



## Route 9 North East

### 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).

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### Route context

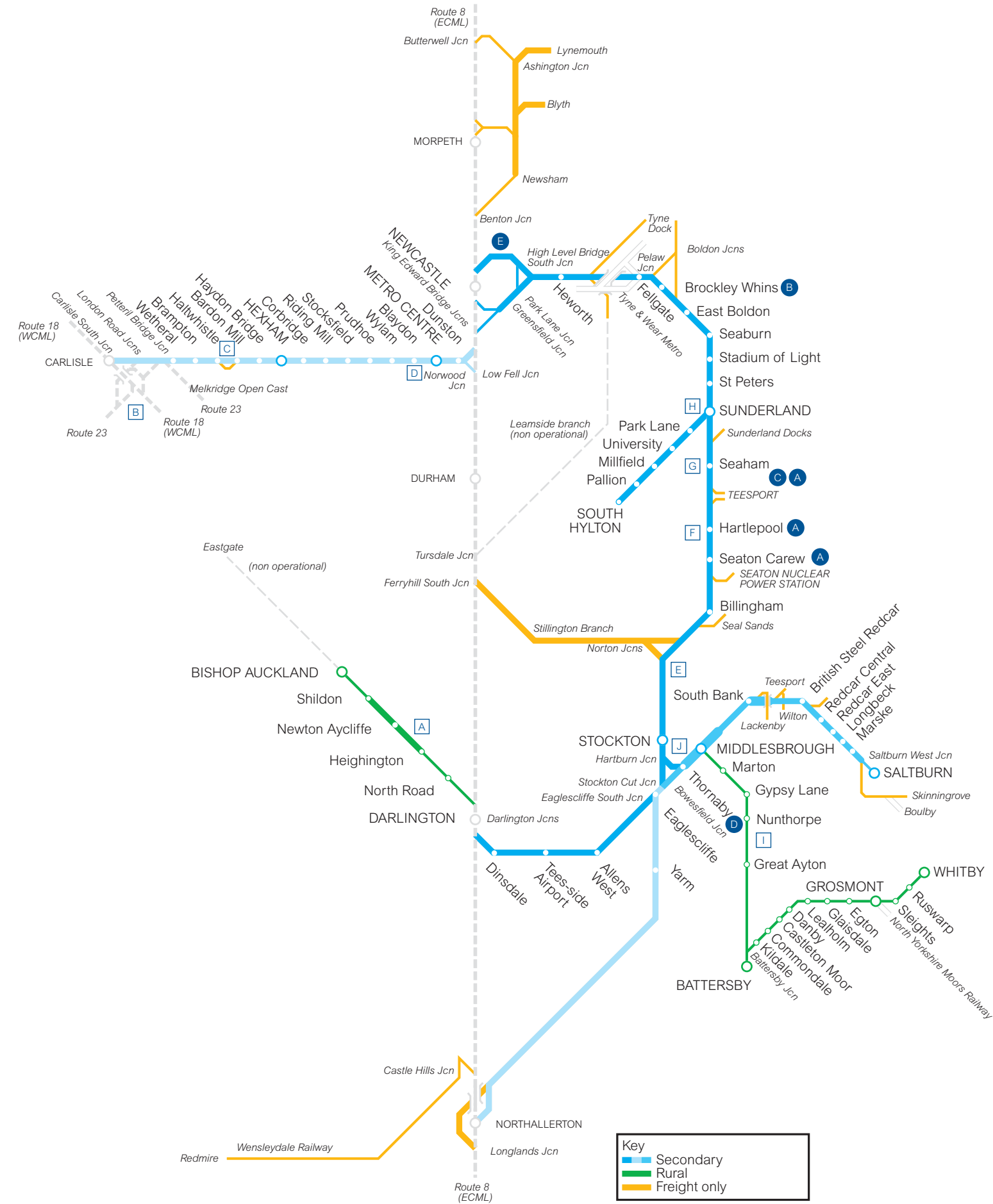
This route provides passenger links in the conurbations on the rivers Tyne, Wear and Tees into Newcastle and Darlington, thereby providing rail connections to other parts of the country. It also handles long distance flows from Tyneside to Carlisle and western Scotland, and between Teesside and the North West via Leeds. There is a substantial volume of freight traffic, particularly from Teesside 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 focussed 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 is expected to publish its Regional Planning Assessment (RPA) for the North East shortly which will form an input to the RUS. The DfT will be publishing their Northern Rail review in 2006, which will also feed into the RUS.

The Middlesbrough to Whitby line is a designated community railway, led by the Esk Valley Railway Development Company.

# Route 9 North East



Line Type	Color
Secondary	Blue
Rural	Green
Freight only	Yellow

### Passenger and freight demand

This route sees a low usage per head of population despite several lines having a frequent level of passenger service. The exception is the Gateshead Metro Centre to Sunderland corridor; some of which forms both part of the UK rail network and the Nexus Metro system.

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

### Current services

Services are provided by Northern Rail, Transpennine Express, English Welsh & Scottish Railway Ltd, Direct Rail Services Ltd, Freightliner Ltd and Freightliner Heavy Haul Ltd.

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. Its limited gauge clearance precludes most intermodal traffic.

On Teesside 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 between Middlesbrough and Whitby.

The lines on Teesside see intensive freight activity relating to the ports, the steelworks at Lackenby (Redcar) and the various petro-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.

In the December 2005 timetable change, coal traffic from Western Scotland to Yorkshire and the East Midlands has been concentrated on the the Settle and Carlisle route. However, some of this traffic will need to be diverted onto the Carlisle to Newcastle line (and then onto the ECML between Newcastle and Doncaster) due to planned track works on the Settle to Carlisle line during various periods over the coming years. Other engineering access strategies also require increased use of Newcastle to Carlisle line for diversionary purposes, primarily for freight despite its gauging constraints.

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

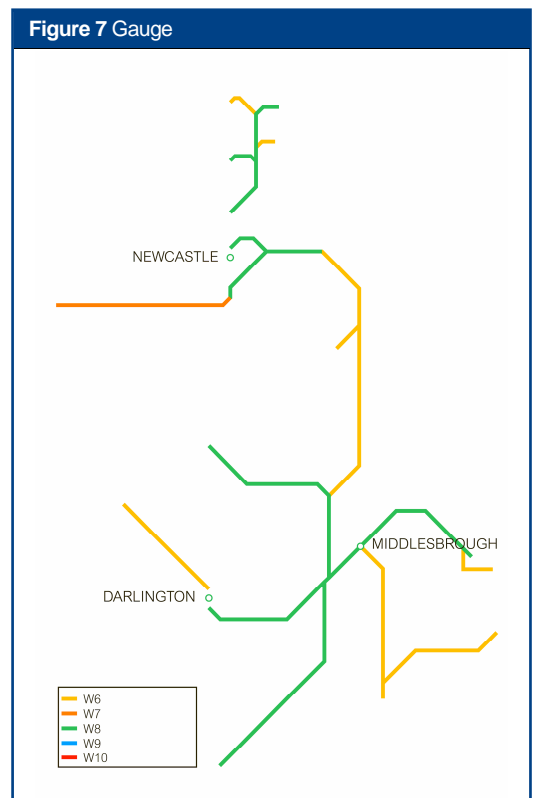
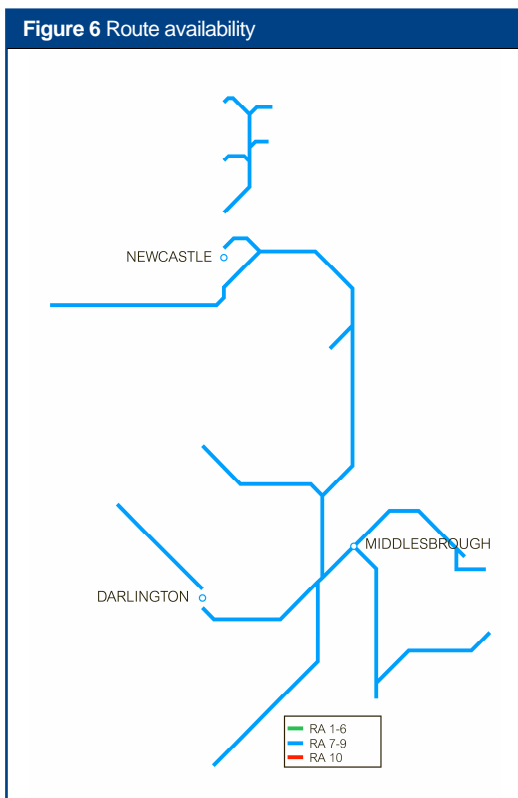
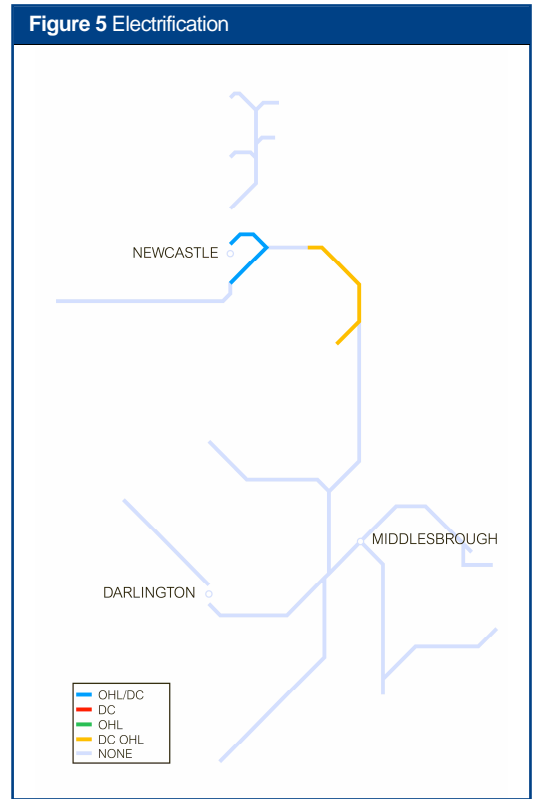
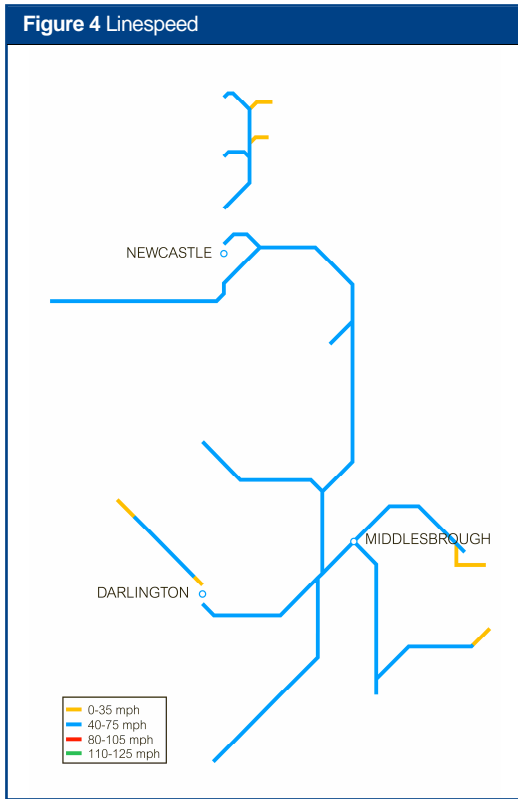
**Figure 1** Current train service level (trains per hour)

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



### 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 due to the mix of Metro trains, heavy rail passenger services and freight traffic.

The single track branch to the Port of Tyne is likely to reach capacity soon due its use of the Divisible Train Staff method of operation.

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.

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

Network Rail is continually working to improve track geometry and to reduce the number of speed restrictions currently in place.

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 RUS with industry and wider stakeholders. As the ECML is such a core artery for rail in the North East, all of the North East Route has been included in this study. The RUS will aim to make effective and efficient use and development of the route capacity available, consistent with the funding that is, or is reasonably likely to become, available during the 10 years covered by the RUS.

The DfT is expected to publish its North East RPA shortly and is working on its review of Northern Rail franchise services. Both will form inputs to the RUS.

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

Now that the Weardale Railway has come out of administration we are optimistic that they will now be able to purchase the line from Bishop Auckland to Eastgate.

**Future demand**

Demand for travel along this route is expected to continue to increase, as growth in employment generates new commuting trips into the main urban areas, and economic growth encourages new business and leisure journeys.

Grand Central, an open access operator, wishes to run four trains per day in each direction between Sunderland and London via Hartlepool. The ORR determination on its request for access rights was expected just after the Route Plan went to print.

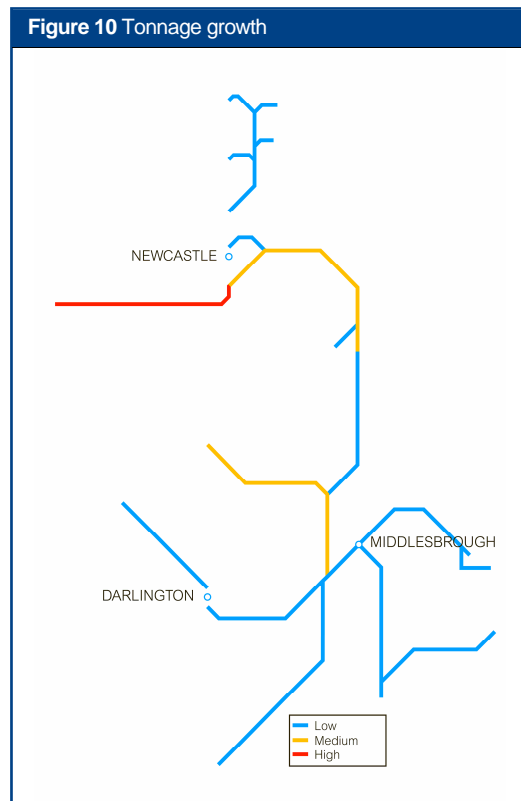
We are in discussions with the North Yorkshire Moors Railway about the operation of regular steam hauled services from Whitby onto their own railway from Grosmont to Pickering.

Freight growth is expected at Teesport and Port of Tyne with a variety of bulk products and also container traffic. The Port of Blyth is looking to make much more use of rail and is planning to reinstate some rail connections to facilitate this.

**Figure 9** Current PPM MAA

TOC	MAA	Period
Northern Rail	86.1%	10
Transpennine Express	77.4%	10

Figure 10 indicates percentage change in tonnage to 2015.



#### 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 from the South to Teesport 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.

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

Linespeeds 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, linespeed improvements would increase the speed differential between passenger and freight trains and thereby reduce capacity.

Planned reconstruction works on two bridges on the route will remove speed restrictions for heavier traffics at Hartlepool or near Thornaby.

We are in early discussions with the Wensleydale Railway regarding the provision of a new curve to allow direct access from the Redmire branch into Northallerton.

A couple of lines on this route will need significant additional expenditure should any additional regular freight flows, or other locomotive hauled trains, require to operate. Those concerned are the Bishop Auckland branch and on the westerly section of the Middlesbrough to Whitby line.

#### Future capacity

Coal traffic is to be diverted off the Settle to Carlisle line and onto the Newcastle to Carlisle line from time to time to allow planned track works. As a result, the volume of freight traffic along this section will significantly increase when such diversions occur.

The RUS will identify how passenger growth would need to be accommodated but on many lines this is anticipated to be through train lengthening rather than additional services.

Freight growth will be largely focussed on the routes' ports and the lines connecting them to the ECML.

The proposed shortening of the Hartlepool to Dawdon block section as part of the Durham Coast resignalling scheme would provide some additional capacity on this line.

#### 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, i.e. for the following lines within this route:

- Ryhope Grange – Hendon (Sunderland);
- Blyth Bates branch.

**Figure 11 Forecast reduction in delay minutes**

	2006/07	2007/08	2008/09
% reduction in delay minutes	6%	10%	18%

**Future performance**

Figure 11 shows the forecast reduction in Network Rail delay minutes compared with 2005/06.

Embankment stabilisation works in the Brockley Whins area will remove a major speed restriction.

Our Area Delivery Groups continue to renew fencing and undertake vegetation clearance to reduce the risk of route crime and train delays and impact on performance.

The creation of Joint Delivery Working Groups are aiming to improve service recovery following perturbation, improve train management and regulation and will continue to target the removal of temporary speed restrictions.

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 these services running 24 hours per day. We will need 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 recently published proposals to build a light rail system between Darlington and Saltburn using a mixture of dedicated tracks and shared running with heavy rail services (building on the experience of the Pelaw to Sunderland section). It is predicated on linking the five Tees Valley major development sites.

The scheme proposes to replace services between Darlington and Saltburn but will need to ensure that other services in the area can still operate satisfactorily. With resignalling of the Bowesfield – Tees Yard – Middlesbrough section due around the end of the decade, there is the opportunity to integrate the two schemes. However, a decision on the light rail scheme is required soon so that detailed development work can feed into the signalling renewals programme. Beyond this the proposal does not appear to have any affect on the strategy for the rest of the route.

**Delivering future requirements****Summary**

The major projects on the route are the Durham Coast and South Tees resignalling schemes currently planned for 2006 – 2011. For the Durham Coast it is planned to centralise signalling control at Hartlepool.

**Figure 12 Forecast PPM MAA**

TOC	2006/07	2007/08	2008/09
Northern Rail	86.7%	87.5%	88.3%
Transpennine Express	88.7%	90.5%	91.4%

### Expenditure

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

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

<b>Figure 13 Forecast expenditure</b>			
<b>£m (05/06 prices)</b>	<b>2006/07</b>	<b>2007/08</b>	<b>2008/09</b>
<b>Renewals</b>			
<b>Track</b>			
Plain Line	9	8	8
Drainage	0	0	0
<b>Track Total</b>	<b>10</b>	<b>8</b>	<b>8</b>
<b>Civils</b>			
Underbridges	4	5	5
Overbridges	0	0	–
Bridgeguard 3	0	(1)	0
Footbridges	1	2	1
Earthworks	1	6	1
Tunnels	–	–	0
Culverts	–	0	–
Retaining walls	–	–	–
Major structures	14	12	1
Other	0	–	0
<b>Civils Total</b>	<b>21</b>	<b>24</b>	<b>9</b>
<b>Signalling</b>			
Resignalling	1	6	7
Minor works/other	1	6	6
<b>Signalling Total</b>	<b>2</b>	<b>12</b>	<b>14</b>
<b>Electrification</b>			
<b>DC Systems</b>			
Other	0	–	–
<b>Electrification Total</b>	<b>0</b>	<b>–</b>	<b>–</b>
<b>Plant and machinery</b>			
Fixed plant	0	0	0
Signal supply point	0	0	0
Point heating	0	0	0
<b>Plant Total</b>	<b>0</b>	<b>0</b>	<b>1</b>
<b>Operational property</b>			
stations	1	–	3
Lineside buildings	–	1	1
<b>Operational property Total</b>	<b>1</b>	<b>1</b>	<b>4</b>
<b>Other Renewals</b>			
Maintenance delivery unit depots	–	–	0
<b>Other Renewals Total</b>	<b>–</b>	<b>–</b>	<b>0</b>
<b>Total Renewals</b>	<b>34</b>	<b>46</b>	<b>35</b>

Enhancements (funded by)			
<b>Network Rail (RAB)</b>			
Other	1	0	1
<b>Network Rail (RAB) Total</b>	<b>1</b>	<b>0</b>	<b>1</b>
<b>Other Third Party</b>			
Teesport gauge clearance	0	2	–
Other	0	0	0
<b>Other Third Party Total</b>	<b>0</b>	<b>2</b>	<b>0</b>
<b>Total Enhancements</b>	<b>2</b>	<b>2</b>	<b>1</b>

The planned volume of renewals is detailed in Figure 14.

Figure 14 Forecast volume			
	2006/07	2007/08	2008/09
<b>Track</b>			
Rail (km)	12	11	11
Sleepers (km)	12	12	12
Ballast (km)	14	13	13
Drainage (km)	1	1	1
<b>Civils</b>			
Underbridges (square metres)	1,252	2,847	785
Overbridges (square metres)	483	40	73
Footbridge (square metres)	200	378	332
Embankments (square metres)	2,165	19,641	10,928
Tunnels (square metres)	–	–	100
Culverts (square metres)	–	6	–
Major structures (square metres)	7,600	19,503	2,828
<b>Signalling</b>			
Resignalling (SEUs)	–	–	53
<b>Plant and machinery</b>			
Signal supply point (no)	–	–	2
Point heating (point end)	–	29	22

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

#### Maintenance

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

Figure 15 Forecast expenditure			
£m (05/06 prices)	2006/07	2007/08	2008/09
Maintenance	15	14	13

## Infrastructure investment

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

Figure 16 Planned infrastructure investment						
Project	Scope	Enhancement or output change	Main asset type(s)	Third Party funding	GRIP stage	Completion year
A Lancaster Road Bridge, Hartlepool (09.05)	Reconstruction	Improved asset condition and route capability	Structures	None	4	2006/07
B Brockley Whins (09.05)	Embankment stabilisation	Improved asset condition and performance	Earthworks	None	5	2006/07
C Durham Coast Resignalling (09.05)	Renewal of lineside equipment and wiring	Improved asset condition	Signalling	None	2	2008/09
D Tees Bridge (09.07)	Reconstruction	Improved asset condition and route capability	Structures	None	2	2008/09
E Tyneside High Level Bridge (09.05)	Major works on both the rail and road sections of the bridge	Improved asset condition	Structures	None	5	2007/08

Figure 17 highlights uncommitted schemes under development.

Figure 17 Infrastructure investment under consideration			
Project	Scope	Enhancement or output change	Main asset type(s)
A Durham Coast Resignalling (09.05)	Resignalling to shorten a long block section between Hartlepool and Dawdon	Route capacity	Signalling
			Status
			In development for Network Rail Discretionary Funding in association with a signalling renewal

## Non infrastructure developments

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

## Appendix

**Figure 18** 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

**Figure 18 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
09.09	Blyth and Tyne Network	EJM	Freight	DfT	No	W8	RA9 (RA6)	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