to St. Ives (12.08).

As well as these passenger branches there are freight branches (12.14) to Whatley, Merehead, Heathfield, Plymouth Cattewater, Fowey, and Drinnick Mill; and a connection from Crediton to Coleford Junction (alongside the Exeter to Barnstaple branch) which leads on to the privately-owned Meldon Quarry freight line through Okehampton.

# **Route 12** Reading to Penzance



## Passenger and freight demand

In addition to the main cities and towns served directly by the Reading to Penzance route and its branch feeders, there are large areas of the South West which are remote from a station, and long-distance trains call at smaller stations such as Castle Cary to address demand for railheading in South Somerset. Similarly the stations at Tiverton Parkway, Totnes and Bodmin Parkway cater for large swathes of north Devon, south Devon and north Cornwall respectively.

The emerging Department for Transport (DfT) Regional Planning Assessment (RPA) for the South West identifies the role of rail as supporting London's role as a World City and the local economies of other key urban centres by enabling rail commuting linking employers to sources of skilled labour; supporting the growth and integration of the London and South East, and the South West economies through provision of rail services linking London to the key centres; supporting wider social connectivity in the South West by providing important regional links, and contributing to the provision of surface access to Heathrow Airport.

The main markets for rail are identified as medium and short-distance commuting into London, from the eastern end of the route, and to other main centres such as Exeter and Plymouth; inter-urban travel between main centres in the south west and London and the Midlands; intra-regional inter-urban travel; access to airports; leisure and tourism, and the social dimension of local branch lines.

Between 2000 and 2006 rail passenger demand has grown by up to 20 percent for journeys from Exeter and Taunton to London, and up to 40 percent to the Midlands. However, this is in contrast to the minimal growth for journeys to similar locations from Plymouth, and west thereof. Growth in local journeys to Exeter and Plymouth is fairly static.

Based on the December 2006 timetable, the RPA also identifies that demand for seats on main line services to London during the morning peak exceeds provision only at the eastern end of the route from Newbury by approximately 5 percent.

There is very little through freight movement between the Home Counties and the far west of England, although the Reading to Westbury section of the route is heavily utilised by long and heavy freight trains conveying aggregates eastwards from the Mendips.

Freight traffic generated in Cornwall is predominantly china clay, mostly exported locally through the port of Fowey, but with some longer-distance traffic also. Cement traffic from Hope (Peak District) runs twice weekly to Moorswater on the Looe branch.

## Current services

First Great Western operates the broadly hourly London Paddington to Plymouth services, which come together with the hourly Midlands and north to Plymouth services (operated by Virgin Cross Country) at Cogload Junction (east of Taunton), to make traffic volumes greatest between there and Plymouth. Between Plymouth and Penzance passenger train services are mostly operated by First Great Western. Virgin Cross Country has a limited presence west of Plymouth, although this is stronger in the summer months. A number of London Waterloo to Exeter St. Davids (via Salisbury) services operated by South West Trains run westwards beyond Exeter, to Paignton and Plymouth.

At the eastern end of the route the broadly hourly commuter services provided by First Great Western are operated with 2 car or 3 car formations and a more intensive service is operated during morning and evening commuter peaks. The most intensively used Devon branch, to Exmouth, enjoys half-hourly frequencies whilst the other west of England branches have hourly or less frequent interval services.

English, Welsh and Scottish Railway and Freightliner Heavy Haul operate freight services throughout the route.

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



**Figure 1** Current train service level (trains per hour)

| Main line services | Trains per hour |
|---|---|
| Plymouth – Paddington | 1 peak/1 off peak (9 trains per day from Penzance) |
| Exeter St Davids – Paddington | 1 peak/0 off peak |
| Bedwyn – Paddington | 1 peak/1 off peak |
| Newbury – Paddington | 2 peak/1 off peak |
| Plymouth – Birmingham New St | 1 peak/1 off peak (3 trains per day from Penzance) |

**Figure 2** Current train service level (trains per hour)

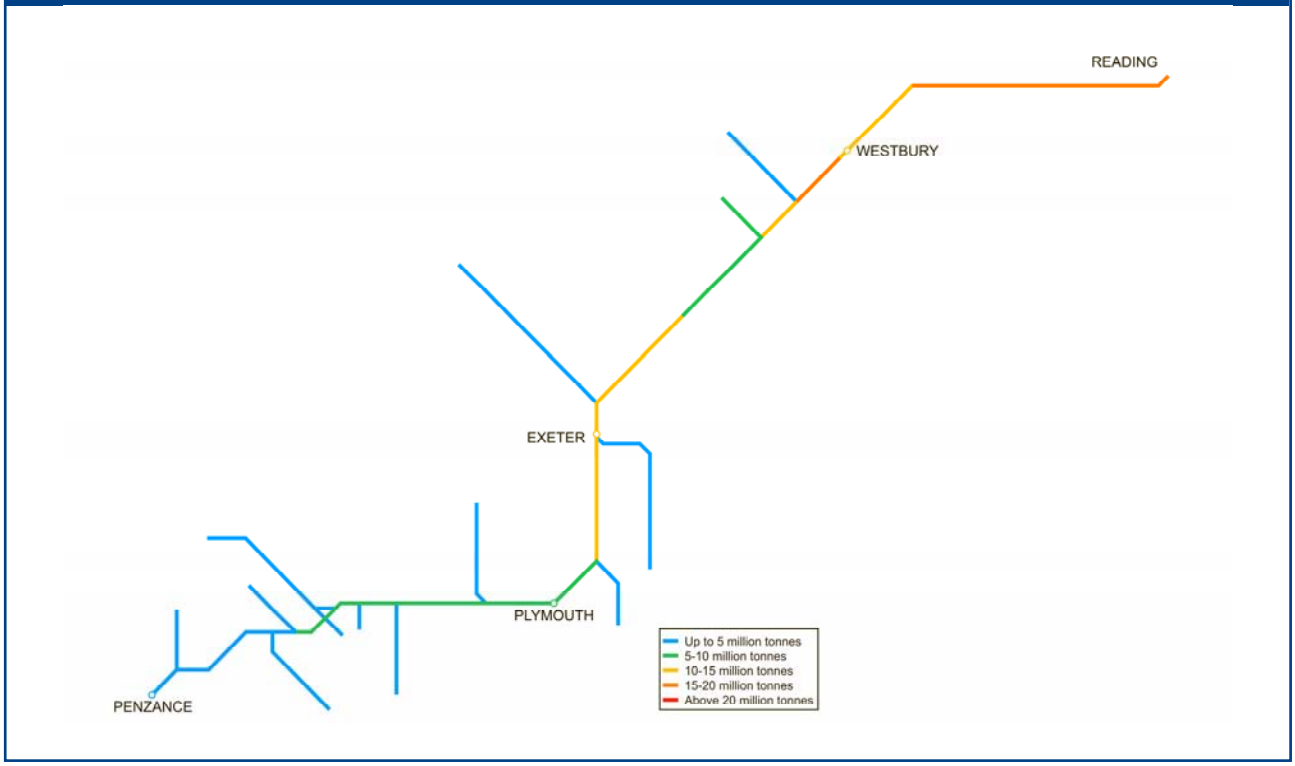
| Regional/Rural Service | Trains per hour each way |
|---|---|
| Newbury – Reading | 1 |
| Exmouth – Barnstaple | 1 |
| Exmouth – Paignton | 1 |
| Plymouth – Gunnislake | 7 trains per day |
| Liskeard – Looe | 1 |
| Par – Newquay | 4 trains per day |
| Truro – Falmouth | 1 |
| St Erth – St Ives | 2 |

Figure 2 shows the current service level for regional and rural services

Figure 3 shows the tonnage levels on the route.



**Figure 3** Tonnage




Traffic volumes are summarised in Figure 4.

**Figure 4** Current use

| | Passenger | Freight | Total |
|---|---|---|---|
| Train km per year (millions) | 12 | 1 | 13 |
| Train tonne km per year (millions) | 3,144 | 1,314 | 4,458 |

## Current infrastructure capability

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

**Figure 5** Linespeed

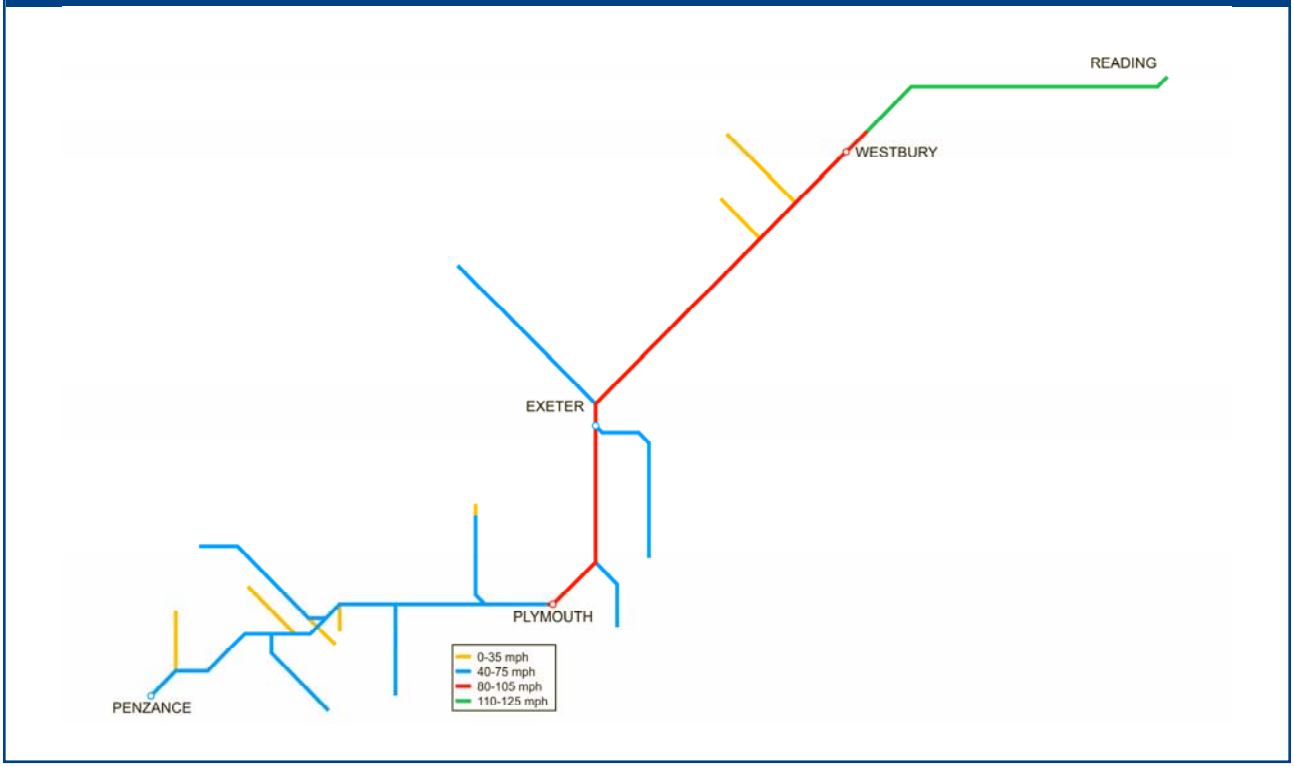



**Figure 6** Electrification

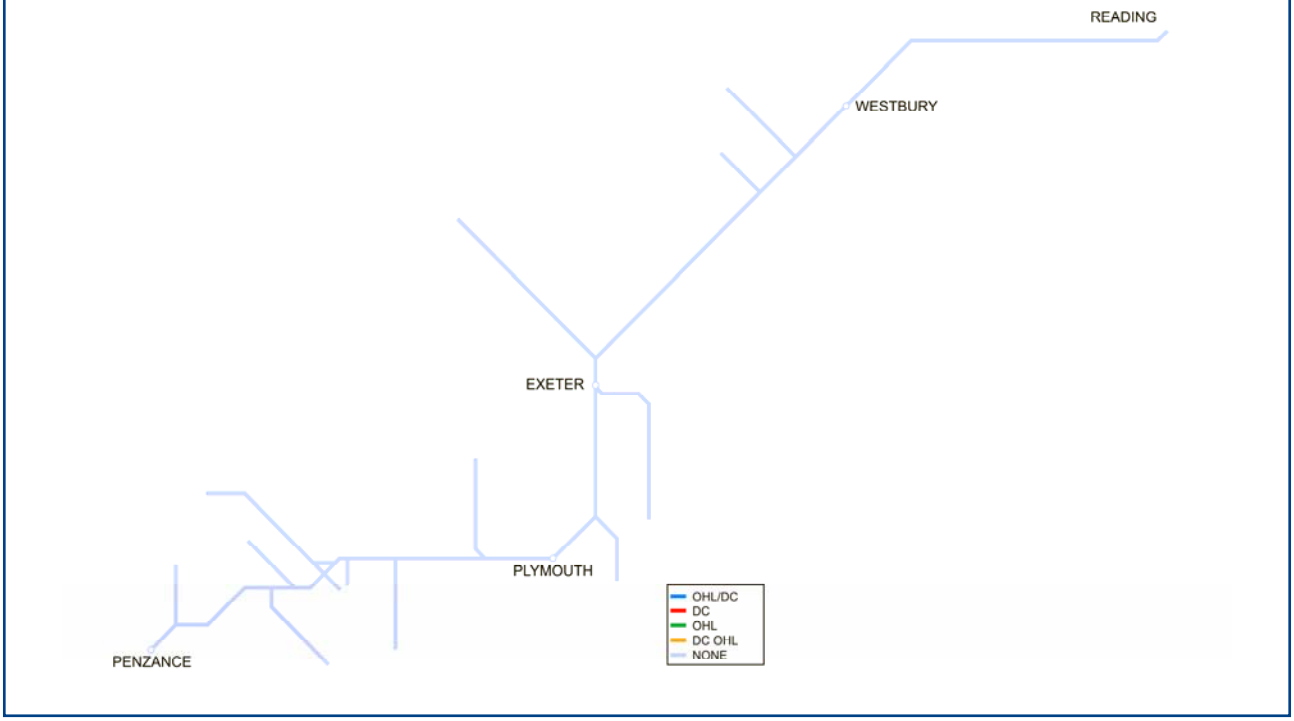


**Figure 7** Route availability

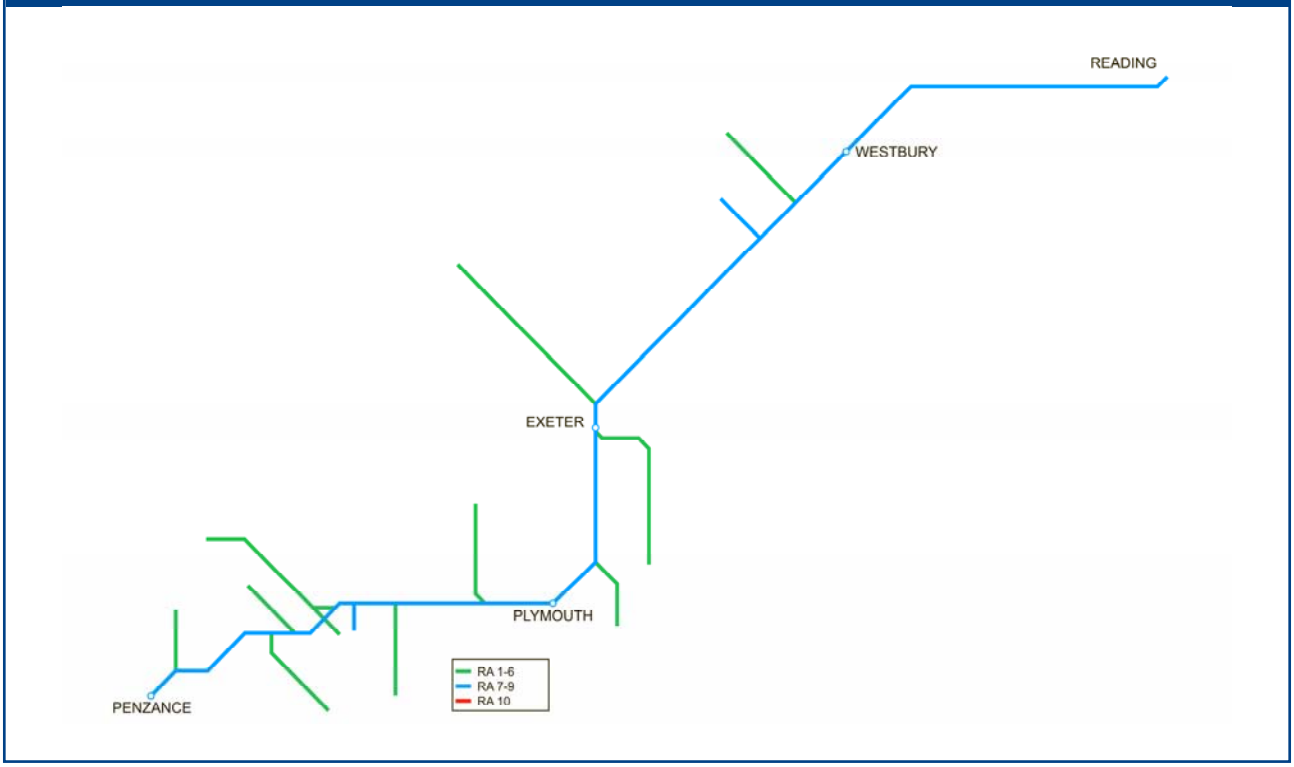
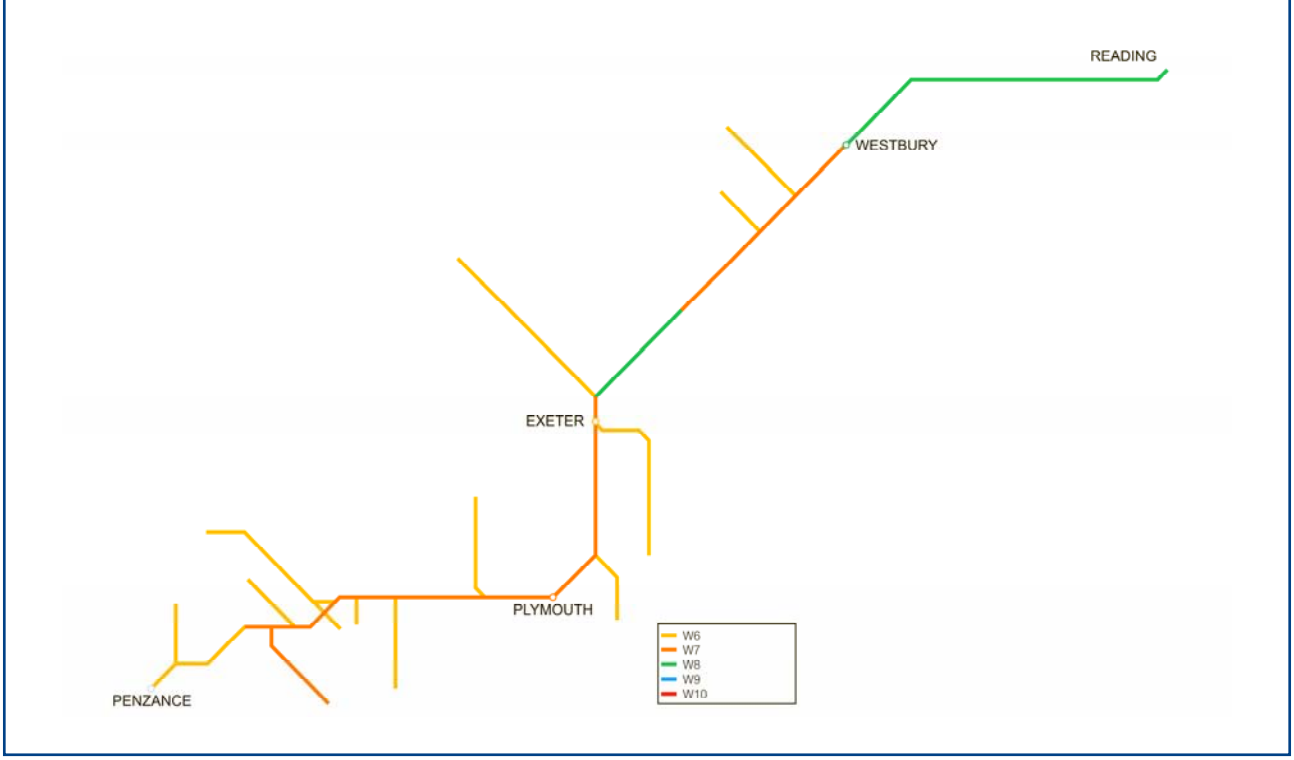



**Figure 8** Gauge



## Current capacity

The highest take-up of paths is at the eastern end of the route, between Reading and Newbury, where west of England services have to fit between intensive passenger and freight movements (between Reading and Southcote Junction) on the immediately adjacent Basingstoke section of the Great Western Main Line (GWML), which influence how capacity is then shared westwards along the whole route towards Taunton. The capacity constrained Reading station restricts the ability to deliver additional paths on the route to meet future demand, particularly freight traffic for the construction of the Olympics' sites and Crossrail.

The single track Devon branches run at or close to capacity, as dictated by passing loop provision, whilst the Cornish branches, except that to St. Ives, operate somewhat less intensely. In the case of the St. Ives branch, utilisation has been increased to the maximum possible level as a result of the Community Railway initiative.

Figure 9 shows the current train service level in key sections of the route.

## Current performance

The route continues to suffer from a number of performance issues. A prime cause of delay is the increasing number of Temporary Speed Restrictions imposed throughout the route due to the poor condition of track, which is age related. Route performance, particularly west of Taunton, is also strongly influenced by late running long distance services from off the route. This, with the inability to recover lost time, generates further reactionary delay both on and off the route.

We are undertaking a sustained programme of track renewal to remove Temporary Speed Restrictions by the end of March 2009.

In 2005 the Network Rail Route Director, in conjunction with the Territory Maintenance Director, set up the Performance Improvement Programme to target poor performing assets and implement 'quick win' remedial action. To date, this award-winning programme has delivered 56 of the 126 selected schemes across the Western Territory.

The Great Western Joint Board generally meets at three-monthly intervals and comprises representatives of Network Rail, all TOCs and FOCs using Western route infrastructure, DfT and Office of Rail Regulation, and focuses particularly on performance issues at a strategic level.

To improve operational management an Integrated Control Centre at Swindon has been introduced.

Figure 10 shows the current PPM for the main TOCs running along the route.

# Future requirements

## Strategic direction

The strategic vision set out within the Strategic Rail Authority's Great Western Main Line Route Utilisation Strategy (RUS) published in June 2005 involves simplification of the service pattern between Reading and Taunton so as to make better use of paths by means of deploying higher capacity rolling stock. West of Taunton, further simplification of the service pattern was identified. No case was foreseen for investment in any upgrading to give higher speeds.

The South West Regional Assembly's emerging Regional Spatial Strategy covering the period until 2026, focuses on the implementation of an integrated Transport Corridor approach where local authorities will work with the rail industry to develop opportunities to facilitate modal shift, address overcrowding, improve strategic interchanges and improve use of the network to deliver spatial growth and congestion targets.



**Figure 9** Current train service level (peak trains per hour)

| Route Section | Number of trains |
|---|---|
| Newbury to Reading | 4 |
| Exmouth branch (Devon) | 3 |
| Totnes to Plymouth | 2 |
| Falmouth branch (Cornwall) | 1 |

**Figure 10** Current PPM MAA (2006/07)

| TOC | MAA | As at period |
|---|---|---|
| First Great Western | 83.4% | 11 |
| South West Trains | 89.7% | 11 |
| Virgin Cross Country | 83.7% | 11 |

The Regional Spatial Strategy also recommends that commercial developments which generate high volumes of freight movements should be located close to appropriate rail freight facilities to support more sustainable distribution.

The Department for Transport's emerging South West and Thames Valley Regional Planning Assessments evaluate rail traffic and infrastructure needs for the next twenty years. The RPAs identify that maintaining and improving connectivity within the South West region and to the rest of the UK is important for the region's future economic vitality. They also recognise that increasing road congestion will raise rail competitiveness, and that limited car parking capacity creates access issues.

The RPAs will inform the Network Rail GWML RUS, for which work will commence in early 2008.

## Future demand

Demand for passenger traffic from the south west to London is forecast to grow, as is holiday traffic to Devon and Cornwall. Key to this is the business need for connectivity to London and the south east with journey times of under two hours from key centres such as Taunton and Exeter, and under three hours from Plymouth.

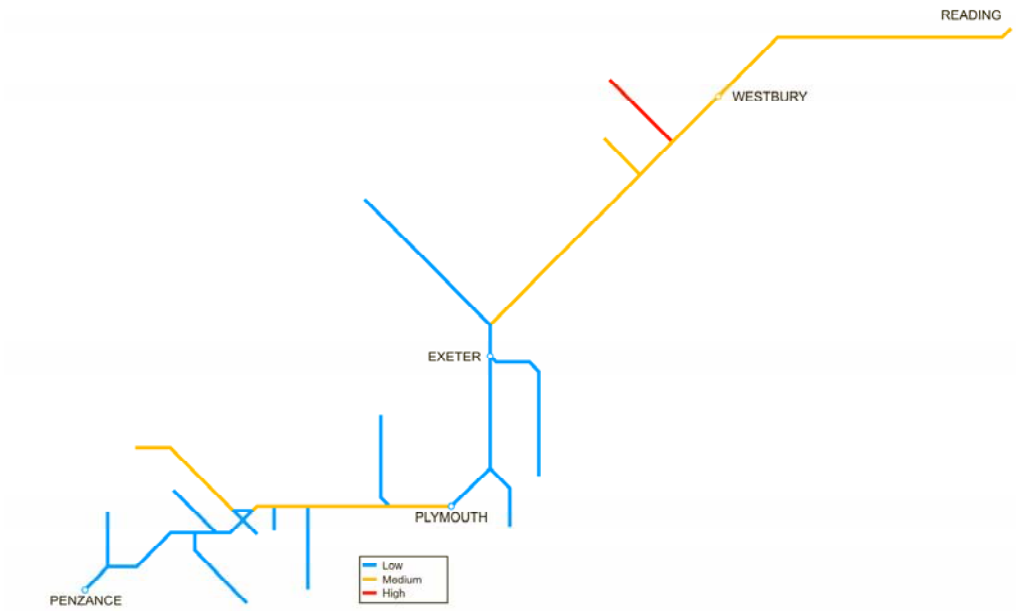
The Department for Transport's South West Regional Planning Assessment forecasts that demand for journeys towards London in the morning peak will be met throughout the route, up to 2016, by increased service provision. However, by 2026 seating demand is forecast to be in excess of capacity from as far west as Westbury, and by as much as 14%. Significant growth is also forecast for local services to Exeter, mainly on the Exmouth branch and from the south Devon area.

Demand for cross country travel is also on the increase and the remapping of the Central Trains and Virgin Cross Country franchises will influence those passenger markets.

Growth in aggregates freight traffic will occur to meet the house building programme demands for the south east of England, for the construction of the Olympics' sites and, potentially, Crossrail. Network Rail's Freight RUS, published in March 2007, indicates that by 2014/15, up to two additional trains per day will be required to meet the predicted growth in construction traffic.

The creation of the new Greater Western franchise in April 2006 has seen no significant changes to rolling stock types on the route, except at the eastern end. Train service variations have simplified the route service structure; however, a new service between London and Frome has been introduced, whilst a summer peak service between London and Newquay will be introduced in summer 2007.

**Figure 11** Tonnage growth



## Future services

The Greater Western franchise runs until 2016 and during its lifetime additional services will be required to meet forecast growth on some parts of the route.

It is anticipated that by 2016 the service requirement for the route will increase to three trains per hour between London and the west of England to meet forecast demand.

Figure 11 indicates the forecast percentage change in tonnage to 2016.

## Future capability

Our strategy to improve the capability and performance of the route is to develop it as a core high speed route which will also facilitate the introduction of the High Speed Train replacement around 2015.

Network Rail is developing a national programme for station improvements and car park expansion, which will include a number of stations on the route.

### *Fragile routes*

Network Rail engineers have identified a set of 'Fragile routes' across the country where the addition of any further loco hauled traffic would have a significant impact on the residual life of track and/or structures.

The key route sections that have been identified as fragile routes and have clearly defined additional tonnage/train numbers projected by the industry are the Barnstaple, Exmouth, Paignton, Gunnislake, Falmouth, Newquay and St Ives branches, as well as the route from Plymouth to Penzance.

## Future capacity

In order to deliver our strategy of developing core high speed routes it will be necessary to provide additional capacity for slower moving traffic. This would be achieved by expanding the relief line network by linking existing goods and relief lines and upgrading them to passenger status, freeing up the main lines for uninterrupted high speed service provision. Whilst this would be predominantly off the route (across the greater Bristol area and through Reading and the Thames Valley to London) it would have a beneficial impact on services to and from the south west.

On the route itself we believe that the solution to passenger growth and future capacity requirements could be met by a combination of initiatives. These include train lengthening on cross country services supported by platform lengthening; changes to the timetable structure to reduce the mix of different train types and the number of conflicting moves; increasing linespeeds between Reading and Taunton; and reducing the signalling headways between Newton Abbot and Plymouth.

## Future performance

In addition to continued improvement in asset reliability, a major focus of attention going forward is the work necessary to devise more robust train timetables. The creation of the new Greater Western franchise, from three separate TOCs, provides the opportunity for Network Rail to work more closely with one train operator to encourage the development of timetables and resource plans that are more robust in terms of recovery from incidents.

The introduction of a new signalling control centre for the Thames Valley in mid-2009 will deliver greater operational and performance management benefits for all our customers.

Figure 12 shows the forecast reduction in Network Rail delay minutes compared with 2006/07.

Figure 13 shows the forecast PPM for the main TOCs running along the route.



**Figure 12** Forecast reduction in delay minutes

| | 2007/08 | 2008/09 |
|---|---|---|
| % reduction in delay minutes | 21% | 29% |

**Figure 13** Forecast PPM MAA

| TOC | 2007/08 | 2008/09 |
|---|---|---|
| First Great Western | 86.2% | 86.7% |
| South West Trains | 91.2% | 91.8% |
| Virgin Cross Country | 85.1% | |

## Engineering access

Engineering access on this route varies from being fairly restrictive on the main line to reasonably available on the branches. In many areas access is available on overnight possessions with consent from affected operators. Wherever possible, possessions are managed to ensure that a route is available to the west. The main considerations include no concurrent possessions from Southcote Junction to Exeter, or Bristol to Cogload Junction and Bathampton Junction to Bristol, or Bathampton Junction to Westbury. In addition there are restrictions on Friday night possessions throughout the summer to cater for the holiday market.

A different approach to heavy maintenance of the numerous West of England branches has been developed where workload requirements are such as to warrant extended midweek possessions (blockades) and bus substitution by agreement with the operator First Great Western. This current policy will continue in Devon and Cornwall timed mainly to meet school holiday periods when loading is reduced. On the Torbay line work is mainly carried out during school half term holidays. On the Gunnislake line work is mainly carried out during the Easter holiday period when commuter numbers are low.

Track renewals will continue on the Bristol to Exeter route, primarily to the south of Taunton, and on the Berks and Hants route for the next two years. This will be achieved through a combination of weekend and midweek possessions and continuous use of the High Output Track Renewals system in order to achieve the outputs required for renewal of the ballast and track. The system will require overnight single line working of sections of route with diversions of overnight services and stock moves. Conventional renewal will apply where operational restrictions (eg. level crossings, stations and junctions) prevent the use of High Output Track Renewals.

Network Rail's High Output equipment is currently based at Taunton Fairwater Yard to allow rapid and frequent transit to the renewal sites on the route.

## Opportunities and challenges

We anticipate that accommodating the steady growth forecast for travel to and from the capital and other regional centres can be achieved within the service structure introduced by First Great Western. However, while this growth may be catered for locally it will have a major impact on known capacity constraints off the route such as the greater Bristol area, Reading and the Thames Valley where even higher growth is forecast.

Whilst it is clearly understood that the business community regard reliable journeys and connectivity with the London and south east business centres in less than two hours as extremely important, this can only be achieved east of Taunton. Three hour journeys are achievable from the Plymouth area on some business trains.

To meet the challenge of increased growth in freight from the Southampton ports to the Midlands, the north of England and Scotland, we are evaluating the potential for an alternative route via Salisbury and Melksham to accommodate W10 gauge traffic. This would cross the route at Westbury, which would ease pathing difficulties between Southcote Junction and Reading Oxford Road Junction.

Capacity improvement schemes currently undergoing evaluation are catalogued in the Infrastructure Investment appendices.

## Delivering future requirements

### Expenditure

The age of rail and sleepers on the route is amongst the highest on the national network and varies between 30 and 40 years old and to address this we are implementing a track renewals strategy which matches the traffic usage of the route. This will include the deployment of Network Rail's High Output equipment on the most intensely used part of the route, between Reading and Exeter, to deliver a higher track quality with absolute minimum rail failures; more conventional targeted renewals will be carried out on the less intensely used sections beyond Exeter, with patch repairs and renewals to maintain stable infrastructure on the more rural branch lines.

Figure 14 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 14** Forecast expenditure

| £m (2006/07 prices) | 2007/08 | 2008/09 |
|---|---|---|
| **Renewals** | | |
| | | |
| Track | | |
| Plain line | 47 | 13 |
| Switches and crossings | 4 | – |
| Track total | 51 | 13 |
| | | |
| Civils | | |
| Underbridges | 5 | 4 |
| Overbridges | 1 | 1 |
| Bridgeguard 3 | 0 | – |
| Footbridges | 0 | 0 |
| Earthworks | 4 | 9 |
| Culverts | 0 | – |
| Coast and estuary defence | 0 | 0 |
| Retaining walls | – | 1 |
| Major structures | 0 | 1 |
| Other | – | 0 |
| Civils total | 11 | 16 |
| | | |
| Signalling | | |
| Minor works/other | 1 | 4 |
| Over-planning | (0) | – |
| Signalling total | 1 | 4 |
| | | |
| Telecoms | | |
| Concentrators | | |
| Large | 1 | – |
| Small | 1 | – |
| Telecoms total | 1 | – |
| | | |
| Operational property | | |
| Stations | | |
| Franchised | 2 | 3 |
| Depots | | |
| Light maintenance | – | 1 |
| Lineside buildings | 0 | 0 |
| Operational property total | 3 | 5 |

| | | |
|---|---|---|
| Plant and machinery | | |
| Fixed plant | | |
| Point heating | 0 | 0 |
| Signal supply points | 0 | 0 |
| Depot Plant | 0 | 2 |
| Other | 0 | 0 |
| Plant and machinery total | 1 | 3 |
| **Total Renewals** | **67** | **42** |
| | | |
| **Enhancements (funded by)** | | |
| | | |
| Network Rail | | |
| Potential schemes | 0 | – |
| Total | 0 | – |
| | | |
| Other third party | | |
| Planned | | |
| Falmouth Branch line upgrade | 7 | – |
| Other | 0 | – |
| Total | 7 | 0 |
| Potential schemes | 1 | 4 |
| Total | 8 | 4 |
| | | |
| **Total Enhancements** | **8** | **4** |

The planned volume of renewals is detailed in Figure 15.

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

**Figure 15** Forecast volumes

| | 2007/08 | 2008/09 |
|---|---|---|
| Track | | |
| Plain line (km) | | |
| Rail | 73 | 18 |
| Sleepers | 71 | 17 |
| Ballast | 60 | 22 |
| Total | 203 | 57 |
| | | |
| Switches & crossings (no.) | | |
| Complete renewal | 8 | – |
| S&C (equivalent units) | 8 | – |
| | | |
| Civils | | |
| Underbridges (m²) | 4,940 | 3,576 |
| Overbridges (m²) | 124 | 132 |
| Bridgeguard 3 (m²) | 101 | – |
| Footbridges (m² decking area) | 49 | 72 |
| Earthworks (m² slope surface) | 41,050 | 70,386 |
| Culverts (m²) | 55 | – |
| Retaining walls (m²) | – | 98 |
| Major structures (m²) | – | 327 |
| | | |
| Telecoms | | |
| Concentrators | | |
| Large (no.) | 6 | – |
| Small (no.) | 4 | – |

**Figure 16** Forecast expenditure

| £m (2006/07 prices) | 2007/08 | 2008/09 |
|---|---|---|
| Maintenance | 29 | 26 |

## Infrastructure investment

The following table highlights schemes that are planned for completion in the financial year shown:

**Figure 17** Planned infrastructure investment

| Project | Project description | Output change | Main asset type(s) | Funding | GRIP stage | Completion Year |
|---|---|---|---|---|---|---|
| A East Largin viaduct (12.04) | Strengthening works | Renewal | Structures | Network Rail | 8 | Completed December 2006 |
| B Track Renewals (12.01, 12.03, 12.05, 12.10 & 12.11) | Plain line renewals at Hungerford, Newton Abbot, Starcross, Exeter St James' Park, Polsloe Bridge and Collegewood | Renewal | Track | Network Rail | | 2007/08 |
| B Track Renewals (12.01 & 12.04) | S&C renewals at Bedwyn, Liskeard East and Penwithers | Renewal | Track | Network Rail | | 2007/08 |
| C Westbury PSB (12.01) | SPT concentrator renewal | Renewal | Telecoms | Network Rail | 4 | 2007/08 |
| D Long Sutton cutting (12.01) | Stabilisation works | Renewal | Earthworks | Network Rail | 2 | 2007/08 |
| E Exeter PSB (12.03) | SPT concentrator renewal | Renewal | Telecoms | Network Rail | 4 | 2007/08 |
| F Dawlish sea wall (12.03) | Sea defences preventative maintenance | Renewal | Structures | Network Rail | 5/6 | 2007/08 |
| G Wear Farm cutting (12.03) | Stabilisation works | Renewal | Earthworks | Network Rail | 3 | 2007/08 |
| H Laira LMD (12.03) | Wheel lathe renewal | Renewal | Property | First Great Western | 2 | Deferred |
| H Weston Mill viaduct (12.04) | Strengthening works | Renewal | Structures | Network Rail | 3 | 2007/08 |
| H Royal Albert bridge (12.04) | Preventative maintenance | Renewal | Structures | Network Rail | 2 | 2007-09 |
| A St Pinnock viaduct (12.04) | Strengthening works | Renewal | Structures | Network Rail | 3 | 2007/08 |

**Figure 17** Planned infrastructure investment

| Project | Project description | Output change | Main asset type(s) | Funding | GRIP stage | Completion Year |
|---|---|---|---|---|---|---|
| I Truro – Falmouth (12.11) | Extended platform and passing facility at Penryn | Increase capacity from one train to two trains on the branch at one time | Track, signals, stations | Cornwall County Council and EU | 4 | 2008 |
| D Hurcott Hill embankment (12.01) | Stabilisation works | Renewal | Earthworks | Network Rail | 1 | 2008/09 |
| D Clanville embankment (12.01) | Stabilisation works | Renewal | Earthworks | Network Rail | 3 | 2008/09 |
| D Foddington embankment (12.01) | Stabilisation works | Renewal | Earthworks | Network Rail | 3 | 2008/09 |
| C Cement Works viaduct (12.01) | Strengthening works | Renewal | Structures | Network Rail | 3 | 2008/09 |
| C Heywood Road Junction (12.01) | Stabilisation works | Renewal | Earthworks | Network Rail | 3 | 2008/09 |
| C Westbury Avoider embankment (12.01) | Stabilisation works | Renewal | Earthworks | Network Rail | 3 | 2008/09 |
| J Pinkwood embankment (12.01) | Stabilisation works | Renewal | Earthworks | Network Rail | 3 | 2008/09 |
| E Track Renewals (12.02 & 12.07) | Plain line renewals at Exeter St Davids and Crediton | Renewal | Track | Network Rail | | 2008/09 |
| H Track Renewals (12.03) | S&C renewal at Plymouth station | Renewal | Track | Network Rail | | 2008/09 |
| K Tavy viaduct (12.13) | Strengthening works | Renewal | Structures | Network Rail | 3 | 2008/09 |
| D Lovington embankment (12.01) | Stabilisation works | Renewal | Earthworks | Network Rail | 2 | 2009/10 |
| C Westbury East embankment (12.01) | Stabilisation works | Renewal | Earthworks | Network Rail | 3 | 2009/10 |
| E Exeter St Davids (12.02 & 12.03) | Canopy works | Renewal | Property | Network Rail | 4 | 2009/10 |

**Figure 17** Planned infrastructure investment

| Project | Project description | Output change | Main asset type(s) | Funding | GRIP stage | Completion Year |
|---|---|---|---|---|---|---|
| H Laira LMD (12.03) | Building works | Renewal | Property | Network Rail | 4 | 2009/10 |
| L Truro (12.04) | S&C renewal | Renewal and linespeed increase onto the Falmouth branch | Track | Network Rail | 2 | 2009/10 |
| M Hayle viaduct (12.04) | Strengthening works | Renewal | Structures | Network Rail | 2 | 2009/10 |

Figure 18 highlights other schemes under consideration.

**Figure 18** Infrastructure investment under consideration

| Project | Project description | Output change | Main asset type(s) | Funding | Status |
|---|---|---|---|---|---|
| A St Pinnock viaduct (12.04) | Reinstate double track | Improved capacity and performance | Structures | n/a | No longer under consideration following a structural condition report that concluded that the viaduct would be unsuitable for conversion to two-track operation. |
| A East Largin viaduct (12.04) | Reinstate double track | Improved capacity and performance | Structures | n/a | No longer under consideration following a structural condition report that concluded that the viaduct would be unsuitable for conversion to two-track operation. |
| N Torbay stations (12.06) | Station enhancements | Improved station facilities at Torre, Torquay and Paignton | Stations | Third party and Network Rail | Pre-GRIP |

Figure 19 highlights route enhancement aspirations

**Figure 19** Route enhancement aspirations

| Project | Project description | Output change | Main asset type(s) | Funding | Status |
|---|---|---|---|---|---|
| O Newbury Racecourse down passenger loop (12.01) | Conversion to reversible capability | Facilitate improved turnrounds for race-day trains and freight capacity | Signals | Third party | First Great Western proposal |
| B Bedwyn turnback siding (12.01) | Extension of turnback siding | Accommodation of 6 car trains | Track | Third party | First Great Western proposal |
| C Westbury station (12.01) | Re-instatement of fourth platform and revised layout | Improved station capacity and capability | Track, signals | Third party | First Great Western proposal |
| C Reading – Cogload Junction (12.01) | Linespeed increase | Improved capacity and performance | Track | Network Rail | Network Rail strategic development |
| P Cogload Junction – Taunton (12.02) | Additional track and remodelled approach to Taunton upside bay platform | Improved capacity and performance | Track, signals | Third party | First Great Western proposal |
| Q Taunton – Silk Mill (12.02) | Down Relief line speed increase | Improved capacity and performance | Track | Third party | First Great Western proposal |
| R Taunton – Plymouth (12.02 & 12.03) | Maximise tilt train capability | Improved journey times | Track | n/a | No longer under consideration by Virgin Cross Country due to redeployment of Class 221 fleet |
| E Exeter St Davids (12.02 & 12.03) | Signalling adjustments and linespeed increases throughout the station area | Increased capacity and capability | Track, signals | Third party | First Great Western proposal |
| S Newton Abbot – Plymouth (12.03) | Reduction in headways | Improved capacity and performance | Signals | Network Rail | Under consideration for inclusion in scope of the area signalling renewal |
| T Exeter St Davids – Exeter Central (12.05) | Conversion of both lines to reversible status | Increased capability | Signals | Third party | First Great Western proposal |

**Figure 19** Route enhancement aspirations

| Project | Project description | Output change | Main asset type(s) | Funding | Status |
|---|---|---|---|---|---|
| U Exeter – Barnstaple (12.07) | Linespeed increases and passing loop improvements (abolition of Salmon Pool crossing) | Improved capacity and performance | Track, signals | Third party | First Great Western proposal |
| V Plymouth – Penzance (12.04) | Reduced signalling headways | Improved capacity and performance | Signals | Third party | First Great Western proposal |
| W Long Rock – Penzance (12.04) | Redouble single line | Improved capacity and performance | Track, signals | Third party | First Great Western proposal |
| X St Ives branch (12.08) | Linespeed increase, abolition of Western Growers crossing | Increased capability and performance | Track | Third party | First Great Western proposal |
| Y Newquay (12.12) | Reinstatement of the second platform | Increased capacity in order to accommodate layover train working | Track, signals | Third party | First Great Western proposal |

## Non-infrastructure developments

Figure 20 shows potential developments which do not involve changes to the infrastructure.

**Figure 20** Timetable development

| Description | Key issues | Actions or options being developed | Benefits | Target timetable implementation |
|---|---|---|---|---|
| Greater Western franchise | Timetable restructuring | North Somerset train service revisions<br>Cornish train service revisions | New London services for Frome<br>New London services for Newquay | Completed December 2006<br>Summer 2007 |

# Appendix

**Figure 21** Strategic route sections

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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12.01 | Reading – Cogload Jn | BHL,WES WEY,CCL | Primary | DfT | No | W8,W7 | 8 | 100 | none | TCB | 5,8 | 2 |
| 12.02 | Cogload Jn – Exeter St Davids | MLN1 | Primary | DfT | No | W8 | 8 | 100 | none | TCB | 4 | 2 |
| 12.03 | Exeter St Davids – Plymouth | MLN1 | Primary | DfT | No | W7 | 8 | 60 | none | TCB | 4,6 | 2 |
| 12.04 | Plymouth – Penzance | MLN2,MLN3, MLN4 | Secondary | DfT | No | W7, W6A | 8,7 | 65 | none | Mech. | (AB) | 2 |
| 12.05 | Exeter – Exmouth Jn | BAE | Secondary | DfT | No | W6A | 6 | 70 | none | TCB | 3 | 2 |
| 12.06 | Paignton Branch | TOR | Secondary | DfT | No | W6A | 6 | 40 | none | TCB | 7 | 2 |
| 12.07 | Barnstaple Branch | DAC, NDN | Rural | DfT | Yes | W6A | 6,5 | 55 | none | OTW | (AB) | 1 |
| 12.08 | St Ives Branch | SIV | Rural | DfT | Yes | W6A | 5 | 30 | none | OTW | (AB) | 1 |
| 12.09 | Looe Branch | LIL, LOO | Rural | DfT | Yes | W6A | 4 | 25 | none | OTW | (AB) | 1 |
| 12.10 | Exmouth Branch | EMT | Rural | DfT | No | W6A | 6 | 50 | none | OTW | (AB) | 1 |
| 12.11 | Falmouth Docks Branch | FAL | Rural | DfT | Yes | W7 | 6 | 50 | none | OTW | (AB) | 1 |

**Figure 21** Strategic route sections

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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12.12 | Newquay Branch | NEW | Rural | DfT | No | W6A | 6 | 50 | none | OTW | (AB) | 1 |
| 12.13 | Gunnislake Branch | DAC, CAL | Rural | DfT | Yes | W6A | 4 | 55 | none | OTW | (AB) | 1 |
| 12.14 | Freight Lines | | | DfT | No | | | | none | | | |

| Capacity and operational constraints | |
|---|---|
| A | Southcote Junction: convergence of two key routes with a mix of heavy aggregates and long intermodal freight traffic, inter city and local passenger services |
| B | Signalling headways between Newton Abbot and Plymouth |
| C | Royal Albert bridge: single line section linking Devon and Cornwall |
| D | St Pinnock and East Largin viaducts: single line sections |

| Other Issues on Route | |
|---|---|
| 1 | Flood plain to the north of Exeter requires constant monitoring |
| 2 | Dawlish Sea Wall defences require constant monitoring and enhanced maintenance |

## 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).

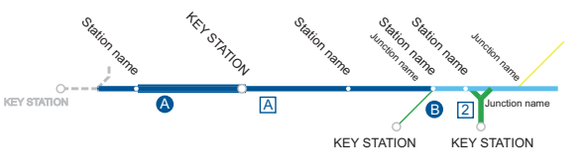
The Route Plan shows in more detail how the strategies set out in the Business Plan will be delivered at a route level across the network, and how we are working with our customers and other stakeholders to improve the performance and utilisation of the network. It presents a portfolio of activities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

**Key to route diagrams**




**Capacity and operational constraints**
A Location: capacity or operational constraint

**Issues on the route**
1 Location: issue on the route

**Key planned projects**
A Location: planned project on the route

**Other symbols**
- Key station location
- KEY STATION — Key station on this route
- KEY STATION — Key station on another route
- Other station location
- Station name — Other station on this route
- Junction name — Junction / other landmark

**Track descriptions**

The colour of the line denotes the route classification
- Primary
- London and South East commuter
- Secondary
- Rural
- Freight only

The width of the line denotes the number of tracks
- Multiple track
- Double track
- Single track

Other lines are shown as follows:
- Line on other route
- Non Network Rail infrastructure
- High Speed One - under construction
- Non operational line

Printed on Greencoat Digital Velvet which is produced from pulp containing 80% recycled fibre. The remaining 20% virgin pulp is TCF (Totally Chlorine Free). Greencoat has been awarded both the NAPM and the Eugropa recycled marks, two of the most prestigious and recognisable recycled certificates available.

**This Route Plan is part of a set.**
**To view or download the others**
**visit www.networkrail.co.uk**

Network Rail
40 Melton Street
London NW1 2EE

Tel: 020 7557 8000

www.networkrail.co.uk

038/March 2007