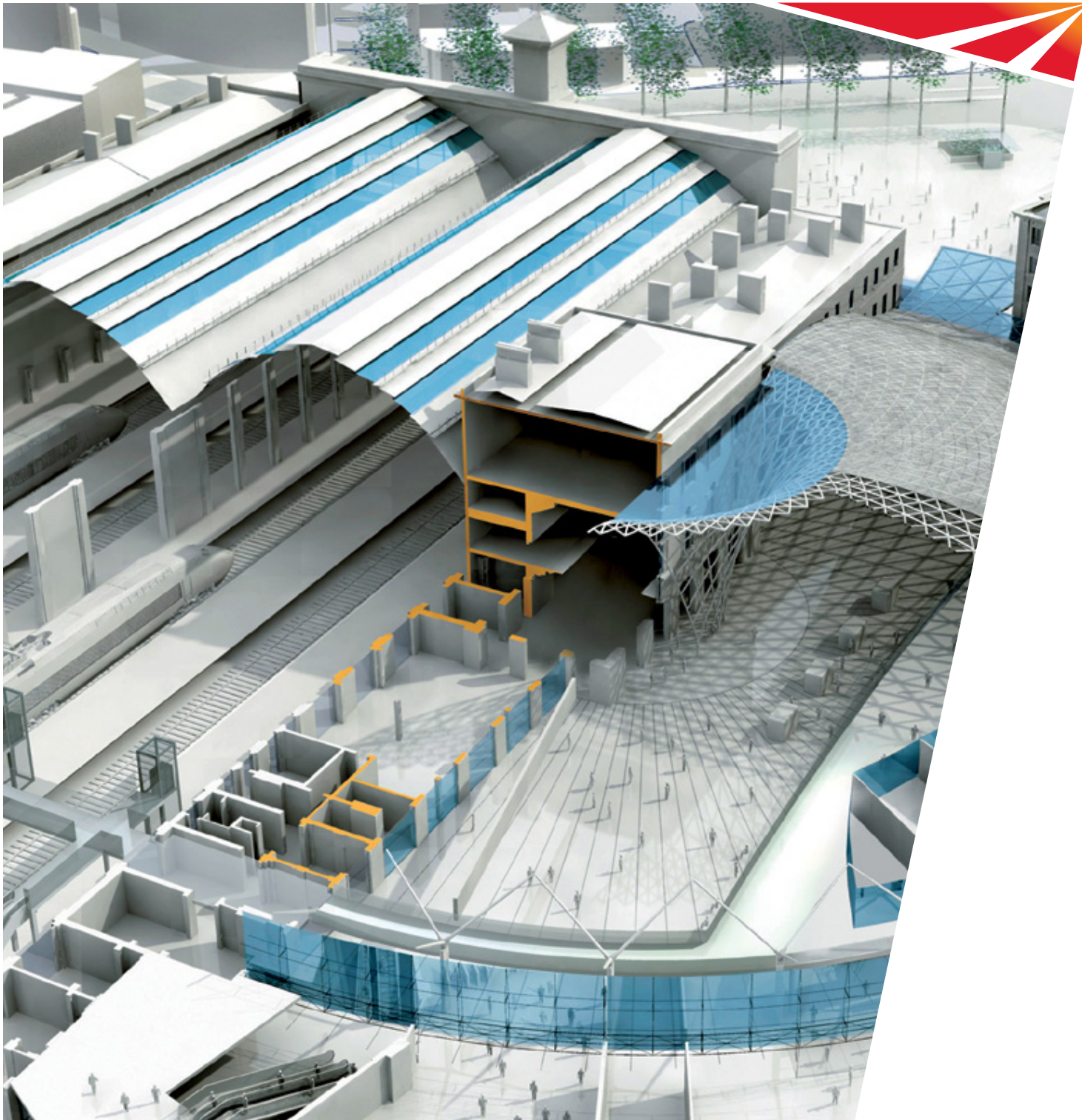


Moving ahead Planning tomorrow's railways

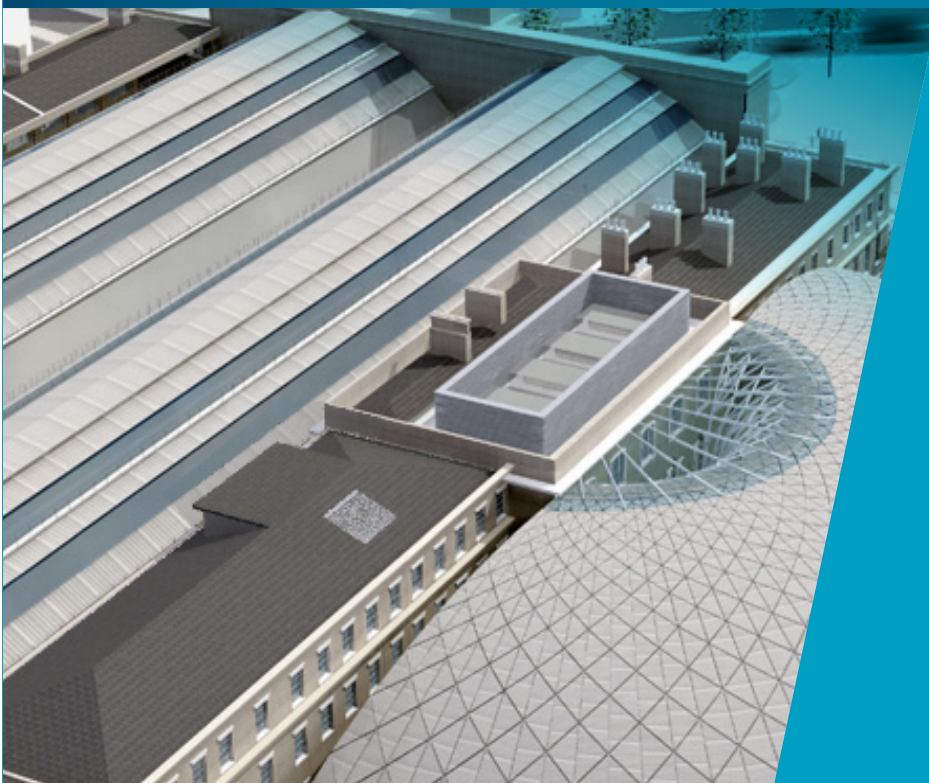
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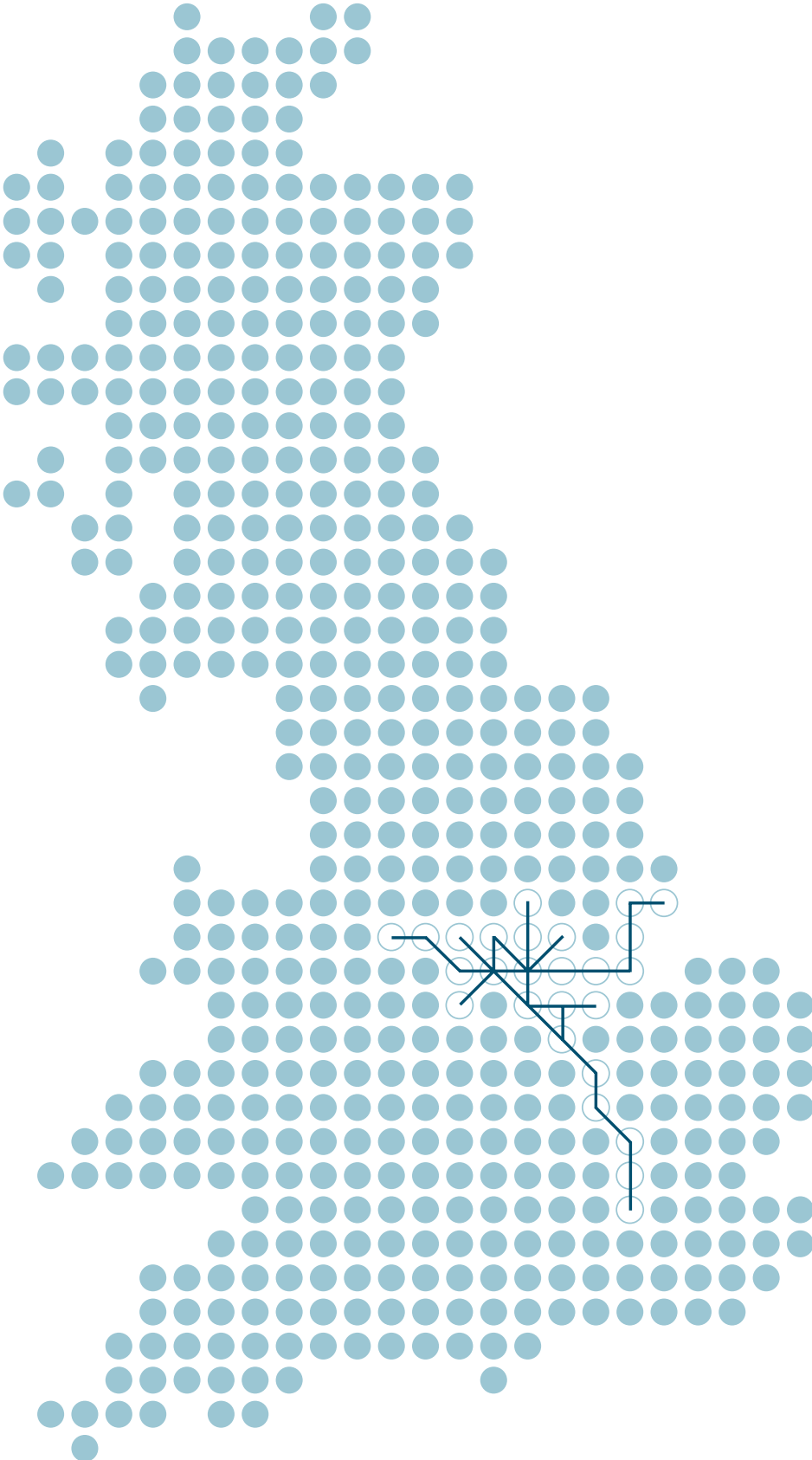
*Our railways play a vital role
in building Britain's future*

Planning tomorrow's railways

Our £500 million investment in King's Cross station will transform the experience of passengers using the station. We are delivering hundreds of projects across the network to build a bigger, better railway for passengers, freight and the whole of Britain.

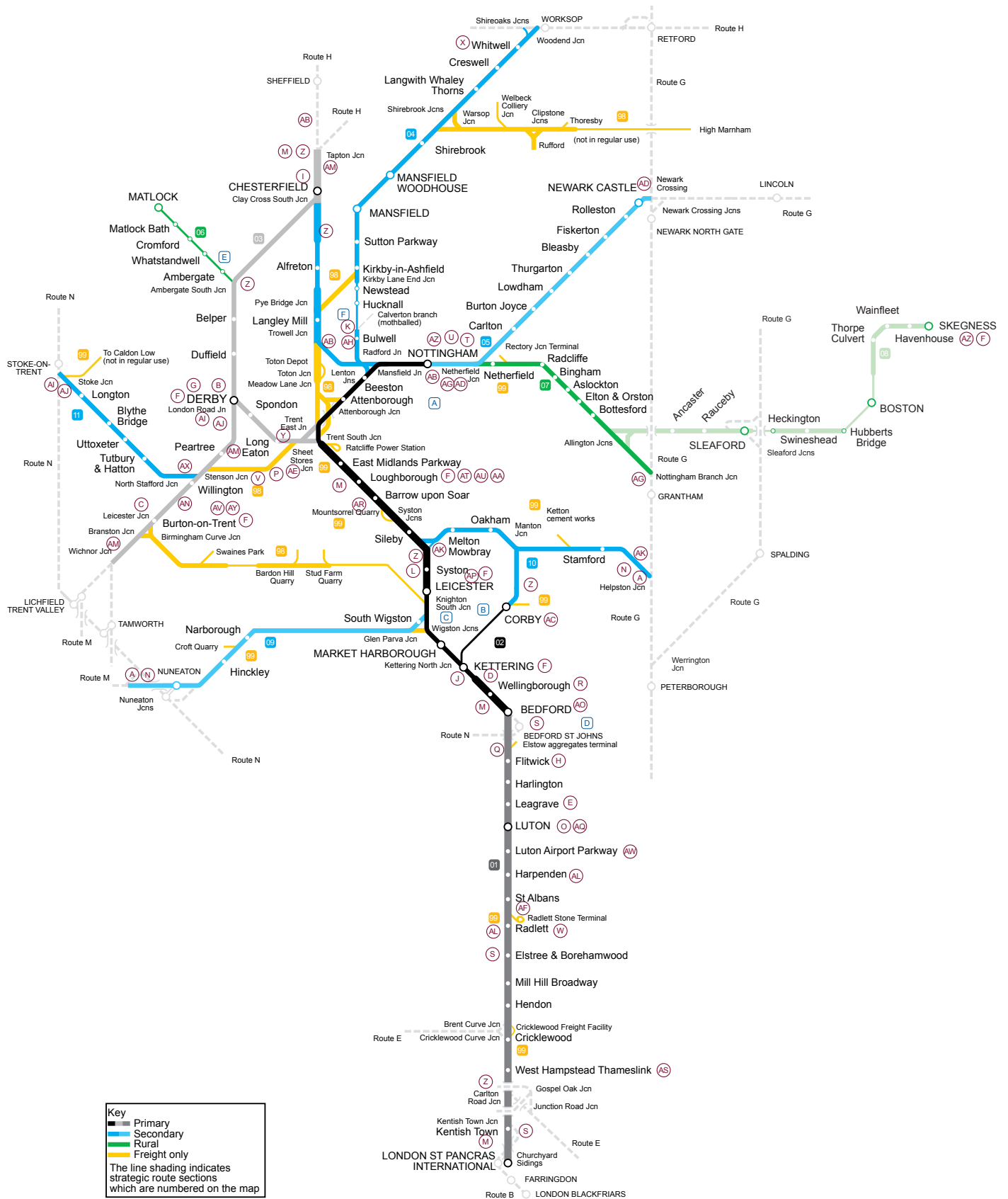


Route Plan I
London and East Midlands

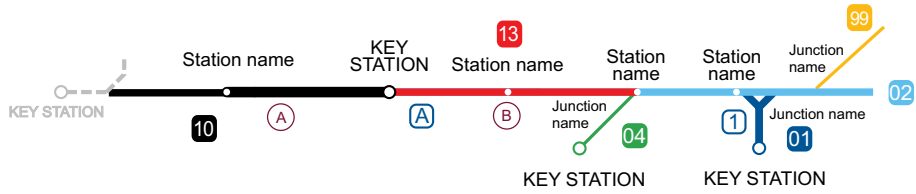


Route Plan I

London and East Midlands



Key to route diagrams



A Capacity and operational constraints
Location: capacity or operational constraint

1 Issues on the route
Location: issue on the route

A Key planned projects
Location: planned project on the route

01 Strategic route sections
Listed in the appendix of the route plan

Other symbols

	Key station location
	Key station on this route
	Key station on another route
	Other station location
	Other station on this route
	Junction / other landmark

Track descriptions

	Primary
	London and South East commuter
	Secondary
	Rural
	Freight only

The line shading indicates strategic route sections which are numbered on the map

	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
	Non operational line

Section 1: Today's railway

Route context

This route covers the Midland Main Line (MML) from London St Pancras International to Chesterfield, along with the East Midlands local routes radiating from Derby, Nottingham and Leicester as far as the East Coast Main Line (ECML), the West Coast Main Line (WCML) and the Grantham to Skegness line. This route serves a large number of communities in North London, the Home Counties and the East Midlands. It carries significant volumes of long distance, commuter and other local passenger services, and a number of key freight flows. This is a key route for the long distance cross country services operating outside London.

The London to Leicester section, which parallels the M1 motorway, is the primary link between the East Midlands and London and is mainly used for long distance journeys, London commuting and freight services. A mixture of local, long distance and freight traffic exists north of Leicester on a network of routes. The Chesterfield – Derby – Burton-on-Trent section forms part of the North East/Yorkshire to West Midlands link and is key to both cross country passenger and freight trains.

The main freight flows are aggregates from the northern part of the route to the South East and through traffic from the North East and Yorkshire to West Midlands/South West.

Key features causing capacity constraints and affecting performance are the heavily used sections between London and Bedford (with particular problems of platform capacity at London St Pancras International and Bedford), between Trent Jns and Nottingham, and the Derby station area.

The East Midlands Route Utilisation Strategy (EM RUS), led by Network Rail on behalf of the industry, was published in February 2010. The EM RUS covers this route and a small section of Route G not included in the Yorkshire and Humber RUS.

The EM RUS is being developed in parallel with the West Midlands and Chilterns, and the Great Western RUSs to ensure that cross boundary issues are identified and developed. The Yorkshire and Humberside RUS, with which it also interfaces, was established in September 2009.

The Department for Transport (DfT) has published two Regional Planning Assessments (RPA) relevant to the route covering the East Midlands and the East of England.

Today's route

The route's four main elements are described below. The relevant Strategic Route Section is shown in brackets:

- Midland Main Line – London to Chesterfield, via Derby and Nottingham. The south end of the route, from Bedford to St. Pancras, forms part of the Thameslink network (I.01, I.02, and most of I.03 and I.04)
- East Midlands local routes (part of I.04, I.05, I.06, I.07, I.11 and I.08)
- cross country routes – Derby to Burton-on-Trent and Nuneaton to Peterborough (part of I.03, I.09 and I.10)
- freight only routes – including the following through lines (I.98 and I.99)
 - Wigston Jn – Burton-on-Trent
 - Kettering – Manton Jn
 - Pye Bridge Jn – Kirkby Summit Jn
 - Sheet Stores Jn – Stenson Jn
 - Trent Jn to Trowell Jn.

In describing and developing these routes it is acknowledged that none exist in isolation and that constraints and opportunities here have implications for the rest of the national rail network.

Current passenger and freight demand

The London to Leicester section serves commuters, long distance passengers and freight, and is experiencing a considerable increase in commuter journeys.

From both Leicester and Burton-on-Trent to Derby the route serves long distance as well as local passenger markets while north of Derby the main passenger traffic is medium to long distance. The Chesterfield – Derby – Burton-on-Trent section forms part of the North East – Yorkshire – West Midlands link and is crucial for both cross country passenger and freight services.

The route also provides access to Nottingham for both local and long distance services.

The main passenger markets are:

- long distance journeys between London and the East Midlands and South Yorkshire
- commuter journeys particularly from East Northamptonshire, from the Home Counties and North London into the Capital
- medium to long distance cross country journeys to/from the East Midlands and through journeys connecting the North West, North East, Yorkshire, East Anglia, the West Midlands and South West
- commuter and other local journeys in the East Midlands.

Freight demand generally falls into the following categories:

- aggregates traffic from various quarries on the route and from the Buxton area on Route H to East Anglia and the South East
- coal traffic from the loading points on the route at Welbeck and Thoresby and/or to the power station on the route at Ratcliffe (north of Loughborough)
- scrap metal to Beeston
- traffic to and from the terminal at Burton-on-Trent
- Corby automotive flows
- intermodal traffic from Southampton to Yorkshire and the North East
- intermodal flows from West Midlands to Yorkshire via Chesterfield
- other through workings from northern England to the West Midlands and South West, mostly operating via Chesterfield, either through Derby or via the Erewash Valley through Langley Mill. However, some flows from the Humber ports run via Newark and Nottingham

- infrastructure services for the London Underground network operating out of the yards at Wellingborough.

Current services

East Midlands Trains, CrossCountry, First Capital Connect and Northern Rail operate passenger services on this route along with DB Schenker, Freightliner Limited, Freightliner Heavy Haul and First GB Railfreight providing freight services.

The commuter services at the southern end of the route form part of the Thameslink service which is operated by First Capital Connect with an off-peak pattern of four semi-fast services between Bedford and London with four slow services between Luton/St Albans and London. All these trains operate through the low level platforms at London St Pancras International to Farringdon and Blackfriars to serve locations south of London as far a field as Brighton.

There are additional trains in the peak periods and significant crowding problems exist on some of these services.

GB Railfreight infrastructure services on behalf of Metronet operate from Wellingborough to locations off the route at Barking, Gunnersbury and Amersham.

Many of the remaining services are operated by East Midlands Trains. There are currently five services per hour from London St Pancras International, comprising two services per hour operating to/from Sheffield via Derby (one fast and one semi-fast), two services per hour to Nottingham (one fast and one stopper) and a semi-fast service to Kettering/Corby. Some of the semi-fast services are extended to/from other locations such as Melton Mowbray and Lincoln while some of the fast Sheffield trains are extended to/from Leeds.

The extension of the Derby semi-fast service to Sheffield from December 2009 has provided a half hourly service connecting London, the East Midlands and South Yorkshire. In addition to these regional connectivity benefits, the service supports increased passenger km and peak arrivals into London, Sheffield and Leicester (as part of HLOS metrics).

A long distance interurban service operates hourly between Liverpool and Norwich, via Sheffield, Chesterfield, Nottingham and Grantham.

Figure 1 London St Pancras International International / Thameslink – current train service level (trains per hour)

Originating Station	tph to London St Pancras International International /Thameslink
St Albans	15 peak / 8 off peak
Luton	14 peak / 7 off peak
Bedford	9 peak / 6 off peak
Kettering	2
Leicester	4
Derby	2
Nottingham	2
Sheffield	2

East Midlands Trains also operates most of the local services on the route, many extending to a number of off route destinations, as listed below.

- Leicester – Nottingham – Lincoln
- Nottingham – Grantham – Skegness
- Nottingham – Worksop via Mansfield (the Robin Hood Line)
- Derby – Crewe
- Matlock – Derby – Nottingham.

These run at broadly hourly frequencies, but when combined with interurban services provide a two train per hour service on some key route sections.

The majority of the other passenger trains are operated by CrossCountry which provides an integrated network that links virtually all Great Britain's nations and regions.

CrossCountry is one of the main providers of long distance high speed services outside of London, and is geographically the most extensive operator of passenger services in the UK, covering around 1500 route miles and calling at over 100 stations. As CrossCountry's services traverse many of Network Rail's strategic routes, planning therefore has to be considered across route boundaries in order to deliver maximum industry benefits.

On this route the pattern of service is two trains per hour between Newcastle and Birmingham with one of these running to/from Reading, and the other extending to Edinburgh and the South West. These operate via Chesterfield, Derby and Burton-on-Trent and form part of the Birmingham to Leeds corridor which is one of the busiest parts of the CrossCountry network. There are half hourly services between Nottingham and Birmingham, with one per hour extending to Cardiff, and hourly Birmingham to Stansted Airport services.

In addition, CrossCountry operates local services between Birmingham and Leicester.

Northern Rail operates an hourly interurban service between Leeds and Nottingham serving Langley Mill and Alfreton.

Freight services are as described in the current passenger and freight demand section.

Figure 1 shows the current level of service to London St Pancras International (MML platforms) and its low level (Thameslink) platforms from principal stations.

Figure 2 shows the total annual tonnage levels on the route.

Traffic volumes are summarised in Figure 3.

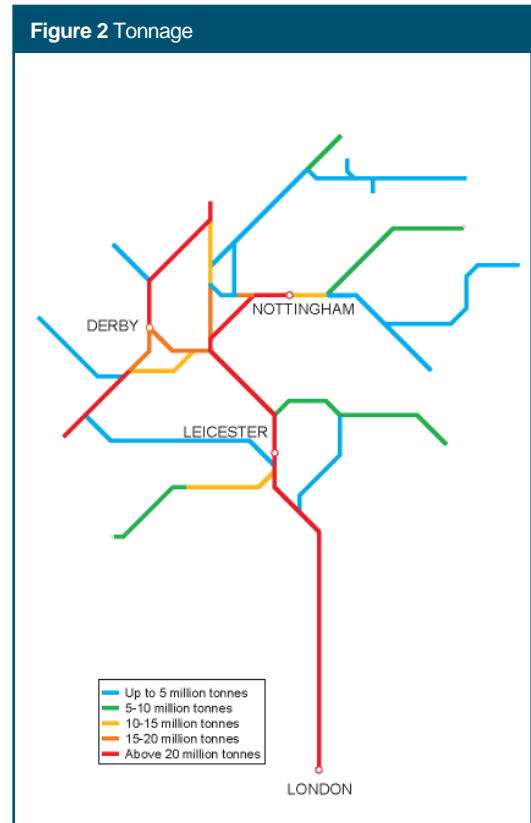


Figure 3 Current use

	Passenger	Freight	Total
Train km per year (millions)	25	4	29
Train tonne km per year (millions)	6,227	4,133	10,360

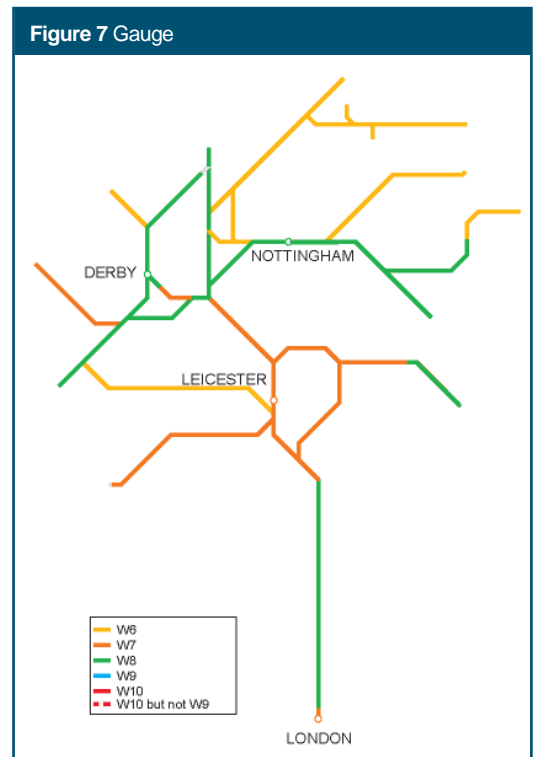
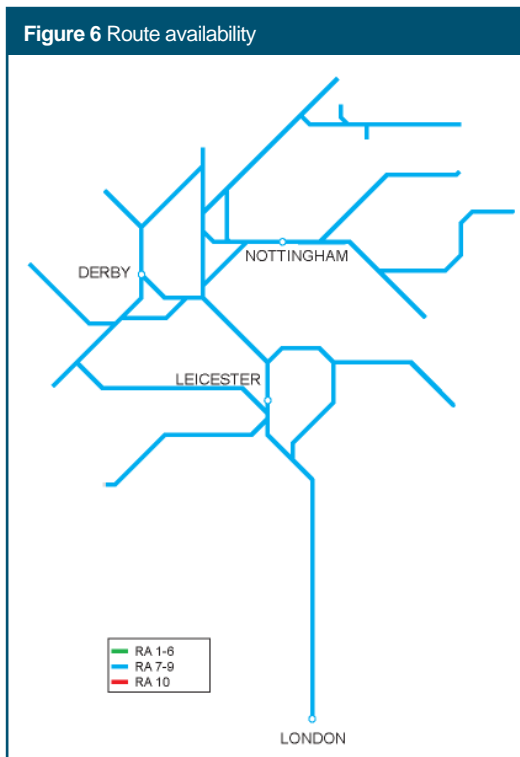
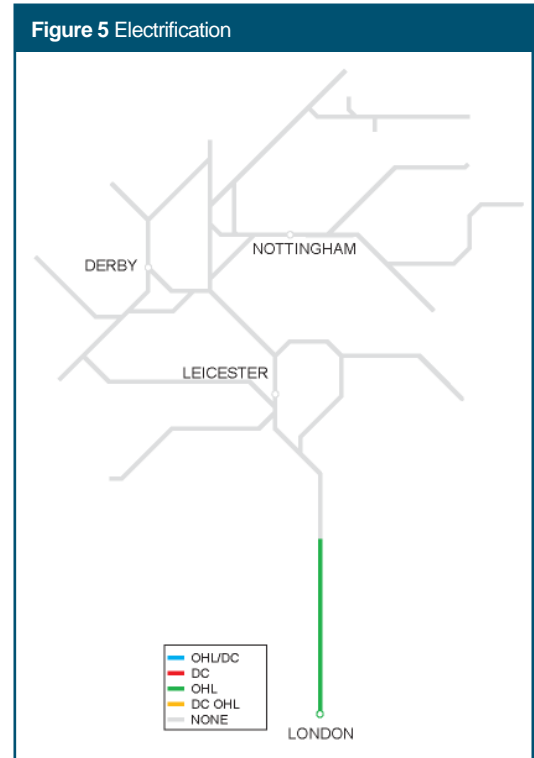
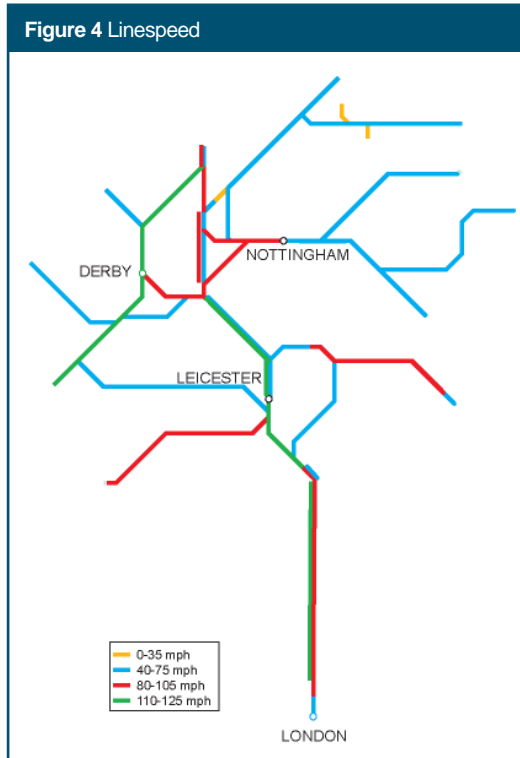
Current infrastructure capability

The following maps provide an indication of the predominant capability on each section of the route.

As part of the Infrastructure Capability Programme a number of Network Changes to Route Availability and Gauge, which may affect some of the detail of these maps, have been issued for consultation. Details of the Network Changes being consulted can be found on the [Network Rail](#) website and

details of Network Changes established can be found on the [Network Rail](#) website.

Current capability is shown in the Network Rail Sectional Appendix.



Current capacity

The busiest sections of the route, which run at or near capacity at peak times, are between London and Leicester and between Trent Jn and Nottingham. The Leicester area itself and the corridor running east to west through Leicester is also very busy. The most heavily loaded trains on the route are those on London peak commuter services south of Bedford.

London St Pancras International has just four platforms for all East Midlands Trains services in the main train shed. The number of platforms constrains capacity significantly. The remainder of this part of the station is used by Eurostar and domestic services using High Speed One (the Channel Tunnel Rail Link). There are also two low level platforms for First Capital Connect services operating on the Thameslink corridor.

Other major capacity constraints include:

- current signalling control arrangements on the approach to junctions at Radlett, Harpenden and Leagrave, when trains need to cross between the fast and slow lines. Where these moves are not planned up to two minutes delay can be incurred
- Bedford station area – all terminating/starting First Capital Connect services and southbound East Midlands Trains services calling at Bedford need to use just three platforms and, in conjunction with freight services, they all use the slow lines between the station and Bedford South Jn. This constrains the number of southbound East Midlands Trains services that can call and causes congestion during perturbed operations
- the infrastructure between Bedford and Kettering, where there is a mixture of three and four track sections which limit the availability of paths at busy times and affect performance when trains are running out of course
- Kettering station area, in particular, and extending along the single line to Corby, is constrained by the mix and timing of services
- Nottingham station, which is heavily congested on the western approaches to the station. The existing layout and current signalling control can lead to the routeing of trains becoming constrained and therefore lead to delays. There is insufficient capacity available at Nottingham for the number of terminating services which further results in congestion
- Derby station is heavily congested and the speed of the lines running into and out of the station further exacerbate delays when trains are running out of course.

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

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

Route Section	Number of trains
Radlett – St Albans	19
Harrowden Jn – Kettering	7
Loughborough – Ratcliffe Jn	6
Chesterfield South Jn – Tapton Jn	8
North Staffordshire Junction – Stenson Jn	8
Nottingham – Beeston	11

Figure 9 2009/10 PPM

TOC	Forecast MAA	As at period
CrossCountry	90.4%	11
First Capital Connect	89.4%	11
East Midlands Trains	92.5%	11
Northern	91.3%	11

Current performance

Figure 9 shows the forecast 2009/10 PPM for the main TOCs running along the Route.

Performance issues are particularly pronounced at locations where the route is heavily congested. These are indicated in the previous section.

The Nottingham - Worksop Line suffers from particularly poor performance mainly as a result of the single line sections and linespeeds causing the train plan to be quite tight.

Section 2: Tomorrow's railway: requirements

HLOS output requirements

Figure 10 Total demand to be accommodated by Strategic Route (millions)

Route	Annual passenger km (millions) forecast in 2008/09	Additional passenger km (millions) to be accommodated by 2013/14
Route 19	2,655	498
Route 11	741	113

Figure 11 Peak hour arrivals to be accommodated by Strategic Route

London Terminals and Regional Hubs	Peak three hours			High- peak hours		
	Assessed demand in 2008/09	Extra demand to be met by 2013/14	Maximum average load factor at end CP4 (%)	Assessed demand in 2008/09	Extra demand to be met by 2013/14	Maximum average load factor at end CP4 (%)
St. Pancras International including Thameslink and Kent services via High Speed One#	25,900	10,900	67	13,100	5,700	76
Nottingham & Leicester ##		13% increase on 2008/09	41		16% increase on 2008/09	46

Notes

the load factor requirement in the HLOS applies as an average across 12 London stations

included in aggregate target across a number of regional hubs

Figure 10 shows the HLOS output requirement for the total demand to be accommodated on the former strategic routes (Route 19 and Route 11) which make up Route I: London and East Midlands.

In addition to the outputs above, the HLOS includes Key Output 1 of the Thameslink Programme which covers the section south of Bedford on this route. The detailed plans, and their effect on the HLOS metric, may be subject to change in the light of future decisions on rolling stock deployment.

Future demand in CP4

Demand will continue to grow, particularly on the southern part of the route, as growth in local employment and new housing development encourages further commuting, business and leisure journeys. Demand is expected to be highest south of Leicester in view of development around Corby, Kettering and Wellingborough, and in Bedfordshire and Hertfordshire, and also at Cricklewood.

Passenger demand (journeys) is forecast by industry models to grow by up to 2.5 percent per annum on the route, although actual growth experienced between March 2007 and March 2009 was slightly lower than this as a result of the recession.

However, given that historical growth has been higher, more significant growth is likely on some regional flows as the economy improves.

CrossCountry are experiencing steady growth on their Newcastle to Bristol (via West Yorkshire and Birmingham) services. Growth has been highest in the evening peak, on Fridays and throughout the weekend, with Sunday being the second busiest day of the week.

CrossCountry has aspirations to increase the frequency of services via Leeds to improve links between Sheffield and Leeds, provide a direct service between West Yorkshire and the Thames Valley and reduce crowding on services between Birmingham and Leeds.

Further growth is developing as a result of the transfer of Eurostar services to London St Pancras

International in November 2007 and Kent domestic services since December 2009. These mainly operate to/from Paris, Brussels and Lille but offer interchange at these locations to services serving many other European destinations. In addition Key Output 1 of the Thameslink programme will further increase demand which will be accommodated in the peaks by some 12-car lengthened trains on FIRST CAPITAL CONNECT services.

Growth on the Stansted Airport – Peterborough – Leicester – Birmingham corridor is expected to increase considerably due to population growth in Anglia and the continued expansion of Stansted Airport. This will increase the amount of interchange at Leicester and Peterborough.

Similar, or even greater growth, is anticipated on all other CrossCountry services as modal shift from road to rail accelerates over the coming years, provided that journey times by rail can be competitive. A key feature of CrossCountry services is the opportunity to interchange and connect to services operating on the MML, ECML and WCML.

The Freight RUS was published by Network Rail in March 2007 and established by the Office of Rail Regulation in May 2007. A key input to the strategy was a set of demand forecasts through to 2014, that were developed and agreed by the industry through the RUS Stakeholder Management Group.

There is expected to be a steady growth in freight traffic over the key freight arteries on the route.

Growth is projected across most market sectors, with deep sea intermodal traffic showing the biggest volume increases. On this route W10 clearance of the section between Peterborough and Nuneaton will provide for an additional eight paths each way per day. Further growth in intermodal traffic is expected on this axis and between Burton-on-Trent and Chesterfield.

The most significant driver of change in demand patterns is the Energy Supply Industry (ESI) coal market. This is due to the ongoing shift toward importing coal supplies, and volume shifts between competing import facilities.

As a result coal traffic will continue to see significant changes on this route as increased coal imports from Hull and Immingham to East and West Midlands power stations replace much of the traffic from the East Midlands' loading points.

On the north – south corridor along the Midland Main Line, two off peak freight paths per hour will continue to be required to meet demand.

Future demand beyond CP4

Similar demand growth is expected to continue well into CP5, for both freight and passenger businesses. Beyond that, the Government's July 2007 White Paper challenged the industry to plan for a doubling of demand in the subsequent 30 years.

CrossCountry aim to focus on the need to accommodate demand generated by the expansion of Stansted Airport, which is anticipated to continue beyond 2014.

The corridor between Peterborough and Nuneaton, is likely to see a further increase in intermodal freight traffic as a result of continuing growth from the Haven Ports to the WCML and any terminals developed in the East Midlands.

The Strategic Freight Network (SFN) is examining the use of MML as a core intermodal freight route with a potentially enhanced role in conjunction with a re-opened Oxford to Bletchley route. This would increase the demand for additional freight paths on the MML.

The SFN process has also developed a forecast of the freight train path requirements for 2030 and will soon complete a similar forecast for 2019.

Section 3: Tomorrow's railway: strategy

Figure 12 below summarises the key milestones during CP4 in delivering the proposed strategy for the route. Further explanation of the key service changes and infrastructure enhancements are set out in the following sections.

Implementation date	Service enhancement	Infrastructure enhancement	Expected output change
2010 - 2014	Birmingham to Leicester services extended to Cambridge by 2014 and ultimately extended to Stansted Airport with earlier and later services.	Platform lengthening and Selective Door Operation (SDO), where appropriate	Increased capacity
2010 - 2014	Progressive programme of train lengthening on interurban and regional services in the East Midlands	Platform lengthening and Selective Door Operation (SDO), where appropriate	Increased capacity
2011	Thameslink Programme Key Output 1	Platform lengthening and improved layout at Bedford and Route B works	Increased on-train capacity and improved performance
2012 - 13	Improved journey times for long distance services	Various investments to improve linespeeds and timetable restructuring	Reduced journey times

The table below shows how the HLOS load factor targets for locations on the route are met by the proposed strategy.

The measures will also allow the total additional passenger km to be accommodated.

Description	Additional vehicles involved	Station served	0700 – 0959 Capacity Impact	0800 – 0859 Capacity Impact
Lengthening of East Midlands Trains and CrossCountry trains	6	Leicester	600	500
Lengthening of East Midlands Trains	10	Nottingham	1,200	900

London Terminals and regional Hubs	Peak three hours				High peak hours			
	Demand end CP4	Capacity start CP4	Capacity end CP4	Load factor end CP4	Demand end CP4	Capacity start CP4	Capacity end CP4	Load factor end CP4
St. Pancras International including Thameslink and Kent services via High Speed One	36,800	31,000	62,800	66%	18,800	13,200	26,500	75%
Other London Termini*	525,100	705,800	783,000		263,500	308,100	348,100	
Nottingham & Leicester	31,000	20,800	22,500	40%	14,300	7,100	8,500	46%
Other urban areas		50,500	55,200			18,700	22,900	

Strategic direction

The East Midlands Route Utilisation Strategy (EM RUS) Draft for Consultation was published in August 2009. Consultation closed on 13th November 2009 and the Final EM RUS was published at the end of February 2010. The EM RUS provides a strategy for future development of long distance services to St Pancras International and long distance interurban and regional services on routes in the East Midlands.

In the short to medium term the strategy recommends lengthening existing train services and the deployment of additional rolling stock to address much of the peak growth and all day crowding. Where a revised service pattern may provide a better option for the use of the additional rolling stock than train lengthening, this has been considered.

In particular Key Output 1 of the Thameslink Programme is expected to deliver significant crowding relief for the commuter services south of Bedford by allowing 12-car operation from December 2011.

Regional connectivity improvements are recommended through reduced journey time and/or increasing the frequency of services, on the following corridors:

- London St Pancras International and Sheffield
- Birmingham – Stansted Airport
- Nottingham – Derby – Birmingham
- Nottingham – Leeds
- Nottingham – Lincoln

Following the completion of the Felixstowe to Nuneaton W10 gauge clearance scheme this route, including the corridor between Peterborough and Nuneaton, will become a core intermodal freight route.

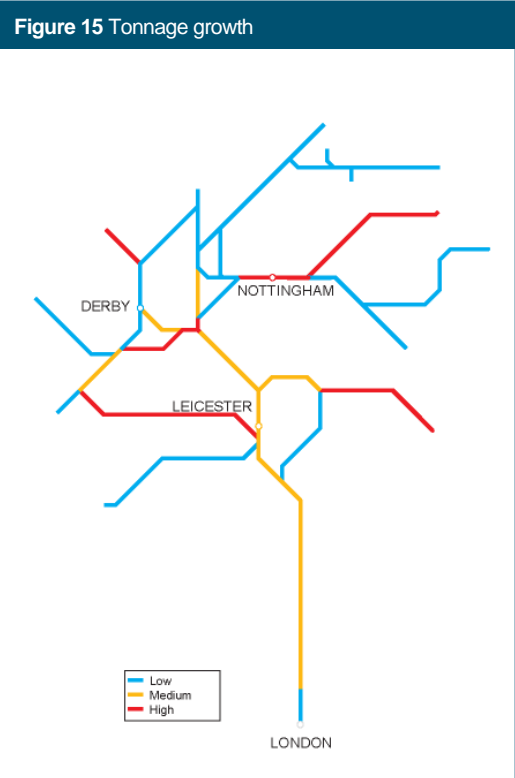
The route from London to the north will remain a heavily used freight route, with aspirations for longer and heavier trains in the future.

Other routes identified in the EM RUS for potential enhancement to provide for future freight growth include:

- Water Orton – Stenson Jn
- Helpston – Leicester – Wigston
- Nottingham – Newark

Future train service proposals

Figure 15 indicates the forecast percentage change in tonnage to 2019.



Increased capacity on the Norwich – Nottingham – Sheffield – Liverpool service is planned within the East Midlands Trains franchise, subject to negotiations with the DfT, which will assist with the HLOS commuter growth metrics for Nottingham and Sheffield.

East Midlands Trains doubled the frequency of off peak services between St Pancras International and Sheffield in December 2009. This was achieved by the extension of the St Pancras International to Derby services through to Sheffield.

CrossCountry plans to extend the Birmingham to Leicester service to Cambridge in the short term and to Stansted in the medium to long term. Initially, this would provide a half hourly Birmingham to Cambridge service with incremental increases over the course of the franchise to deliver a half hourly Birmingham to Stansted Airport service. CrossCountry also wish to introduce earlier services into and later services out of Stansted to meet demand from airline customers and airport staff.

Our plans assumed around ten additional vehicles arriving in Nottingham in the three-hour morning peak provided by a mixture of franchise changes already implemented and further proposed franchise changes. These would probably be deployed to lengthen existing services thereby making best use of track capacity and traincrews.

The DfT Rolling Stock plan provides additional vehicles to meet the HLOS commuter growth metrics.

Overall there will be sufficient capacity to accommodate the additional fleet maintenance requirements across the route once the enhancement scheme at Derby Etches Park has been completed.

The growth targets for peak hour services into London St Pancras International are expected to be met through the service changes already introduced in the East Midlands Trains franchise, longer First Capital Connect (FCC) services upon completion of Key Output 1 of the Thameslink Programme and following the introduction of services from Kent via High Speed One in December 2009.

A significant increase in intermodal trains is expected on the Peterborough – Leicester – Nuneaton and Burton-on-Trent routes. Growth in services for other freight markets is also anticipated.

Future capability

Infrastructure investment to improve the capability of the route between London St Pancras International and the East Midlands and Sheffield is under development for implementation in CP4. The aim is to reduce the journey time by a minimum of eight minutes for journeys between London St Pancras International and Sheffield, for services calling at Leicester, Derby and Chesterfield. Subject to the ability to path the accelerated services these improvements will provide some benefits to other passenger train operators on the route and may support CrossCountry's aspiration for faster journey times over its core network. Opportunities are being sought to progress the infrastructure works in conjunction with planned renewals.

This scheme will further improve journey times in addition to those already secured through the East Midlands Trains franchise by the use of Class 222 units on Sheffield services and reducing the performance allowances included in the timetable.

The East Midlands Resignalling Scheme, which is primarily renewals driven, is also providing some capacity and capability improvements, either through changes driven by the need to match current outputs within the requirements of today's design standards or by add-on enhancements.

The route has several proposed new stations at various stages of development including Elstow and Cricklewood North and we are developing major enhancements at Nottingham, Leicester,

Wellingborough, St. Albans, Luton and West Hampstead.

Short platforms at a number of stations on the Midland Main Line are a constraint. We are currently examining options to address those at Loughborough to make maximum use of the train formation changes introduced by East Midlands Trains in December 2008.

The majority of outer suburban platforms south of Bedford will need to accommodate 12-cars in order to deal with growth and such works are included in the scope of Key Output 1 of the Thameslink Programme. Currently, work has been completed at Luton Airport Parkway and works are underway at Mill Hill Broadway, St Albans, Harpenden, Luton and West Hampstead Thameslink.

The Thameslink Programme has extended the Overhead Line Equipment from Farringdon to City Thameslink and installed a new crossover to the south of Farringdon to make sure that the functionality remains to recover the timetable in perturbed situations.

In anticipation of the introduction of new rolling stock as part of the Thameslink Programme additional stabling will be required at Bedford and Cricklewood. Power supply enhancements are also required at Elstree to support the longer train services that will be operating on the route.

Elsewhere, as an alternative to platform extensions, fitment of Selective Door Opening (SDO) functionality to some of the turbostar fleet which does not currently have this capability is being considered to allow four-car operation. Lengthening of these trains will require extension of platform 2 at Stansted Airport.

Modest speed improvements on some interurban and rural routes would give longer turn rounds at one or both ends of a route which would improve performance as well as increase demand through faster journeys. Where renewals are planned we will seek ways to increase linespeeds though this may require some funding from the Network Rail Discretionary Fund (NRDF).

As well as development and prioritisation of gauge enhancement through the SFN process, we are working with DfT and other stakeholders (including several in the East Midlands) on development work for W9 and W10 (and possibly W12) gauge enhancement on a number of routes to allow the operation of deep sea containers on standard deck height wagons and swapbodies.

The SFN programme development work, includes the corridor between Water Orton and Doncaster (via Castle Donnington, the Erewash Valley and Beighton). Freight Operators wish to see the capability to operate longer trains, particularly along the Felixstowe – Nuneaton route. They also require improvements to transit times.

The SFN is also examining options to provide capacity for longer, heavier trains to operate over the MML from the Hope Valley and Leicestershire quarries. The Freight Operators would like to operate 2500 tonnes trailing loads into London on the MML during the daytime. This may include the provision of loops south of Bedford and between Kettering and Leicester to accommodate these trains.

The case for extending the electrification of the Midland Main Line to Corby, Derby, Nottingham and Sheffield has been examined as part of the Network RUS. The final strategy was published in September 2009 and stated that extended electrification of the MML route potentially generates a net industry cost saving rather than a net cost over the 60-year appraisal period.

Initiatives to further improve operational safety by removing or upgrading level crossings are being progressed as part of the MML linespeed improvement scheme and the East Midlands Signalling Renewals Programme.

Future capacity

As mentioned previously, the main issue on the route will be providing capacity for the ongoing demand for commuter journeys to London. As track capacity is limited south of Bedford, the plan is largely to make better use of existing train paths by running longer trains. For First Capital Connect this will require a move to 12-car operation which is a key output of the Thameslink Programme. As well as the platform extension works on this route, major works are required on the core Thameslink routes south of London (see Route B).

The severe capacity constraints of the East Midlands Trains' platforms at St Pancras International limit the options for dealing with growth in longer distance commuting journeys, particularly from East Northamptonshire. The EM RUS recommends the introduction of new rolling stock for use on these services, such as that proposed by the InterCity Express Programme (IEP). EM RUS analysis has shown that this would provide sufficient additional seating capacity to manage growth in long distance journeys over the longer term although some works at London St Pancras

International may be required to accommodate the longer trains.

As mentioned previously, the Bedford station area is a capacity constraint. The Thameslink Programme is developing a scheme to enable the future timetable to operate which should improve performance as well.

The provision of additional freight capacity between London and the north will be examined as part of the SFN and includes possible use of the MML as a core freight route with a potentially enhanced role in conjunction with a re-opened Oxford to Bletchley route. If the MML is identified as a Freight Priority Route then this would drive the requirement for additional infrastructure works on this route.

At Nottingham a major redevelopment of the station is being examined. The aim of this scheme is to provide additional capacity on the station itself and improved customer facilities. The scheme will also help generate local employment and commuter journey opportunities in the East Midlands area by improving interchange links.

Nottingham station layout is heavily congested and Phase 3 of the East Midlands Resignalling Scheme will aim to provide performance, capacity and potential journey time benefits. The scope includes some bi-directional signalling between Mansfield Junction and Nottingham station.

Development work has been carried out on the cross country corridor between Peterborough and Nuneaton to provide increased capacity for both freight and passenger services. The EM RUS recommends further capacity enhancements between Helpston, Syston and Wigston are progressed as part of an integrated scheme for the Leicester area in conjunction with Leicester resignalling in late CP4/early CP5.

The implementation of Integrated Train Planning System (ITPS) should help improve timetable accuracy by earlier detection of conflicts. Further development should provide more detailed analysis of journey times and further improve timetable accuracy.

Future performance

Figure 16 sets out the planned PPM for each train operator. The PPM figure quoted represents the expected contribution of the TOC to the sector-level regulatory outputs in the CP4 Delivery Plan.

The capacity constraint of four platforms at London St Pancras International is one which East Midlands

Trains and ourselves will need to manage. Late running or slow turnaround of trains causes delays.

There is a significant level of change in service patterns driven by the Thameslink works throughout CP4. This, together with relatively minor changes to fleet resources, will result in some challenges to maintain performance. Following consultation with passenger and freight operators the Thameslink Programme are introducing a number of schemes to mitigate against the expected reduction in PPM.

In addition, the timing of freight and passenger growth and associated schemes to provide additional capacity and diversionary routes, will be key to managing future performance on the route.

There are a number of other proposed schemes that we are currently developing to improve performance and provide incremental capacity benefits as described below.

Changes to the signalling system at Radlett and Harpenden will enable trains to continue at a higher speed than now when crossing over at these junctions between the fast and slow lines thereby improving operational flexibility and minimising delays to following services.

A remodelled layout at Derby which better segregates services is recommended for further development in the EM RUS. This would significantly reduce the reactionary delays in the Derby area resulting from conflicting moves across the layout.

Central Rivers depot is critical to the operation of the CrossCountry service with more than a quarter of the fleet maintained there. CrossCountry and Network Rail are working on initiatives to improve the flexibility of the infrastructure in the area.

Although the Nottingham – Worksop line is a very poorly performing route, it is difficult to justify significant investment for linespeed improvements, level crossing modernisation and signalling headways which would make the timetable much more robust. However, in addition to the linespeed improvements recently completed between Mansfield Woodhouse and Sutton Forest and the removal of the double block working, we are

examining further small scale interventions in conjunction with Nottingham County Council, to provide further performance improvements in the short term.

Smaller scale initiatives across the route, such as driving down cable theft will also provide performance benefits.

Network Rail is working with operators to tackle issues of significant lateness to trains.

Route clearance works undertaken by TOCs (rather than by traction type) provide increased flexibility during perturbations and CrossCountry have recently cleared Voyagers to operate via Nottingham which should deliver performance benefits in the future.

East Midlands Trains

The performance of the TOC is 92.5 percent PPM as at period 11 2009/10. Performance has improved recently due to joint actions by the TOC and Network Rail and a timetable restructuring of some regional services.

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

- continued progress on the implementation of East Midlands Trains franchise performance plan
- potential linespeed improvements on the MML
- impact of the December 2008 timetable change
- linespeed improvements on the Robin Hood Line
- better fencing in the rural areas to reduce animal incursions
- impact of poorer First Capital Connect (FCC) punctuality during Thameslink enhancement work
- performance improvements will be delivered through Nottingham Station layout remodelling and various junction remodelling schemes as part of the East Midlands Signalling Renewals Programme
- Bedford Station layout changes will be designed to improve performance in conjunction with the Thameslink programme of works
- better information on small delays (especially in the rural areas) through use of On Train Monitoring and Recording (OTMR) and Global Positioning System (GPS).

Figure 16 Forecast PPM MAA – CP4 plan

	2010/11	2011/12	2012/13	2013/14
East Midlands Trains	88.7%	89.4%	89.9%	90.2%
First Capital Connect	92.1%	92.4%	92.7%	92.9%
CrossCountry	90.2%	90.6%	90.9%	91.3%
Northern Rail	90.7%	91.2%	91.7%	91.8%

The route plan is being developed around these key points and currently suggests that performance for the TOC will be around 90.2 percent by April 2014. We have started discussions with the TOC around this plan and will continue these during the development of a long term performance plan with the operator during the Summer.

First Capital Connect

First Capital Connect operates the suburban train routes into London Kings Cross and the cross - London Thameslink route. The performance of the TOC is 89.4 percent as at period 11 2009/10. There is a significant level of change in service patterns driven by the Thameslink works throughout CP4 and some services south of Blackfriars are operated on behalf of Southeastern. This together with relatively major changes to fleet resources will result in some challenges to maintain performance.

The key performance issues and opportunities identified for this TOC include:

- minimising the operational impact of the Thameslink programme; to date modelling work has only been focussed on Key Output 0 and there is a degree of uncertainty around the full impact of the work programme
- uncertainty over the impact of the East London Line (ELL) extension and planned rewrite of the South London and Brighton Mainline timetables
- impact of passenger growth
- specific concerns over seasonal variation and the likely benefits of Remote Condition Monitoring
- maintenance of journey times
- the impact of fleet changes and stabling arrangements.

The TOC is currently concerned by the lack of a detailed plan to deliver performance improvements on this route especially due to the large amount of uncertainty. We will work with the TOC to produce a long term performance plan during the Summer and it is anticipated that this will result in a forecast level of performance of 92.9 percent by the end of 2013/14 (including the impact of the Thameslink works).

CrossCountry

The performance of the TOC is currently 90.4 percent as at period 11 2009/10.

As a long distance operator CrossCountry faces significant performance challenges. With a tighter timetable structure in place following the introduction of the December 2008 timetable there may be congestion issues at key junctions and corridors across the network. Right time arrival at

junctions will therefore be critical to meeting the targets for PPM and significant lateness targets set in the HLOS. Franchise plans developed during bidding based on TOC self improvements have a PPM figure of 88.7 percent at the end of the franchise. This was based on a given bid assumption of no improvement in Network Rail in CP4. It is therefore expected by CrossCountry that the further improvement sought in franchise and national PPM will come from Network Rail initiatives. The PPM figures shown for CP4 represent Network Rail's forecasts but while there have been high level discussions, CrossCountry has not yet been able to agree formally a PPM figure for the end of CP4. PPM is anticipated to reach 91.3 percent by April 2014.

Northern Rail

Northern Rail commenced operation of the Leeds to Nottingham service in December 2008. Northern Rail has raised concerns about the turnround times at Nottingham station. The future performance section for Northern Rail can be found in the plans for Routes H.

Significant lateness

Network Rail nationally is developing plans for a 25 percent reduction in trains over 30 minutes late over Control Period 4. These plans include, continued work on flooding prevention and joint initiatives being developed between Network Rail and British Transport Police (BTP) to prevent theft and vandalism. These commitments are consistent with CrossCountry's desire to minimise the number of significantly late trains, a source of customer complaint, loss of business to rail and payments under the delay repay regime. Although plans are currently in their early stages, any actions under this heading are likely to benefit the performance of the CrossCountry services given the geographic extent and long distance nature of the business.

Extreme weather

Extreme weather is no longer confined to particular periods of the year. Flooding and high winds can strike at any time with an adverse effect on services. CrossCountry's geographic coverage means that a regional weather event can have a national impact. Other interurban services such as Liverpool to Norwich, operated by East Midlands Trains, can be similarly affected. Of particular concern to CrossCountry are blanket emergency speed restrictions which can severely impact services which operate the length and breadth of the country as well as across Network Rail organisational boundaries.

Network availability

Despite the busy nature of the route, engineering access is generally sufficient particularly as many sections of the route have three or more tracks. Generally, where only two tracks are available, diversionary opportunities exist.

The Birmingham – Wichnor Jn – Derby line causes particular problems as the diversionary routes via Leicester and Lichfield add considerable time to journeys and significantly add to resource requirements.

The route has the capability to deliver aspirations of increased hours of train operation such as the provision of additional late Saturday night services using single line working and the key diversionary routes. This will entail a greater level of renewal and maintenance efficiency coupled with a number of infrastructure enhancements. Key elements in achieving this capability involve increased sections of bi-directional signalling and the upgrading of diversionary routes for additional and larger gauged traffic.

Aspirations to operate passenger services over all lines south of Bedford on a Sunday from 12:00 mainly affects renewals work and needs to be worked through in more detail. Further changes to Rules of the Route would be needed to facilitate this aspiration.

The Seven Day Railway case will be based on the revenue growth generated by the additional Saturday evening services out of London and suppressed demand released through the provision of a Saturday style timetable operated earlier on a Sunday.

CrossCountry, like other operators has aspirations for a 'seven day timetable'. Due to the nature of CrossCountry journeys, Sunday carries the second highest volume of passengers (with Friday peak having the greatest volume). Some services operate on a 30 minute frequency, therefore reducing the number of services during engineering works is no longer possible due to the diverse origin and destination points within service groups. As a result, some weekend line closures, extended journey times and bus replacement services can impact on the revenue of the business. Possession overruns resulting in unplanned service changes are particularly damaging.

Some of the schemes mentioned in the sections above will also provide more flexibility for engineering access by reducing the time penalties

for using the slow lines on three or four track sections.

The introduction of intermodal traffic to the Peterborough to Nuneaton corridor in the future will require trains to be diverted via London during engineering works, this being the route all such trains use currently.

Long term opportunities and challenges

The work undertaken in the EM RUS has identified the key challenges that the rail industry will face in the medium to long term, and through analysis and optioneering, the most appropriate methods to resolve these issues have been determined.

Commuter growth will continue to be a key issue for the route, especially into London. EM RUS analysis has demonstrated the difficulties associated with the provision of further peak paths to/from London due to the constraint of four platforms at St Pancras International and the number of paths available through the Thameslink core from Kentish Town to Blackfriars once Key Output 2 of the Thameslink Programme connects it to the ECML route.

On the MML and in the East Midlands, the EM RUS recommends that medium and longer term growth in commuter and leisure travel is addressed predominantly through continued train lengthening with the provision of some additional services where appropriate.

The EM RUS makes a number of recommendations to improve regional connectivity. More frequent services and improved journey times, for both passenger and freight services, remain an aspiration for the longer term.

The level of infrastructure works proposed under the East Midlands Signalling Renewals scheme offers both the opportunity to deliver further improvements through associated enhancements against the challenge of continuing to operate reliable services during the works. In particular, the EM RUS recommends that renewals planned in the medium to long term at both Leicester and Derby are enhanced to incorporate journey time, capacity, performance improvements and provide Seven Day Railway opportunities.

If the W9 and W10 gauge enhancement proposals come to fruition in the East Midlands, including the potential enhanced role of the MML for freight in conjunction with a re-opened Oxford to Bletchley, then there will be a significant increase in the number of intermodal freight paths required. EM

RUS analysis has confirmed that on the north south corridor along the Midland Main Line two off peak freight paths will be required for forecast growth but this would increase if other traffic is rerouted, thereby driving the need for infrastructure enhancement.

Accommodating future growth over the longer term on the rest of the East Midlands has also been examined in the EM RUS. Recommendations for the longer term, include the requirement for remodelling at Stenson Jn and further works to the section between Stenson Jn and Wichnor Jn to accommodate freight and passenger growth.

The DfT published its formal consultation document Delivering a Sustainable Transport System (DaSTS) in November 2008. It sets out long term transport priorities for the period to 2019 and beyond and reflects conclusions from the Eddington Study and the Stern review. The document sets out five clear transport goals for the network. These are to:

- support national economic competitiveness and growth by delivering reliable and efficient transport networks to improve access and connectivity to labour markets in key business centres and support housing growth
- reduce transport emissions of carbon dioxide (CO₂) and other greenhouse gasses, with the desired outcome of tackling climate change
- contribute to better safety and health and longer life expectancy by reducing the risk of death, injury or illness arising from transport, and by promoting travel modes that are beneficial to health
- promote greater equality of opportunity for all citizens, with the desired outcome of achieving a fairer society
- improve quality of life for transport users and non transport users and to promote a healthy natural environment.

Rail has the potential to help meet these objectives and Network Rail will continue to engage with the Regions and Local Authorities at all levels of the process. In stage one, each Region was invited to propose a number of strategically relevant studies to take forward which they believe will meet the DaSTS objectives. The DfT then selected the studies that would progress into stage two, to generate options for appropriate interventions. All studies are currently in stage two and need to produce a long list of options by the end of March 2010 for further review. Stage three will involve the sifting and packaging of options, while stage four will see the completion of an overall programme, with all studies complete by 2012.

As part of the DaSTS programme there are both national and regional studies. The national studies are led by the DfT and the local studies are led by the regions. There are a number of studies with the involvement of both the DfT and the regions.

There is a national Freight Modal Choice study looking to confirm the economic, social and environmental benefits of current freight movements by non-road modes on national network corridors and to identify where changes in future modal choice, from road to rail or water, could address issues on the network and deliver against the five DaSTS goals. This includes consideration of the capacity and capability of the national infrastructure to accommodate these changes in modal choice.

On this route, the studies that may affect long term opportunities and challenges are:

- three cities connectivity and growth study
- eastern sub-region growth point connectivity study
- Northamptonshire towns growth and connectivity
- regional freight study
- transmodal movements between London and the West Midlands.

Infrastructure investment in CP4

Figure 17 Infrastructure Investment in CP4

Implementation date	Project	Project description	Output change	Funding	GRIP stage
2009/10	(N) Peterborough – Nuneaton	Gauge clearance of the route and incremental capacity improvements between Peterborough and Nuneaton in connection with the port developments at Felixstowe and Bathside Bay	To accommodate the carriage of deep sea container traffic on standard deck height wagons as an alternative route to operating via London and the West Coast Main Line and to provide increased capacity to meet growth in freight train demand associated with the aforementioned ports	Transport Innovation Fund	6
2009/10	(AC) Corby	Signalling works	Provides ability to remove the tidal flow timetable between Corby – Kettering – London St Pancras	Network Rail Discretionary Fund	7
2009/10	(Y) Trent East Jn doubling	Doubling single lead junction on back of signalling renewals	Increased capacity and improved performance	Network Rail Discretionary Fund	7
2009/10	(D) Kettering to Harrowden	Provide 3 rd line with bi-directional	Increased capacity, better engineering access	Network Rail Discretionary Fund	8
2009/10	(AE) Sheet Stores Jn	Renewal of S & C	Renewal	Periodic Review 2008	8
2009/10	(AI) Derby to Stoke Renewals	Signalling Renewals	Renewal	Periodic Review 2008	5
2009/10	(K) Robin Hood line performance	Minor enhancements to improve performance	Improved performance	Network Rail Discretionary Fund	6
2009/10	(AP) Leicester Carriage Siding	To enhance Leicester carriage sidings by installing a new walking route and lighting between roads 1 and 2 in these network sidings	Provision of a new walking route and lighting	Third Party Funding	7
2010	(AG) Luton Station to High Town Bridge enhancements	Widen the footbridge	Improvements to the access from High Town to the Town Centre	In development for Third Party funding	3
2010	(B) Derby Etches Park	Depot improvements phase 2	Improved depot facilities to service Meridian trains	Third Party	6
2010	(I) Chesterfield	Provide new platform	Increased capacity, improved performance and Seven Day Railway benefits	Seven Day Railway Fund	6
2010	(AF) Radlett Jn	Renewal of S & C	Renewal	Periodic Review 2008	4

Figure 17 Infrastructure Investment in CP4

Implementation date	Project	Project description	Output change	Funding	GRIP stage
2010/11	(L) Leicester, North Jn to Trent South Jn	Increase in linespeed on the slow lines	Improved performance and capacity	Network Rail Discretionary Fund	7
2010/11	(O) Luton Station	Redevelopment of the station and new car park	Improved station facilities and footfall capacity	Third Party / Network Rail Discretionary Fund	5
2009-2014	(F) National Station Improvement Programme	Enhancements to Derby, Leicester, Skegness, Loughborough, Kettering and Burton-on-Trent	Improved station facilities	National Station Improvement Programme	3
2010/11	(P) Castle Donnington	Connection to new freight terminal	New freight operators	Third Party	4
2010/11	(AR) Mountsorrel Level Crossing	Removal of level crossing and replace with a footbridge	Removal of future safety risk. To prevent TSR	Network Rail S&E funding	4
2010/11	(AS) West Hampstead	New station building	Improved station facilities	Network rail Discretionary Fund	4
2010/11	(AT) Loughborough Station Car Park	To increase car parking to 327 spaces	To meet passenger growth, encourage new business	RAB funded	3
2010/11	(AL) Loughborough Access For All	To provide step free access to platforms 2 and 3, improve safety and allow for future linespeed improvements by removing the barrow crossing	DDA compliant Footbridge	DfT funded	3
2010/11	(AV) Burton-upon-Trent	Bridge strengthening and forecourt works	Improve station facilities	In development for Third Party funding	3
2010/11	(AL) Enhanced signalling at Harpenden and Radlett	Enhanced signalling arrangements for trains crossing between the fast and slow lines	Improved performance	Performance Fund	3
2010/11	(R) Wellingborough Station	A new station footbridge	Improved station facilities	Periodic Review 2008/Access for All	3
2010/11	(G) Derby Station Master Plan Phase 1	Enhancements to the transport interchange facilities	Improved transport interchange facilities	Third Party	4
2010/11	(AH) Robin Hood Line Recontrol	Signalling renewals	Renewal	Periodic Review 2008	4

Figure 17 Infrastructure Investment in CP4

Implementation date	Project	Project description	Output change	Funding	GRIP stage
2009-2012	(M) MML St Pancras International – Sheffield LSI	Enhanced infrastructure capability	Improved journey times	Periodic Review 2008	4
2010-2015	(H) Flitwick Station	Provision of a station interchange, additional car parking and improvements to the station building	Improved interchange and station access facilities	Central Bedfordshire Council	1
2011/12	(S) Thameslink Programme	Major works including revised track layout (including Bedford Station area), new Midland Road crossovers at St Pancras platforms A/B, amendments to the OHLE switching arrangements, platform extensions between Kentish Town and Bedford, stabling facilities at Bedford and Cricklewood, and new customer information service facilities	Improved capacity and new journey opportunities	Periodic Review 2008	6
2011/12	(T) Nottingham Hub.	Redevelopment, potential additional platform, improved waiting/retail facilities	Enhanced station and interchange facilities	Third Party/Network Rail	4
2011/12	(C) Leicester Jn	Renewal of S & C	Renewal	Periodic Review 2008	2
2011	(AW) Luton Station Parkway	Create new forecourt on platform 1 for new ticket office and entrance, demolish current warehouse building and sell off unused land	Station Upgrade	In development for Third party funding	1
2012	(X) Whitwell Tunnel	Removal of tunnel	Impact on maintenance, renewal savings	Third Party	1
2012/13	(U) East Midlands resignalling: Nottingham station area enhancement element	Enhancements on the back of Nottingham station resignalling scheme	Capacity, performance and journey time improvements	Periodic Review 2008	4
2012/13	(V) East Midlands Airport Rail Freight connection	Proposed new rail freight link onto Sheet Stores Jn – Stenson Jn route	Improved rail freight link	Third Party	3
2012/13	(AG) Nottingham to Grantham Recontrol	Signalling Renewals	Renewal	Periodic Review 2008	3

Figure 17 Infrastructure Investment in CP4

Implementation date	Project	Project description	Output change	Funding	GRIP stage
2012/13	AA East Midlands platform extensions	Measures to accommodate longer LDHS and interurban services	Increased capacity	Periodic Review 2008	4
2012/13	J Bedford to Kettering Slow Line capacity improvements	Linespeed increase and an additional loop	Increased capacity to support Seven Day Railway Principles	Development funded by Seven Day Railway	2
2012/13	E Leagrave	Renewal of S & C	Renewal	Periodic Review 2008	2
2012-2014	AJ Derby to Stoke Level Crossings	Level Crossings Renewals	Renewal	Periodic Review 2008	1
2012-2015	AK Syston to Peterborough Level Crossings	Level Crossings Renewals	Renewal	Periodic Review 2008	1
2013-2016	A Peterborough to Nuneaton capacity increase	Capacity enhancements including work in conjunction with the Leicester re-signalling scheme.	Freight and passenger capacity improvement	Subject to agreement	3
2012/13	AD Nottingham to Lincoln	Development work to examine linespeed improvements	Increased linespeed	Development funded by Third Party	2
2013/14	W Radlett	Connection to new freight terminal	New freight operations	Third Party	2
2013/14	Z Hope Valley to London train lengthening	Development work to examine facilities required to accommodate longer and heavier freight trains	Increased capacity for freight	Development funded by Strategic Freight Network	1
2013/14	AM Midlands routes gauge improvements (Water Orton – Doncaster)	Gauge clearance of various routes	To accommodate the carriage of deep sea container traffic on standard deck height wagons	Subject to agreement	3
Tba	Q Wixams (Elstow)	New station	To meet local housing developments	Third Party	4
Tba	AX Burnaston Cross rail freight connection	New eastbound and westbound rail connections to the NSS line	Rail freight link	In development for Third party funding	3
Tba	AY Willington C Power Station	Provide a new rail connection and siding to a new power station	New freight operations	Third Party	0
Tba	AZ Nottingham to Skegness	Linespeed improvements	Improve journey times	Third party	1

NRDF candidate schemes in CP4

Figure 18 Candidate NRDF schemes in CP4

Implementation date	Project	Project description	Output change	Funding	GRIP stage
2011/12	(AN) Leicester (Burton) Jn – Clay Mills	Enhanced turn in/turn out speeds at Leicester (Burton) Jn and Clay Mills plus upgrade of the Up goods line to passenger status	Reduced journey time and improved performance	Network Rail Discretionary Fund	1
2011/12	(AB) Nottingham to Sheffield linespeed increases.	Linespeed increases	Increased capacity and improved performance	Third Party / Network Rail Discretionary Fund	2
2011	(AD) Bedford station	Further enhancements to layout at Bedford North in conjunction with Thameslink works	Improved performance	Network Rail Discretionary Fund	2

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

Renewals activity

Figure 19 shows the estimated renewals costs and activity volumes.

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

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

Figure 19 Summary of estimated renewals costs and activity volumes

£m (2010/11 prices)	2010/11	2011/12	2012/13	2013/14
Renewals				
Track	59	48	56	54
Signalling	21	17	56	34
Civils	17	30	11	12
Operational property	9	8	7	6
Electrification	1	1	2	2
Telecoms	6	3	-	-
Total renewals	113	107	132	107
Renewals volumes				
Track				
Rail (km)	56	46	55	56
Sleepers (km)	37	40	43	43
Ballast (km)	40	40	60	60
S&C (equivalent units)	30	28	33	33
Signalling				
Conventional (SEU)	0	30	215	0
ERTMS (SEU)	0	0	0	0
Level crossings (no)	0	0	7	14

Appendix

Figure 20 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 (mins)	No of Tracks
I.01	St Pancras International – Bedford	SPC1	Primary	DfT	No	W8 (W6)	RA8	110 (50)	25kV	TCB	5	4 (6)
I.02	Bedford – Nottingham/ Corby	SPC2/3/4/5, TSN1/2, WYM, GSM1	Primary	DfT	No	W7 (W8)	RA8	105	None	TCB	4 (OTW)	2 (1, 3, 4)
I.03	Trent Jns/ Wichnor Jn – Derby – Chesterfield	DBP1, SPC6/7/8	Primary	DfT	No	W8 (W7)	RA8	125 (90)	None	TCB	4	2 (4)
I.04	Worksop/ Chesterfield – Nottingham	RAC, PBS1/2/3, PSE, TCC, MJT2	Secondary	DfT	No	W6	RA8 (RA7)	80 (60)	None	TCB (AB)	5	2 (3, 4)
I.05	Nottingham – Newark Crossing	NOB1	Secondary	DfT	Yes	W6 (W8)	RA8	60 (70, 50)	None	AB (TCB)	5	2
I.06	Matlock Branch	AJM1	Rural	DfT	No	W6 (W8)	RA8	50	None	OTW	16	1
I.07	Netherfield – Grantham	NOG1/2	Rural	DfT	No	W8 (W6)	RA8	60 (75)	None	AB (TCB)	5	2

Figure 20 Strategic route sections

Predominant aspect recorded (secondary aspects recorded in brackets). ELR is Engineers Line Reference, RA is Route Availability												
I.08	Skegness – Grantham	GRS1/2/3	Rural	DfT	Yes	W8 (W6)	RA8 (RA7)	60 (50, 20)	None	AB (OTW)	10	2 (1)
I.09	Nuneaton – Wigston Jns	WNS	Secondary	DfT	No	W7	RA8	90 (75)	None	TCB (AB)	5	2
I.10	Syston Junctions – Helpston Jn/ Corby	GSM1/2/3, PMJ, SEN	Secondary	DfT	No	W7 (W8)	RA8 (RA9)	90 (75)	None	AB (TCB)	5	2
I.11	North Stafford Jn – Stoke-on-Trent	NSS	Secondary	DfT	No	W7	RA8	70	None	AB (TCB)	14	2
I.98	Freight trunk routes	HIM, BEC, WKC, TCC, RUB2, PBS1, SSSJ1, KSL	Freight	DfT	No	Various	Various	Various	None	Various	Various	2 (1)
I.99	Other freight lines	SCQ2/3, CVL, DJW, CCB1, BSC	Freight	DfT	No	Various	Various	Various	None	Various	Various	1 (2)

Capacity and operational constraints

- A Nottingham station: complex station layout and curvature
- B Leicester station: constrained station layout and curvature
- C Wellingborough – Leicester – Syston: mixture of two and three tracks
- D Bedford: constrained station layout
- E Matlock – Ambergate: single line section and weak bridges
- F Bulwell – Kirkby in Ashfield: single line section

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