



Route 8 East Coast Main Line

8 8

Today's route

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

- the main line from King's Cross to Edinburgh and the line from Doncaster to Leeds which together form the core of the route (08.01, 08.04, 08.05, 08.06, 08.07, 08.08, 08.09 and 08.10);

- a loop via Hertford North which is mainly used by suburban services (08.03);
- a branch from Finsbury Park to Moorgate used only by inner suburban services Mondays to Fridays (08.02); and
- the North Berwick branch (08.11).

Route context

The East Coast Main Line (ECML) is the electrified high-speed link for train services between London, Yorkshire, the North East and Edinburgh. It also handles cross-country, commuter and local passenger services and carries heavy tonnages of freight traffic, particularly over the Yorkshire and North East sections.

The route forms a key artery on the eastern side of the country and parallels the A1 trunk road. It links London, the South East area and East Anglia, with the Yorkshire and Humber, and

North East Regions, and Eastern Scotland. It carries key commuter flows for the north side of London. It is therefore important to the economic health of many regions of Great Britain.

Network Rail is currently leading an ECML Route Utilisation Strategy (RUS) on behalf of the industry. The DfT has just published its East of England Regional Planning Assessment (RPA) whose primary relevance to the route is south of Peterborough. The RPA for the North East is expected shortly. Both will form inputs to the RUS.

Route 8 East Coast Main Line



Passenger and freight demand

The route is seeing an increasing demand in the long distance, commuter and regional passenger markets and growing freight tonnages.

Many of the long distance passenger journeys are focussed on London. Being mainly a high-speed route, journey times are very favourable from Yorkshire, the North East and Eastern Scotland. Long distance services using London King's Cross regularly operate to/from Leeds, Newcastle and Edinburgh with some services operating beyond these points. There are also seven trains per day each way between Hull and London.

Other long distance journeys involving Eastern Scotland and the North East use the cross country services that lead off the route to access the North West, Midlands and South West.

The main commuter market faces towards London with inner and outer suburban trains operating to/from King's Cross and Moorgate (inner suburban only) serving North London, central Hertfordshire, Huntingdonshire and Cambridgeshire. In addition there is a significant long distance commuter market using ECML stations, particularly Grantham and Newark. The route is also used for other commuter journeys mainly into Leeds, Newcastle and Edinburgh.

A number of regional express and rural passenger services cross the ECML between Peterborough and Doncaster. PTE and other local services also serve Doncaster, Leeds, York, Darlington, Newcastle and Edinburgh.

As there are few freight terminals on the route, most freight trains operating on the ECML are transiting between other areas of freight activity. The majority use the route to access the East Coast ports, Teesside and Scotland. A key use is for coal from the North East and Scottish opencast sites and ports destined for the Aire and Trent Valley power stations. Container and other intermodal traffics from Felixstowe and the Thames estuary ports are a particular growth business.

Current services

Services are provided on this route by West Anglia Great Northern (whose services will be operated by First Capital Connect from 1 April 2006), Northern Rail, Trans-Pennine Express, Great North Eastern Railway (GNER), Virgin Cross Country, First ScotRail, Midland Mainline, Hull Trains Ltd, Central Trains, One, English Welsh & Scottish Railway Ltd, Freightliner Ltd, Freightliner Heavy Haul Ltd, Direct Rail Services Ltd and West Coast Railway Company.

The normal weekday operation by GNER sees long distance trains operating in and out of King's Cross at the rate of around 4 tph with 2 tph to/from the North East and Edinburgh, and up to 2 tph to/from

Leeds and with a train every two to three hours between Hull and King's Cross, mainly operated by Hull Trains Ltd. This level of service increases to 5 to 6 tph at peak times. Some of the Leeds and Edinburgh trains extend to/from Bradford, Harrogate, Skipton, Glasgow Central, Inverness and Aberdeen.

Overlaid on these trains is an extensive West Anglia Great Northern service of outer suburban services south of Peterborough including trains joining/leaving the route at Hitchin serving Cambridge and King's Lynn via Royston. An inner suburban service operates from Moorgate running to Welwyn Garden City, Hertford North and Letchworth. These services use King's Cross at weekends. The weekday service is augmented in the morning and evening peaks.

Between Doncaster and Leeds, as well as the London trains described above there are three Northern Rail PTE supported services per hour operating over various parts of this section, an hourly Virgin Cross Country service north of South Kirkby Junction and the occasional Midland Mainline service between Leeds and London St Pancras.

The section through York in a typical hour sees, in each direction, two GNER London services, two Virgin Cross Country services, three Trans-Pennine Express trains between the North West and the North East and Scarborough and four Northern Rail services.

The North Berwick branch is served by one First ScotRail train per hour to/from Edinburgh (generally two trains per hour on Saturdays) and an hourly Northern Rail local service operates between Newcastle and Morpeth.

A number of local and regional services cross the route at various locations.

In addition, the whole of the route (except the North Berwick and Moorgate branches) sees considerable use by freight traffic.

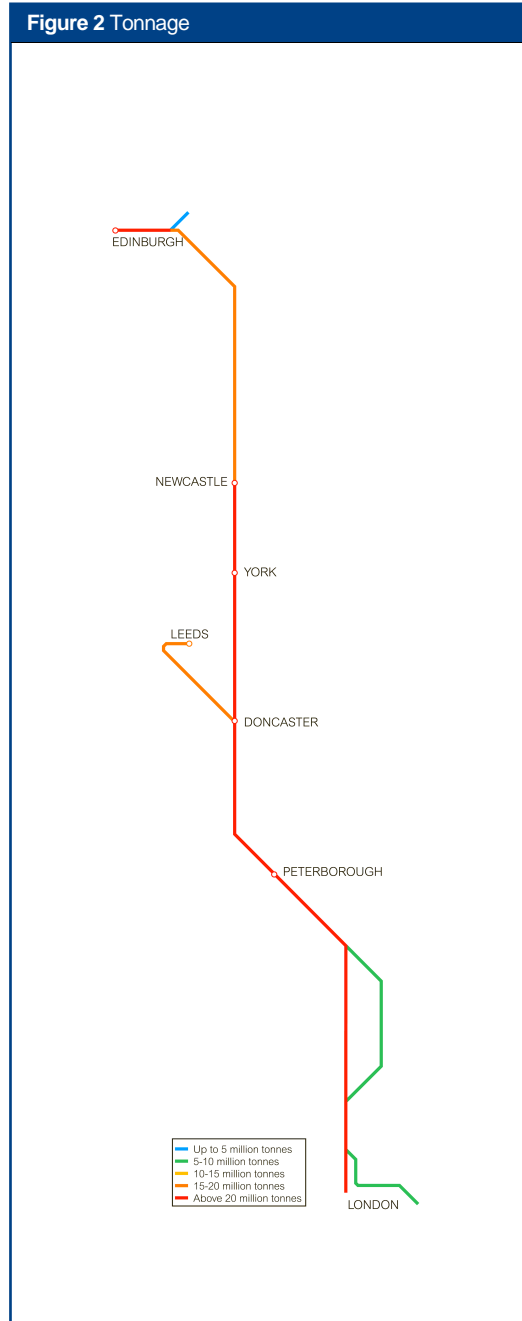
Figure 1 shows the current level of service to London from principal stations.

Figure 1 Current train service level (trains per hour)

Originating Station	tph to King's Cross
Welwyn Garden City	4 peak/2 off peak
Stevenage	7 peak/5 off peak
Peterborough	9 peak/5 off peak
Doncaster	3 on most hours
Leeds	2 on most hours
York	2
Newcastle	2

Current traffic

The following map shows the tonnage levels on the route.



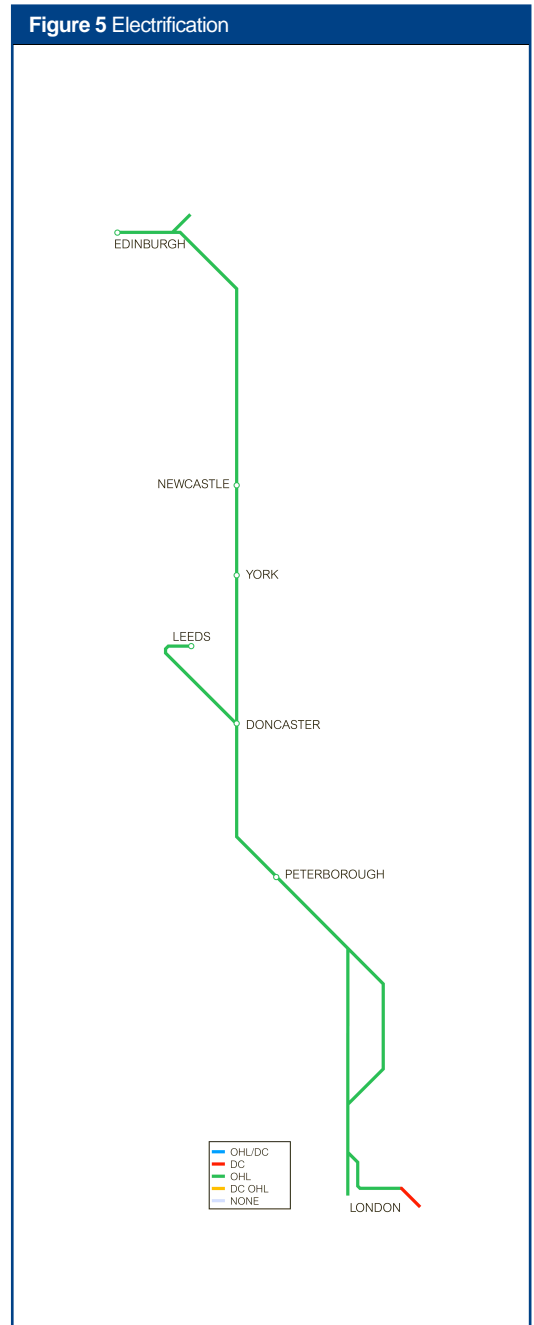
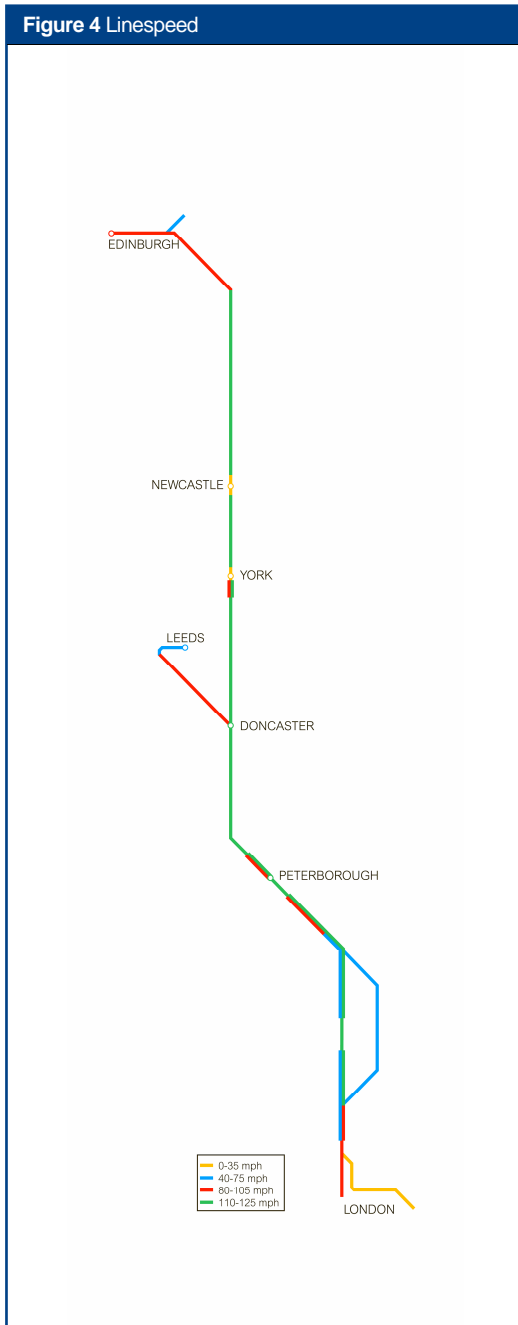
Traffic volumes are summarised in Figure 3.

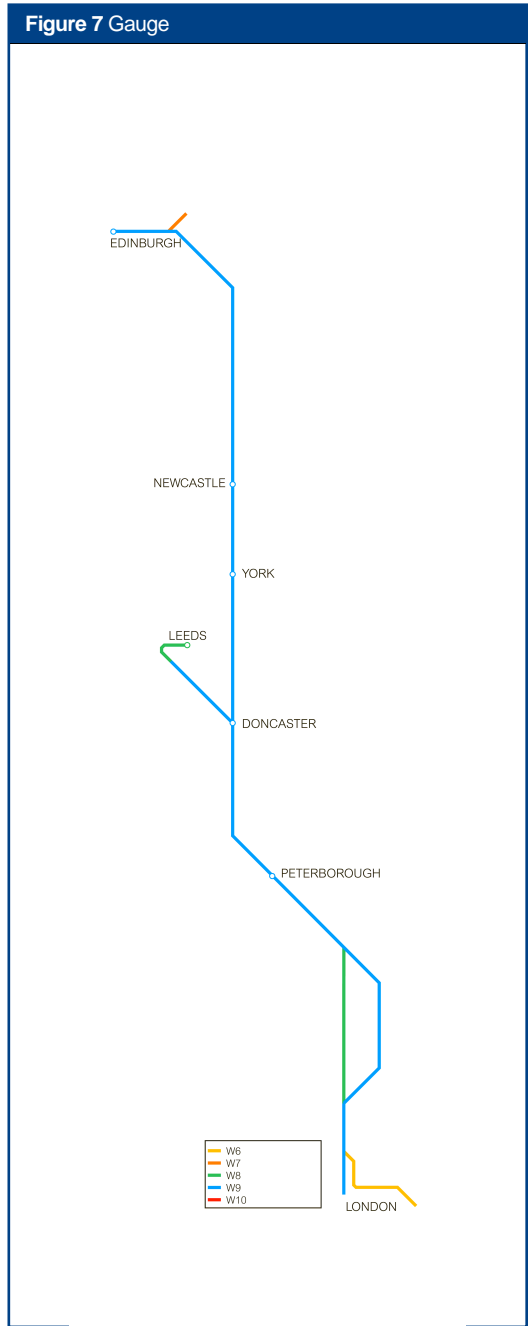
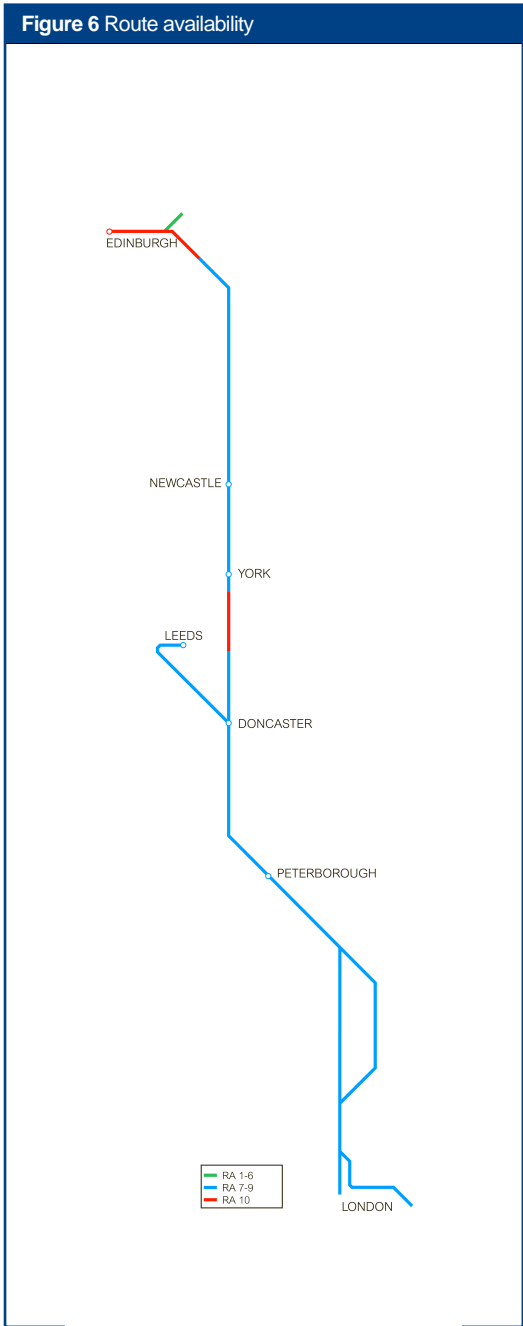
Figure 3 Current use

	Passenger	Freight	Total
Train km per year (millions)	37	6	43
Train tonne km per year (millions)	12,899	5,748	18,647

Current infrastructure capability

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





Current capacity

Much of the route currently operates at or just below capacity for much of the day with the current service mix and timetabling. This is against a background of both passenger and freight growth. The route has capacity constraints at a number of key locations, including:

- King's Cross – the 11 platforms are extensively used at peak times and three are unable to accommodate more than 8 coach trains;
- Holloway to Alexandra Palace – 6 tracks near capacity in the peak;
- Welwyn North – two-track section constrains capacity and exacerbates delays in perturbed running;
- Hitchin – at grade junction to/from Cambridge line creates capacity constraint and again exacerbates delays;
- Huntingdon to Peterborough – 16 miles of one single southbound line with just one loop;
- Peterborough – with only five platforms at Peterborough, routeing of trains can become constrained and operations can easily become perturbed;
- Grantham to Doncaster – two-track section which sees a mixture of fast and semi-fast passenger services interspersed with freight traffic;

- Doncaster – similar issues to Peterborough;
- Doncaster to Leeds – on this two-track section capacity is constrained by the combination of fast and stopping passenger trains and freight services;
- York – four-tracks reduce to three in the southern approaches to the station which, together with restrictive signalling, causes pathing and performance problems;
- Darlington – restrictive signalling at the south end; and
- Northallerton to Edinburgh – long two-track section with limited looping facilities and tight curvature.

The opening of the Allington Chord in October 2005 has improved capacity and performance, on the ECML between Grantham and Newark by allowing Nottingham to Skegness services to access Grantham without the need to traverse the ECML.

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

Current performance

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

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

Route Section	Main Lines	Relief Lines
London King's Cross – Welwyn Garden City	9	5
Digswell – Woolmer Green	16	N/A
Woolmer Green – Hitchin	9	7
Peterborough – Helpston Junction	7	3
Doncaster – Leeds	8	N/A
Colton Junction – York	4	8
Durham – Newcastle	9	N/A
Drem – Edinburgh	6	N/A

Figure 9 Current PPM MAA (2005/06)

TOC	MAA	As at period
Northern Rail	86.1%	10
TPE	77.4%	10
GNER	81.5%	10
WAGN	88.9%	10
Central Trains	76.8%	10
Midland Mainline	92.0%	10
First ScotRail	84.5%	10
Virgin Cross Country	80.0%	10

The capacity constrained sections and locations listed in the previous section give rise to performance problems when trains are running out of course which is a regular feature as many long distance services join the route. The mix of high speed passenger services, with varying stopping patterns, and slower passenger and freight services on the two track sections also make it difficult to contain delays.

The two track sections are also a problem when an incident affects one or both lines as there are few viable diversionary routes, especially for electric trains. When one line is blocked single line working can be instituted over the other track. Over much of the route between Northallerton and Berwick upon Tweed, the signalling system allows this method of operation to be introduced relatively easily and so delays are normally contained. However, on the other sections the constraints of this operation, when special signalling arrangements need to be employed, can lead to delays mounting up very quickly and require the service to be thinned out significantly.

In addition to the benefits of the Allington Chord scheme mentioned above, the Peterborough to Werrington bi-directional signalling enhancement scheme, completed in December 2005, is expected to save circa 4000 performance minutes per annum.

Future requirements

Strategic direction

Network Rail is leading the ECML Route Utilisation Strategy (RUS) on behalf of the industry and wider stakeholders. 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. DfT Rail has recently published its East of England RPA and this will be a key input to the RUS.

Future demand

The RUS process will require much demand analysis and so both the ECML RUS and Freight RUS will identify future requirements for the route in more detail and will allow a more quantitative analysis in next year's Route Plan for the ECML. However, the following gives an overview of issues already being considered in the RUS work.

The high volume of demand for peak commuter services serving London will continue to grow as employment in central London continues to increase, although in the longer term, the capacity of the network will limit the extent to which future growth may be accommodated without infrastructure enhancement. Continued economic growth is expected to increase demand for off peak travel from the inner and outer suburban areas, particularly for journeys to London where rail competes strongly with other modes.

In addition, the ODPM proposals for a substantial amount of new housing in the Home Counties is likely to create a further increase in peak time demand on the route which the current infrastructure will not be able to support.

Demand for longer distance travel is also expected to increase continually, as economic growth encourages further business and leisure trips. Again, growth on flows to London is expected to be the highest.

Our customers are already looking to increase services for this market. GNER is seeking to fill the off-peak gaps in the half hourly service from Leeds to London King's Cross via Wakefield, this being one of their franchise commitments. Hull Trains Ltd wishes to gain ongoing access rights for the additional service per day that was introduced in December 2004 and open access operator Grand Central is wishing to operate 4 trains each way per day between London and each of Bradford (via Halifax) and Sunderland (via Hartlepool).

The applications to operate all the above additional off peak paths on the ECML for commencement in the December 2006 timetable have been considered by the Office of Rail Regulation (ORR) following timetable analysis by Network Rail. The ORR determination on these rights was expected shortly after this Route Plan went to the printers.

Additional journeys into King's Cross will also be generated when the opening of the Channel Tunnel Rail Link (CTRL) Section 2 improves connections from the north to the Continent.

Construction of the Thameslink Programme enabling through running of 12 car main line services across London, will provide significant extra capacity and creating new journey opportunities.

In addition, GNER has proposed in their franchise agreement to examine the electrification of the line between Neville Hill and Hambleton South Junction with a parkway station east of Leeds as a way of further increasing capacity to deliver growth to/from Leeds. GNER believe that the West Yorkshire market will have the biggest growth. In order to meet this expected demand with their existing train fleet and taking into account the lack of spare capacity on the route via Wakefield, they have identified this as the most cost effective solution. We are currently undertaking development work on this jointly with GNER looking at the engineering issues associated with the electrification itself, and track and power supply capacity on the whole of the route. The latter will identify what other infrastructure is required to support the proposed increase in services.

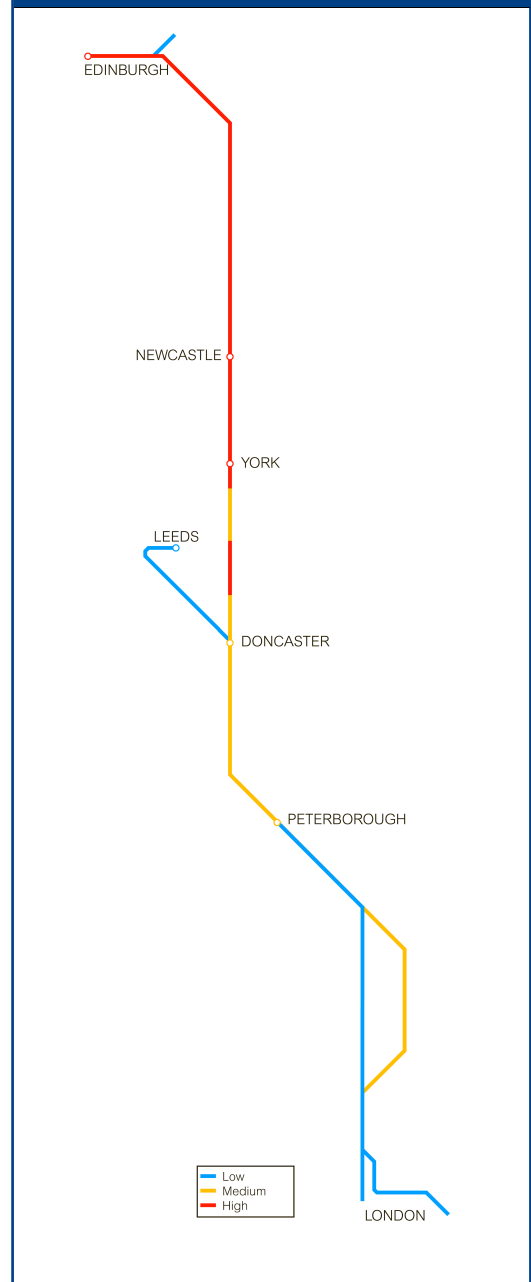
It is anticipated that the greatest growth area for freight will be in container traffic, particularly from

Felixstowe, Bathside Bay and the Thames estuary especially if the appropriate parts of the route are cleared for W10 gauge. It is expected that bulk commodity flows will remain an important traffic for the route, particularly in relation to continuing changes to coal traffic and changes in the steel industry which will create a change in freight train flows with increased impact on the ECML.

Following the December 2005 timetable change, coal traffic from Western Scotland will not regularly use the ECML as it has been concentrated on the Settle and Carlisle route. However some coal traffic is to be diverted off the Settle to Carlisle line via the Carlisle to Newcastle line and then via the ECML between Newcastle and Doncaster due to planned track works during various periods over the coming years.

Figure 10 indicates percentage change in tonnage to 2015.

Figure 10 Tonnage growth



Future capability

There is little scope to increase linespeeds on the route as most such opportunities were taken when the route was modernised for electrification. Some heavy axleweight restrictions should be withdrawn following structures renewals works including the reinstatement of the ability to run RA10 traffic on the Wakefield Westgate to Leeds section.

The major capability change is the proposed clearance of the Peterborough – Doncaster – Hare Park Junction/Temple Hirst Junction sections for W10 gauge traffic funded by HPUK Ltd. This would allow rail to capture a much larger portion of the increased container traffic generated by the Felixstowe and Bathside Bay developments.

Strengthening work on the River Don Bridge at Doncaster should improve a heavy axleweight speed restriction.

Future capacity

The signalling headways are generally considered adequate. Capacity is generally governed by the train occupation of junctions and whilst stopping at stations, and the mix of fast and slower speed services on the long two track sections rather than headways on plain line sections. However, the headways on the two-track section through Welwyn North act as major capacity constraint and the three aspect signalling on the Hertford loop is also a constraint.

Two major capacity enhancements are being developed further in advance of the RUS, primarily to maximise synergies with other works. These are the provision of an additional platform at King's Cross (known as Platform Y) which can be used by long distance services and 12 car suburban services. The other is an additional island platform at Peterborough which will allow the East Anglia passenger services to operate independently of services from London. A third project is awaiting a decision by DfT on a Local Transport Funding bid made by West Yorkshire PTE for an enhanced station layout at Wakefield.

We are also developing a number of NRDF schemes that would provide small incremental capacity benefits. These are as follows:

- Darlington South – improved signalling overlaps;
- Holgate Junction to York station – additional line;
- Stevenage South – additional Down Slow/Down Fast crossover; and
- Hemsworth loops – improved entrance/exit linespeeds.

Future performance

The table below shows the forecast reduction in Network Rail delay minutes compared with the expected outturn for 2005/06.

All the potential schemes mentioned in the previous section will provide performance benefits.

The proposed installation of power supply modifications in the Belford and Ranskill areas will help reduce the risk of delay caused by power outages.

The proposed closure of level crossings will provide safety benefits and will reduce the risk of delay caused by level crossing equipment failure or an operational incident.

Figure 11 Forecast reduction in delay minutes

	2006/07	2007/08	2008/09
% reduction in delay minutes	5%	15%	22%

The fitment of lightning arresters at key junctions will help mitigate delay effects following a lightning strike.

Network Rail is proposing to install bridge protection beams at those bridges most vulnerable from road vehicle strikes. Early inspection following such a strike will also help reduce delays.

The planned renewal of the overhead line equipment between King's Cross and Hitchin and in the Newark and Claypole areas should help reduce the number of equipment failures and thereby improve performance. We are also examining ways to avoid high road vehicles coming into contact with the OHL at Bathley Lane level crossing north of Newark and thereby avoiding major performance problems.

Opportunities are being examined to increase the line speed approaching Newcastle from the south which should improve performance in the area.

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

Engineering access

There needs to be more access for both maintenance and renewal work on the route. Network Rail will seek to manage closures to a more regular pattern in order to improve both train and asset performance.

Access for maintenance on the Scottish section of this route is particularly limited. The current access is 2 midweek nights every third week with only two high gauge trains operating during this period. In addition, extended access is available on Saturday and Sunday nights.

In terms of future Engineering Access the following are aspirational:

- 7-9 hr cyclical midweek nights for maintenance and low-level renewal;
- 8-16 hrs at weekends for heavy maintenance/low-level renewal, with occasional periods of up to 30hrs; and

- 54-80 hour discrete weekend possessions varying in number by year to accommodate major renewals.

The above are considered in each year's discussions on Rules of the Route but Engineering Access will also be examined in the RUS.

Opportunities and challenges

Network Rail will continue to work with the DfT, Scottish Executive and other stakeholders in developing the ECML RUS. The baseline for the study will be the December 2006 timetable.

The RUS will examine what infrastructure schemes will be needed under various scenarios to deliver requirements of the industry and other stakeholders. The ECML Upgrade project work undertaken by SRA and ourselves identified potential solutions for many of the capacity constraints identified previously in this Route Plan. This work will be an important input for the RUS and identified that to enable a moderate increase in the number of trains to meet at least some of the anticipated demand, some or all of the following are required:

- King's Cross additional platform;
- Finsbury Park additional southbound platform;
- Alexandra Palace to Finsbury Park additional southbound passenger line;
- improved OHL power supplies between King's Cross and Potters Bar;
- Peterborough bi-directional signalling on the Down Slow;
- additional island platform on the western side of Peterborough station;
- improved entry/exit speeds for the Slow lines and loops between Stoke Summit and Doncaster;
- alterations to 'cross Doncaster' local services which may also require an additional bay platform on the eastern side of Doncaster station; and
- York Holgate Junction – additional track, and signalling improvements

As mentioned above, development work is continuing on several of these.

Figure 12 Forecast PPM MAA

TOC	2006/07	2007/08	2008/09
Northern	86.7%	87.5%	88.3%
TPE	88.7%	90.5%	91.4%
GNER	83.6%	85.5%	87.7%
WAGN	90.0%	90.6%	90.8%
Central Trains	83.8%	84.5%	84.5%
Midland Mainline	91.4%	91.6%	91.6%
First ScotRail	87.3%	88.7%	90.0%
Virgin Cross Country	81.6%	83.5%	84.3%

Another key workstream in the RUS will be to examine whether the introduction of a regular clock face for inter city services in and out of King's Cross will improve the use of capacity and provide performance benefits, particularly in advance of a programme of enhancements.

It should be noted that the proposed clearance of the route to W10 between Peterborough and Yorkshire, and the North East would drive additional demand for intermodal train paths and the addition of the London to Peterborough section would increase this further. This is likely to be the principal freight growth on the route. Timetable and infrastructure solutions will need to address the need for additional daytime 75mph freight paths.

Delivering future requirements

Summary

Many parts of the route are close to capacity and there is only very limited scope to meet expected demand without major timetable changes and infrastructure enhancements to provide additional track capacity, longer platforms (to allow lengthening of London commuter services) and increased power supplies to allow longer or increased number of electric services at the southern end of the route. The Thameslink Programme which is currently at the public inquiry stage would provide several of the required infrastructure enhancements listed in the previous section at the southern end of the route.

In the meantime we are proposing a number of schemes on the route for funding by the Network Rail Discretionary Fund which, although primarily of performance benefit, will provide some marginal localised capacity improvement. These schemes taken in conjunction with each other and some of the more major enhancements listed previously will provide meaningful capacity improvements. Our ongoing renewal plans for the route will maintain and improve route performance.

Expenditure

The table below shows the planned level of expenditure on renewals on this route over the next three years. However, the precise timing and scope of renewals remains subject to review to

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

Figure 13 Forecast expenditure

£m (05/06 prices)	2006/07	2007/08	2008/09
Renewals			
Track			
Plain Line	57	49	46
S&C	16	17	16
Drainage	3	2	2
Track Total	75	68	64
Civils			
Underbridges	7	3	4
Overbridges	2	1	1
Bridgeguard 3	0	0	–
Footbridges	–	0	–
Earthworks	5	2	1
Tunnels	0	–	0
Culverts	0	1	–
Retaining walls	0	–	–
Major structures	0	1	1
Other	0	–	1
Civils Total	15	9	9
Signalling			
Resignalling	5	6	12
Minor works/other	5	8	4
Signalling Total	10	15	17
Electrification			
AC Systems			
HV switchgear	0	1	3
Booster transformers	0	–	–
Grid supply points	1	–	–
OHL re-wiring	6	5	–
OHL campaign changes/refurbishment	2	2	2
OHL spanwires	3	1	–
OHL structures	2	0	1
Other	3	1	2
DC Systems			
HV switchgear	0	–	–
Other	0	–	–
Electrification Total	17	10	7

Telecoms			
Concentrators: large	3	0	–
Other	0	0	–
Telecoms Total	3	0	–
Plant and machinery			
Fixed plant	5	3	2
Signal supply point	0	0	1
Point heating	0	0	0
Plant Total	5	3	3
Operational property			
Stations	23	37	14
Light maintenance depots	1	–	4
Lineside buildings	–	0	0
Operational property Total	24	37	18
Total Renewals	150	142	118
Enhancements (funded by)			
Network Rail (RAB)			
Bathley Lane OLE enhanced protection	0	0	3
Doncaster PSB area approach control signal arrangement	0	0	2
GNER 5th path – Potters Bar	–	1	2
GNER 5th path – Doncaster east bay platform	–	1	2
King's Cross development	28	54	51
Peterborough new bay platform	0	0	1
Peterborough to Werrington bi-directional signalling	3	–	–
Stevenage station New S&C	0	2	–
York Holgate tunnel	0	0	1
Other	2	1	1
Network Rail (RAB) Total	34	58	61
Other Third Party			
Peterborough station development	0	1	1
York Central Teardrop	0	2	2
Other	0	0	0
Other Third Party Total	1	3	3
Total Enhancements	35	61	64

The planned volume of renewals is detailed in Figure 14.

Figure 14 Forecast volume			
	2006/07	2007/08	2008/09
Track			
Rail (km)	46	44	43
Sleepers (km)	30	28	28
Ballast (km)	158	150	150
Switches & crossings (no)			
Complete renewal	26	30	30
Partial renewal/reballasting	10	11	11
Abandonment	3	3	3
Drainage (km)	9	9	9
Civils			
Underbridges (square metres)	3,494	2,217	2,473
Overbridges (square metres)	1,032	1,367	1,440
Footbridge (square metres)	–	45	–
Embankments (square metres)	18,637	3,727	14,809
Tunnels (square metres)	248	–	–
Culverts (square metres)	63	110	–
Retaining walls (square metres)	195	–	–
Major structures (square metres)	57	1,020	345
Signalling			
Resignalling (SEUs)	98	–	126
Electrification			
AC Systems			
HV switchgear (CBs)	8	27	87
Grid supply points (CBs)	1	–	–
OHL re-wiring (tension length)	401	438	340
OHL spanwires (no)	174	94	–
OHL structures (no)	32	–	18
DC Systems			
HV switchgear (CBs)	6	–	–
Telecoms			
Concentrators: large (no)	1	–	–
Plant and machinery			
Signal supply point (no)	–	–	8
Point heating (point end)	–	–	5

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	63	58	54

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	Claypole S&C	Renewal	Improved asset condition	Track	None	4	2006/07
B	Benton Junction S&C	Renewal	Improved asset condition	Track	None	4	2006/07
D	Colton/Hambleton/Templehirst	Renewal of Signal Interlocking	Improved asset condition	Signalling	None	5	2006/07
E	Darlington station	Roof repairs	Improved asset condition	Station	None	5	2006/07
F	Whitehall Road Bridge, Leeds	Reconstruction	Improved asset condition and route capability	Structures	None	4	2006/07
G	River Don Bridge, Doncaster	Strengthening	Improved asset condition and route capability	Structures	None	4	2006/07
G	Doncaster concentrator	Like for like telecoms renewal	Improved asset condition	Telecoms	None	5	2006/07
H	King's Cross concentrator	Like for like telecoms renewal	Improved asset condition	Telecoms	None	4	2007/08
I	Stevenage North and South S&C	Renewal	Improved asset condition	Track	None	4	2007/08
J	Potters Bar station	Canopy, car park and drainage repairs	Improved asset condition	Station	None	2	2007/08
K	York station	Canopy renewal	Improved asset condition	Station	None	2	2007/08

Figure 16 Planned infrastructure investment

Project	Scope	Enhancement or output change	Main asset type(s)	Third Party funding	GRIP stage	Completion year
K York Siemens Depot	New Depot Facility	Maintenance for the new Class 185 fleet	Depot	Third party funded	6	2006/07
L Hitchin wire degradation	Renewal of signal interlocking	Improved asset condition	Signalling	None	4	2008/09
L Hitchin Cambridge Jn S&C	Renewal	Improved asset condition	Track	None	1	2008/09
M Low Fell Jn S&C	Renewal	Improved asset condition	Track	None	1	2008/09
N South Kirkby Jn	Renewal	Improved asset condition	Track	None	1	2008/09
O Ouseburn Viaduct near Newcastle	Strengthening	Improved asset condition	Structures	None	2	2008/09
T King's Cross station redevelopment	Station renewal works and enhancement of station facilities	Improved station facilities and additional footfall capacity	Station	Partially funded by the DfT	2	2009/10

The following table highlights uncommitted schemes under development.

Figure 17 Infrastructure investment under consideration

Project	Scope	Enhancement or output change	Main asset type(s)	Status
Ⓒ Peterborough station development	Redevelopment of the station, adjacent properties and provision of an island platform	Improved station facilities, performance and capacity	Station	In development for Third Party and Network Rail funding
Ⓔ Darlington station	Relocate a signal and improve the overlap	Improved capacity and performance	Signalling	In development for Network Rail Discretionary Funding
Ⓕ King's Cross station	Additional Platform	Improved capacity	Station	Funded to be confirmed
Ⓖ Stevenage South S&C	One new S&C unit Down Slow to Down Fast	Improved capacity and performance	Track, signalling, electrification & plant	In development for Network Rail Discretionary Funding in association with an S&C renewal
Ⓖ York Holgate 4 th line	Additional line from Holgate Jn to York station and improvements to signal overlaps	Improved capacity and performance	Track, signalling, electrification & plant	In development for Third Party and Network Rail funding
Ⓒ Newcastle Line Speed Increase	Higher line speed on the Down main line approaching King Edward Bridge near Newcastle	Improved performance	Track	In development for Network Rail Discretionary Funding

Figure 18 Infrastructure investment under consideration

Project	Scope	Enhancement or output change	Main asset type(s)	Status
Ⓐ Belford uninterruptible power supply	Installation of new equipment to manage power failures	Improved performance	Electrification and plant	In development for Network Rail Discretionary Funding
Ⓒ Alconbury	Connection to a proposed Freight terminal	New freight operation	Track, signalling, lineside, electrification & plant	In development for funding by a Third Party
Ⓓ Huntingdon S&C	Higher line speed over the junction	Improved capacity and performance	Track	In development for Network Rail Discretionary Funding in association with an S&C renewal
Ⓔ W10 Gauge clearance	Gauge clearance of the route from Peterborough to various Yorkshire Terminals in connection with the port developments at Felixstowe and Batnside Bay	To accommodate the carriage of deep sea container traffic on the East Coast Main Line north of Peterborough	Structures, track	In development for funding by port operator

Figure 19 Infrastructure investment under consideration

Project	Scope	Enhancement or output change	Main asset type(s)	Status
⑤ Wakefield Westgate station	Platform extensions, new platform loops and relocated station buildings and footbridge	Improved station facilities and capacity	Station, track, signalling, electrification & plant	In development for funding by West Yorkshire Passenger Transport Executive
① Hemsworth Loops	Increase the turn in and turn out speed to the loops	Improved performance and capacity	Track & signalling	In development for Network Rail Discretionary Funding
④ Bathley Lane Level Crossing	Enhanced Overhead line protection	Improved performance	Overhead line	In development for Network Rail Discretionary Funding
⑥ Thameslink programme	Major works including revised track and signalling layouts and platform extensions between King's Cross, Peterborough, Letchworth and Cambridge	Elimination of bottlenecks, improved capacity and performance	All	In development. Funding to be confirmed.

Non infrastructure developments

The table below shows potential developments which do not involve changes to the infrastructure.

Figure 20 Other projects

Description	Key issues	Actions or options being developed	Benefits	Start Date
Smartcard introduction	Revenue protection and flexible ticketing	TfL/ATOC to take forward	Revenue increase and potentially demand management improvements	

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
08.01	King's Cross – Peterborough	ECM1	Primary	DfT	No	W9 (W6/8)	RA9	125	25kV	TCB	3 (4/5)	4(2/3/5/6)
08.02	Moorgate Branch	MEB	London & SE	DfT	No	W6	RA9	30	650V DC (25kV)	TCB	4.5	2
08.03	Herford Loop	HDB	London & SE	DfT	No	W9	RA9	75	25kV	TCB	5 (3)	2
08.04	Peterborough – Doncaster	ECM1/ FWR1/ FWR2	Primary	DfT	No	W9	RA9	125	25kV	TCB	4 (5)	2(4/5)
08.05	Doncaster – Holbeck W Jn	DOL1/2	Primary	DfT	No	W9 (W8)	RA9	100	25kV	TCB	3.5 (3/4)	2
08.06	Doncaster – Colton Jn	ECM2/3	Primary	DfT	No	W9	RA10	125	25kV	TCB	0	2
08.07	Colton Jn – Northallerton	ECM4/5	Primary	DfT	No	W9	RA9	125	25kV	TCB	4 (3/5)	4
08.08	Northallerton – Newcastle	ECM5	Primary	DfT	No	W9	RA9	110	25kV	TCB	3 (4)	2

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
08.09	Newcastle – Border	ECM6/ ECM7	Primary	DfT	No	W9	RA9	110	25kV	TCB	3	2
08.10	Border – Edinburgh	ECM7/ ECM8	Primary	Transport Scotland	No	W9	RA10	105	25kV	TCB	3	2
08.11	North Berwick Branch	NBK	Secondary	Transport Scotland	No	W7	RA5	50	25kV	TCB	5	1

Capacity and operational constraints

- A Alexandra Palace to Welwyn: tunnel aerodynamics and curvature
- B Offord: curvature
- C Stilton Fen ground conditions
- D Peterborough: complex station layout
- E Stoke Tunnel: aerodynamics
- F Grantham: curvature
- G Peascliffe Tunnel: tunnel aerodynamics
- H Newark: flat crossing of Nottingham – Lincoln line
- I Gamston – Retford: curvature and location of S&C
- J Bawtry: curvature
- K Doncaster: complex station layout
- L Shaftholme Junction: location of S&C
- M York: curvature and complex station layout
- N Croft: curvature over Tees river bridge
- O Darlington – King Edward Bridge: curvature of track
- P Newcastle – Edinburgh: curvature of track and level crossings