

Route Plans 2007
Route 9
North East Routes



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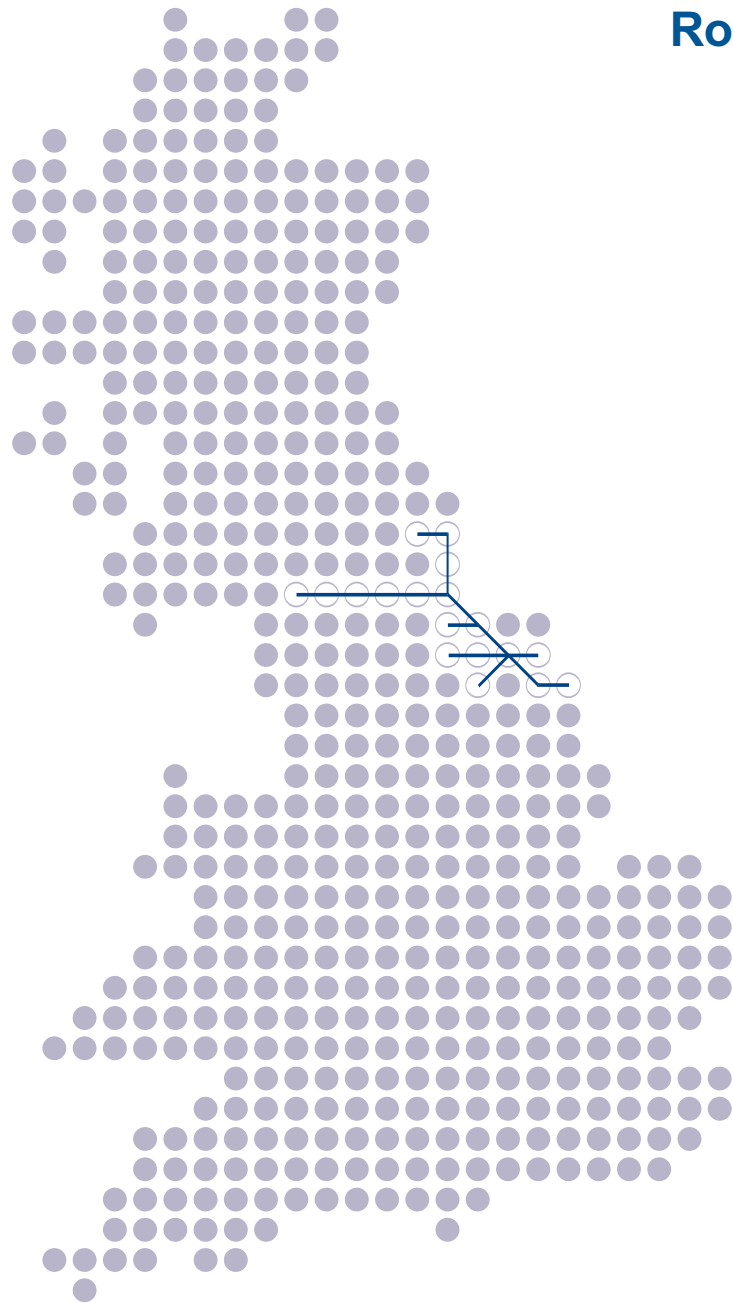


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Route 9 North East Routes



9 9

Today's route

The principal components of the North East Route are described below. The relevant Strategic Route Section is shown in brackets:

- the line from Northallerton to Newcastle via the Durham Coast through Stockton, Hartlepool and Sunderland including the South Hylton branch (09.04 and 09.05);
- the Newcastle – Hexham – Carlisle route (09.01);
- Darlington – Middlesbrough – Saltburn (09.06 and 09.07);
- the single track branches from Darlington to Bishop Auckland and Middlesbrough to Whitby (09.02 and 09.03); and
- freight only lines – the through line from Norton Junctions to Ferryhill (sometimes used for passenger train diversions), the Blyth and Tyne network, and a selection of freight branches (09.08, 09.09 and 09.10).

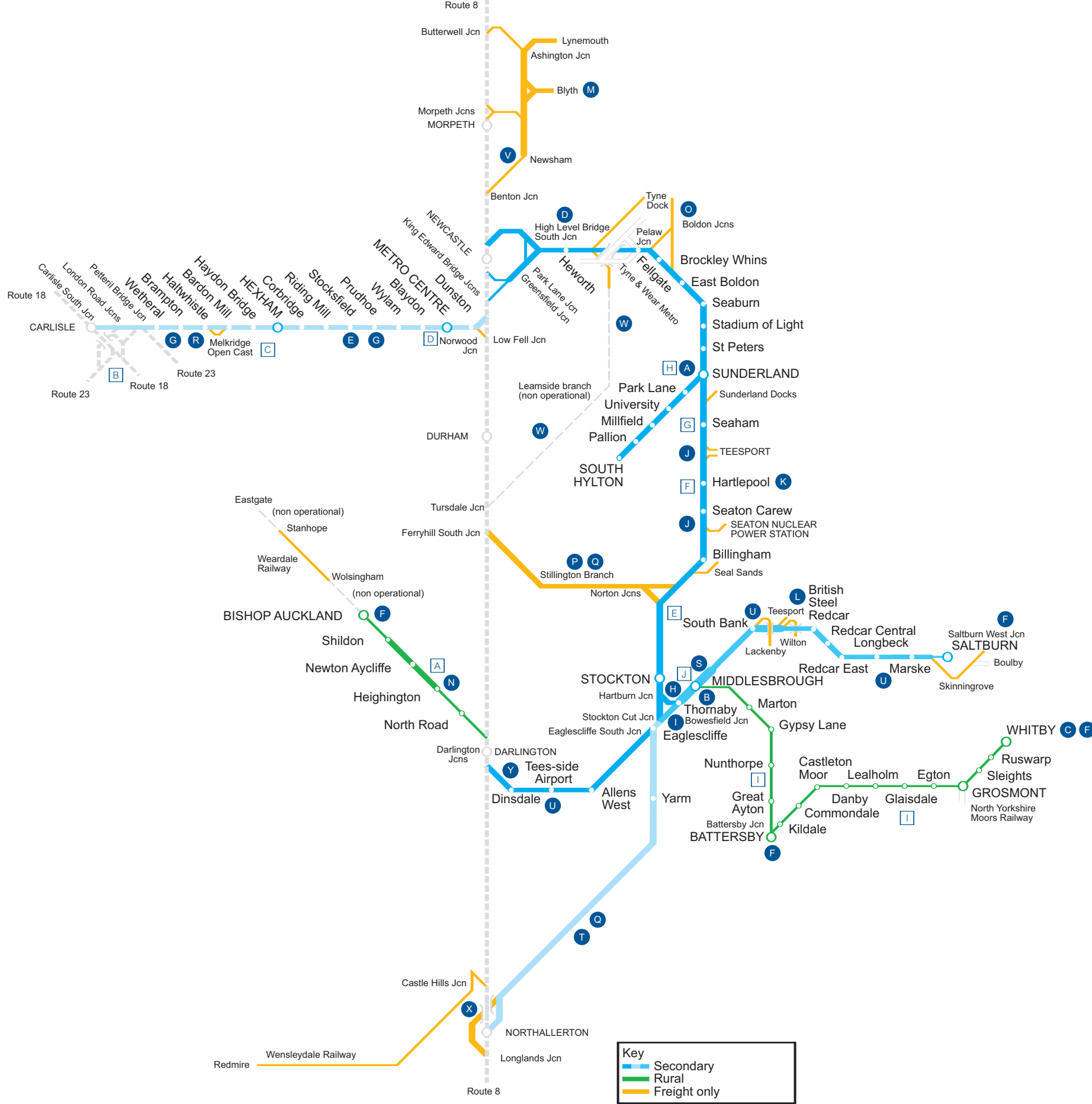
Route context

This route provides passenger links between locations on the rivers Tyne, Wear and Tees into Newcastle and Darlington, thereby providing rail connections to other parts of the country. It also handles long distance flows from Tyneside to Carlisle and western Scotland, between Teesside and the North West via Leeds, and between Tees Valley and the south via Northallerton. There are also branches to Bishop Auckland and Saltburn. The Middlesbrough to Whitby line is a designated community railway, led by the Esk Valley Railway Development Company.

There is a substantial volume of freight traffic, particularly from the Tees Valley and Tyneside.

The route is also used by some through traffic which is diverted off the congested East Coast Main Line (ECML). It competes with an extensive road network which accesses many of the communities better than the rail network, the latter often being focused on the former mining and industrial areas. On behalf of the industry and other stakeholders, we are leading the ECML Route Utilisation Strategy (RUS) which includes the North East. The DfT has published its Regional Planning Assessment (RPA) for the North East which will form an input to the RUS. The DfT has also published the Northern Rail review, which will also feed into the RUS.

Route 9 North East Routes



Passenger and freight demand

Apart from the peak hours, this route sees a low usage per head of population despite several lines having a frequent level of service. The exception is the busy Sunderland to Gateshead Metro Centre corridor; some of which forms both part of the national rail network and the Nexus Metro system.

However, some peak hour services at Middlesbrough and Newcastle are now experiencing crowding reflecting increasing congestion on the road networks.

The freight markets are quite varied with the route serving the ports on the rivers Tyne and Tees, and Seaham Harbour. It also serves the industrial complexes in the Tees Valley, the potash mine at Boulby, and the Blyth area. Its final freight use is for the diversion of some trains off certain congested section of the ECML between Northallerton and Newcastle with such trains running via Eaglescliffe and Norton Junctions, and either rejoining the ECML at Ferryhill or running via the Durham Coast.

Current services

Passenger services are provided by Northern Rail, and First Transpennine Express while freight trains are operated by English Welsh & Scottish Railway Ltd, Direct Rail Services Ltd, Freightliner Ltd, Freightliner Heavy Haul Ltd and GB Railfreight.

Much of this route sees passenger traffic at a level of no more than 2 tph. However, from Pelaw (Gateshead) to Sunderland the route carries the frequent Tyne and Wear PTE (Nexus) Metro trains to South Hylton and the hourly Northern Rail service between Newcastle and Middlesbrough via the Durham Coast. A few freight services run on this section, primarily serving the Port of Tyne and Seaham docks.

From Newcastle, the line to Carlisle sees 4 tph as far as Metro Centre reducing to 2 tph west thereof, one to Hexham, and one which runs to Carlisle or beyond. It sees a little Anglo-Scottish coal traffic and a variety of bulk products. The volume of Anglo Scottish coal traffic increases when the Settle and Carlisle line is closed for engineering work and trains are diverted over the Carlisle to Newcastle route. Its limited gauge clearance precludes most intermodel traffic.

In the Tees Valley there is an extensive freight train operation existing alongside a frequent local train service and regional express trains. Regular passenger services comprise 2 tph operating between Saltburn and Darlington, extending every 2 hours to/from Bishop Auckland, the hourly service from Middlesbrough via the Durham Coast to Newcastle and the hourly Transpennine Express train to Manchester Airport. There are occasional services between Middlesbrough and Whitby.

The Tees Valley see intensive freight activity relating to the ports, the steelworks at Lackenby (Redcar) and the various petrol-chemical plants together with potash traffic from Boulby. North of Newcastle, the route includes the Blyth and Tyne railway which currently sees a very low level of freight activity, relating to the production of aluminium and imported coal.

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

Figure 1 Current train service level (trains per hour)

Originating Station	tph to Newcastle (including Nexus platforms)
Carlisle	1
Hexham	2
Metro Centre	4
Sunderland	6
Middlesbrough	1

Figure 2 shows the tonnage levels on the route.
Traffic volumes are summarised in Figure 3.

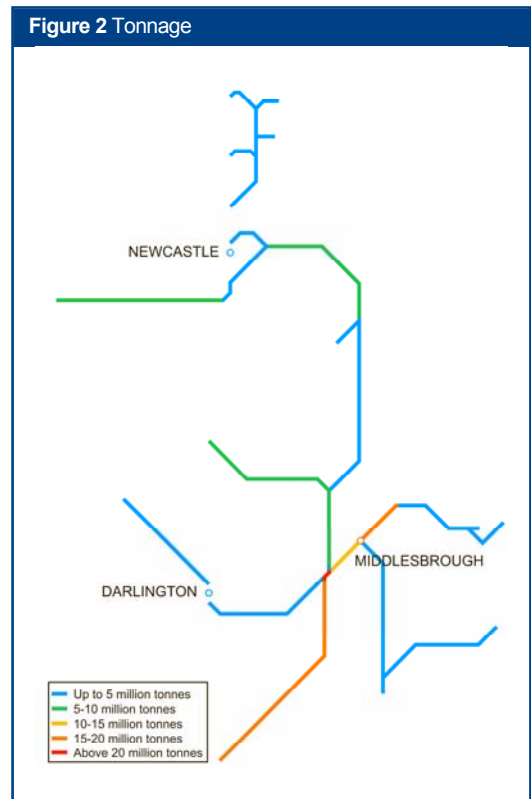


Figure 3 Current use

	Passenger	Freight	Total
Train km per year (millions)	5	2	6
Train tonne km per year (millions)	377	1,547	1,924

Current infrastructure capability

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

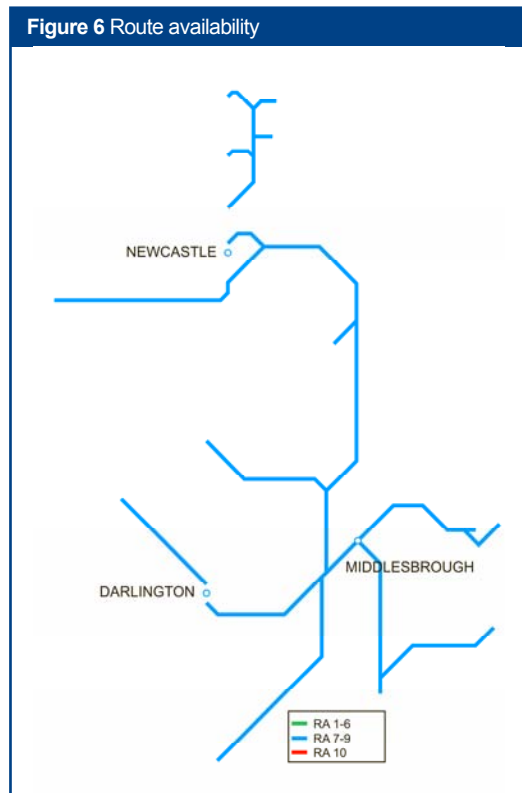
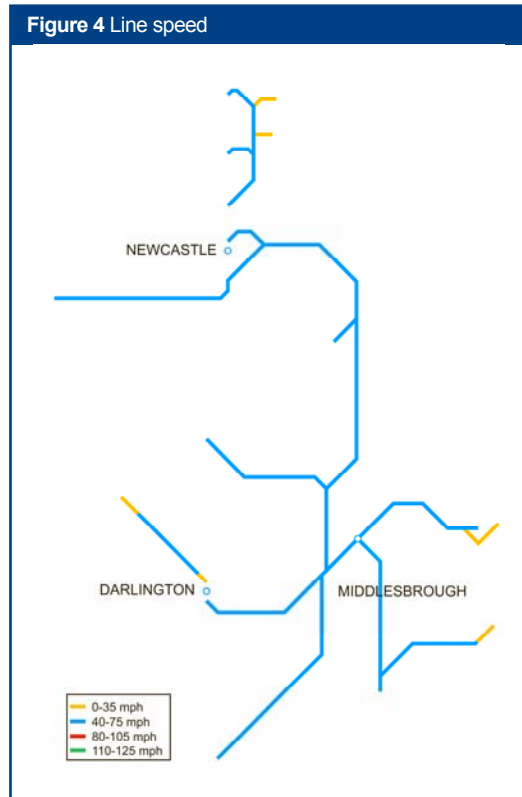


Figure 8 Current train service level (peak trains per hour)

Route Section	Main Lines
Sunderland – Pelaw	7
Eaglescliffe – Thornaby	7
King Edward Bridge – Metro Centre	5
Metro Centre – Hexham	3
Hexham – Carlisle	2
Middlesbrough – Redcar	4

Current capacity

There are currently no significant capacity issues on the North East Route though the Pelaw to Sunderland section is close to capacity on some hours due to the mix of Metro trains, heavy rail passenger services and freight traffic. The mix of traffic between Newcastle and Hexham also causes some capacity issues.

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

Current performance

The main causes of delay on this route are due to track defects, trespass and vandalism, and more recently cable theft.

We are currently experiencing significant delays in the Bowesfield to Thornaby area due to a severe speed restriction imposed over the Tees Bridge.

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

Future requirements

Strategic direction

Network Rail is leading the production of the ECML Route Utilisation Strategy (RUS), which incorporates the North East Route, on behalf of the industry and wider stakeholders. The RUS aims to make effective use and development of the route capacity available, consistent with the funding that is available during the 10 years covered by the RUS.

DfT Rail has published the North East RPA which is a significant input into the RUS process. It included a number of interventions that the RUS has been asked to examine.

The key issue for the North East Route is meeting the increase in demand for Newcastle and Middlesbrough commuter journeys.

We are discussing future aspirations with the Esk Valley Railway Development Company for the Middlesbrough to Whitby line.

Future demand

Industry standard forecasting techniques predict very low growth in demand for journeys within the North East area. However, passenger travel has grown by almost five per cent per annum over the past six years. Demand for travel along this route is therefore expected to continue to increase, as growth in employment continues to generate new commuting trips into the main urban areas, and continued economic growth encourages new business and leisure journeys.

A continuation of freight growth is expected at both Teesport and Port of Tyne with a variety of bulk products and container traffic while the Port of Blyth is expected to generate further bulk traffic.

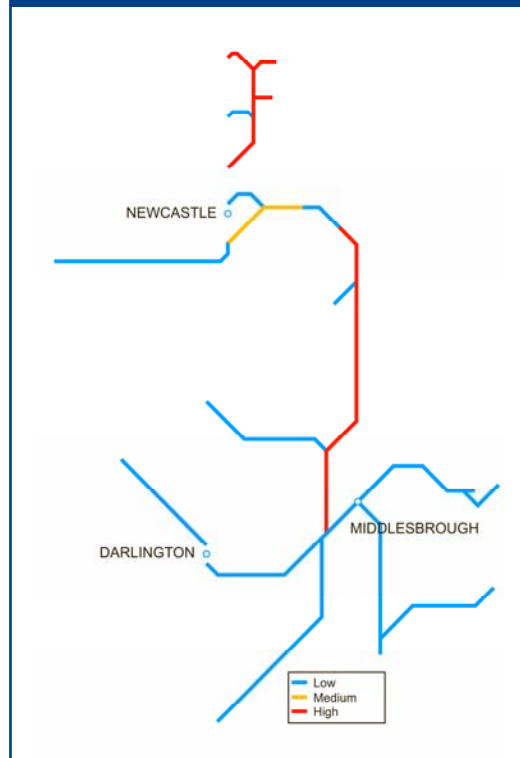
The RPA has identified some interventions for the RUS to examine:

- New Sunderland – Darlington service;
- Improved journey times on the Durham Coast, Tees Valley services, and on the Newcastle – Carlisle line;
- Improved links between the Durham Coast, Yorkshire and London; and
- Viability of one or more new stations on the Durham Coast.

Figure 9 Current PPM MAA

TOC	MAA	Period
Northern Rail	87.2%	11
Transpennine Express	89.2%	11

Figure 10 Tonnage growth



Future services

Figure 10 indicates percentage change in tonnage to 2016.

Starting in April 2007, the North Yorkshire Moors Railway will be operating services on high season days between Pickering and Whitby, joining this route at Grosmont.

From May 2007, open access operator Grand Central will be running three trains each way per day between Sunderland and London via the Durham Coast and has aspirations for a fourth train.

Peak hour crowding at Newcastle and Middlesbrough is likely to be addressed through train lengthening rather than additional services.

Future capability

The key capability issue with much of the route is gauge clearance. A key aspiration is for access to Teesport and the Port of Tyne with intermodal traffic including 9' 6" deep sea containers on standard height wagons (W10 gauge).

Direct access to Teesport from the ECML requires works on Yarm tunnel while clearance of the Eaglescliffe – Stockton – Norton South Junction – Ferryhill would be needed as key diversionary line for gauge sensitive traffic to the Port of Tyne. We are working with DfT and other stakeholders on a TIF submission for these projects.

Reconstruction of a large bridge over the river Tees will improve both asset condition and route capability by removing an onerous speed restriction across the present structure.

The line through Sunderland and the Newcastle to Carlisle line would both need significant structures works to improve the current gauge.

Line speeds are relatively low on various sections where the current rolling stock could attain higher speeds. On some of these curvature and other infrastructure issues preclude an easy solution to increase speeds.

In some areas, line speed improvements would increase the speed differential between passenger and freight trains and thereby reduce capacity. One line where this is particularly the case is that from Northallerton to Eaglescliffe. However, on this line, removing speed restrictions for heavy axle weight vehicles would assist with the differential issue.

Published capability

As part of the ongoing work that Network Rail is committed to in relation to Infrastructure Capability, we have included 'category 1' capability routes in our investment processes in order to resolve discrepancies between actual capability and published capability. On this route the Blyth Bates branch falls into this category.

Future capacity

The RUS is examining how peak hour passenger growth on Newcastle and Middlesbrough services will need to be accommodated, though this is largely expected to be through train lengthening opposed to additional services.

Shortening the Hartlepool to Dawdon block section as part of the Durham Coast resignalling scheme will provide additional capacity to assist with freight and passenger growth on the Durham Coast as well as allowing it to be used more extensively for diversions off the East Coast Main Line (ECML).

We are also looking to improve headways and line speed on the Stillington route between Stockton and Ferryhill which would improve capacity as well as providing improved journey times, including for diversions off the ECML.

The Freight RUS has identified that the increase in bulk freight traffic expected out of Tyne Dock should be routed via the Durham Coast so as to avoid the capacity bottleneck on the ECML south of Newcastle. This would require the reinstatement of Boldon East curve.

Figure 11 Forecast reduction in delay minutes

	2007/08	2008/09
% reduction in delay minutes	17%	24%

Future performance

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

We are managing a number of initiatives, involving considerable resources, to combat the huge rise in cable theft incidents.

The current delays in the Bowesfield to Thornaby area due to the severe speed restriction imposed over the Tees Bridge just west of Thornaby will be eliminated on completion of the bridge renewal.

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

Engineering access

Due to its heavy use by freight traffic, the Northallerton to Thornaby section requires significant maintenance, but access is difficult due to services running 24 hours per day.

We will continue to work with our customers to find innovative ways to make improvements to the access. This will need to tie in with the WCML, ECML and Settle and Carlisle Line engineering works and diversionary requirements, particularly on the Newcastle to Carlisle line.

Opportunities and challenges

Network Rail will continue to work with the DfT and other stakeholders in developing the ECML RUS which covers all of the North East Route.

The Tees Valley Joint Strategy Unit has an aspiration to significantly improve local rail services between Darlington and Saltburn in order to improve the connectivity of development sites. Their overall aim is to reduce journey times and double the frequency of services. We are about to undertake further development work with the unit in order to identify the best option to achieve these outputs.

Stakeholders interested in the area north of Newcastle have commissioned a study into options to reinstate a passenger service to Bedlington. Network Rail is providing input to this work.

North East stakeholders are keen to examine opportunities that the former Leamside route between Ferryhill and Pelaw via Washington may provide and have commissioned a study. This could have implications for the Newcastle to Pelaw section.

Delivering future requirements Summary

The major projects on the route are:

- Stillington Branch – shortening the block section and line speed improvements;
- Durham Coast resignalling;
- Reinstating the east curve at Boldon: and
- Tees Bridge reconstruction and track realignment.

Figure 12 Forecast PPM MAA

TOC	2007/08	2008/09
Northern Rail	88.4%	90.0%
Transpennine Express	90.9%	91.5%

Expenditure

Figure 13 shows the planned level of expenditure on renewals on this route over the next two years. However, the precise timing and scope of

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

Figure 13 Forecast expenditure		
£m (2006/07 prices)	2007/08	2008/09
Renewals		
Track		
Plain line	7	14
Switches and crossings	–	6
Track total	7	20
Civils		
Underbridges	4	8
Overbridges	1	–
Bridgeguard 3	0	1
Footbridges	1	1
Earthworks	6	1
Tunnels	0	1
Culverts	0	–
Major structures	12	2
Other	(1)	0
Civils total	23	12
Signalling		
Resignalling	3	18
Minor works/other	4	22
Signalling total	8	40
Telecoms		
Other	1	–
Telecoms total	1	–
Operational property		
Stations		
Franchised	1	1
Operational property total	1	1
Plant and machinery		
Fixed plant		
Point heating	0	0
Signal supply points	0	0
Other	0	0
Plant and machinery total	0	0
Total Renewals	40	74

Enhancements (funded by)		
Network Rail		
Planned		
Other	0	-
Total	0	-
Potential schemes		
	3	2
Total	3	2
Network Rail (RAB)		
Planned		
Durham Coast Resignalling	0	1
Other	1	2
Total	1	3
Potential schemes		
	1	4
Total	2	7
Other third party		
Planned		
Other	0	0
Total	0	0
Potential schemes		
	6	3
Total	6	3
Total Enhancements	11	13

Figure 14 Forecast volume

	2007/08	2008/09
Track		
Plain line (km)		
Rail	10	19
Sleepers	10	16
Ballast	11	23
Total	31	59
Switches & crossings (no.)		
Complete renewal	–	13
S&C (equivalent units)	–	13
Civils		
Underbridges (m ²)	1,450	2,343
Overbridges (m ²)	196	–
Bridgeguard 3 (m ²)	–	125
Footbridges (m ² decking area)	190	164
Earthworks (m ² slope surface)	29,641	12,943
Tunnels (m ²)	–	100
Culverts (m ²)	6	–
Major structures (m ²)	19,561	2,828
Signalling		
Resignalling (SEUs)	–	48

The planned volume of renewals is detailed in Figure 14.

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

Maintenance

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

Figure 15 Forecast expenditure

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

Infrastructure investment

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

Project	Project Description	Output change	Main asset type(s)	Funding	GRIP stage	Completion year
A Monkwearmouth (09.05)	Bridge strengthening	Renewal	Structures	Network Rail	8	Complete
K Hartlepool (09.05)	Lancaster Road bridge strengthening	Renewal and improved route capability	Structures	Network Rail	7	Complete 2006/07
B Thornaby Station (09.07)	Footbridge renewal	Renewal	Station	Network Rail/Third party	2	2007/08
C Whitby Station (09.03)	Refurbishment/Repair	Renewal	Station	Network Rail	4	2007/08
D Tyneside High Level Bridge (09.05)	Major works on both the rail and road sections of the bridge	Renewal	Structures	Network Rail	6	2007/08
E Stockfield (09.01)	Embankment Stabilisation Works	Renewal	Earthworks	Network Rail	4	2007/08
F TPWS Optimisation Works (various)	Relocate TPWS on the approach to terminating stations	Performance improvement	Signalling	Network Rail Discretionary Funding	6	2007/08
G Low Row (09.01)	Resignalling	Renewal	Signalling	Network Rail	4	2008/09
H Tees Yard (09.07)	West end S&C renewals and line side signalling renewals	Renewal	Signalling and track	Network Rail	2	2008/09
I Bowesfield Jn / Tees Remodelling (09.07)	Route realignment	Improve performance, line speed and asset condition	Track	Network Rail	1	2008/09

Figure 17 Planned Infrastructure investment

Project	Project Description	Output change	Main asset type(s)	Funding	GRIP stage	Completion year
I Tees Bridge (09.07)	Reconstruction	Remove speed restriction	Structures	Network Rail	2	2009/10
J Durham Coast Resignalling (09.05)	Resignalling and shortening a long block section between Hartlepool and Dawdon	Renewal and route capacity	Signalling	Network Rail and in development for Network Rail Discretionary Funding	3	2009/10
Y Morton Grange near Dinsdale (09.06)	Bridge reconstruction	Remove speed restriction	Structures	Network Rail	1	2009/10
L South Tees (09.07)	Signalling interlocking renewal	Renewal	Signalling	Network Rail	1	2013/14
M Blyth & Tyne (09.09)	Signalling interlocking renewal	Renewal	Signalling	Network Rail	1	2012/13
N Heighington & Shildon (09.02)	Signalling interlocking renewal	Renewal	Signalling	Network Rail	1	2012/13
Insulated block joints upgrade works	Track improvements	Renewal	Track	Network Rail Discretionary Fund	8	2007/08

Figure 16 highlights other schemes under consideration.

Project	Project description	Output change	Main asset type(s)	Funding	GRIP stage
O Boldon East Curve (09.05)	Reinstate second connection to Tyne Dock	Improved freight capacity	Track, signalling and plant	In development for Network Rail Discretionary Funding	1
P Stillington Branch (09.08)	Shorten the block section and improve line speeds	Route capacity, improved performance and journey times	Signalling, track and earthworks	In development for Network Rail Discretionary Funding	1
Q W10 Gauge clearance (various)	Gauge clearance from Teesport to the ECML and other North East lines	Accommodate the carriage of deep sea container traffic	Structures and track	In development for Third Party funding	1
R Haltwhistle – Low Row (09.01)	Line speed increase	Improve performance	Track	In development for Network Rail Discretionary Funding	1
S Albert Bridge (09.07)	Middlesbrough	Reconstruction	Structures	Network Rail	1
T Northallerton – Eaglescliffe (09.04)	Line speed increases	Improved performance and capacity	Track	In development for Network Rail Discretionary Funding	1
U Tees Valley Rail Improvements (09.07)	Improved local rail service between Darlington and Saltburn	Improved frequency and journey times	Signalling, structures, stations and track	Third Party development funding	1
I Bowesfield Jn – Tees Bridge (09.07)	Remodelling	Line speed improvement through track realignment as part of Tees Bridge works and S&C renewals	Track and signalling	Network Rail Discretionary Fund	1
Level crossing de-staffing	Level crossing modernisation	Operational efficiencies and safety improvements	Signalling	In development for Network Rail Discretionary Fund	3

Figure 17 highlights route enhancement aspirations.

Figure 18 Route enhancement aspirations

Project	Project description	Output change	Main asset type(s)	Funding	Status
V Blyth & Tyne passenger services (09.09)	Reinstatement of Newcastle to Bedlington passenger trains	New rail journey opportunities	Signalling and stations	Third party	Initial feasibility being undertaken by stakeholders
W Leamside opportunities	Reinstatement of part or all of the former Leamside line	New rail journey opportunities	Track, signalling, structures, earthworks, stations and plant	Third party	Initial feasibility being undertaken by stakeholders
X Castle Hills south curve	Reinstatement of direct access from Redmire branch to a separate bay platform at Northallerton	New rail journey opportunities from Wensleydale Railway	Track, stations, structures and earthworks	Third party	Funding for initial feasibility being sought by Wensleydale Railway

Non infrastructure developments

There are no recorded potential developments which do not involve changes to the infrastructure.

Appendix

Figure 19 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
09.01	Newcastle – Carlisle	NEC1/2	Secondary	DfT	No	W7	RA9	65mph	None	AB	7 (10) mins	2
09.02	Darlington – Bishop Auckland	DAE1/2	Rural	DfT	Yes	W6	RA9	45mph (20/35mph)	None	OTW (AB)	14	1(2)
09.03	Middlesbrough – Whitby	MBW	Rural	DfT	Yes	W6	RA7	50mph (45/30mph)	None	OTW	34	1
09.04	Northallerton – Stockton Cut Junction	LEN	Secondary	DfT	No	W8	RA9	70mph	None	TCB	6 (7)	2
09.05	Stockton – Newcastle	LEN3	Secondary	DfT	No	W6	RA9	60mph (50/20mph)	None (1500V DC)	AB (TCB)	17	2
09.06	Darlington – Eaglescliffe S Junction	DSN1	Secondary	DfT	No	W8	RA9	60mph	None	AB (TCB)	5	2
09.07	Stockton Cut Junction – Saltburn	DSN2/3	Secondary	DfT	No	W8	RA9	60mph	None	TCB (AB)	8	2 (1/4)
09.08	Stillington Branch	STF	Freight	DfT	No	W8	RA9	40mph (20mph)	None	AB	Various	2
09.09	Blyth and Tyne Network	EJM	Freight	DfT	No	W8	RA9 (RA 6)	45mph (20mph)	None	AB (OTW)	Various	2 (1)
09.10	Freight Branches	Various	Freight	DfT	No	W8	RA9	Various	None	Various	Various	1(2)

Capacity and operational constraints

- A Bishop Auckland – Darlington: S&C at Shildon, Heighington and Hopetown
- B Carlisle South Junction – Petteril Bridge Junction: flat junctions and section of single line
- C Whitchester (near Haltwhistle): tunnel clearance
- D Blaydon – Newcastle: line curvature and S&C
- E Middlesbrough – Billingham: S&C and line curvature
- F Hartlepool: line curvature and single platform line through the station
- G Dawdon: line curvature and long block section to/from Hartlepool
- H Sunderland: S&C and Monkwearmouth Bridge
- I Middlesbrough – Whitby: level crossings and token exchange arrangements
- J Eaglescliffe – Middlesbrough: track curvature and Tees Bridge

Note

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

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

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

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

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

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

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



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