

Route Plans 2007
Route 6
North London Line
and Thameside

Network Rail

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Route 6 North London Line and Thameside

of continuing growth in commuting to the centre of London and Docklands. However parts of the current NLL and Thameside route are already operating at or close to capacity in terms of train paths. As with the CL RUS, the GA RUS will look at options and recommendations for accommodating future growth, and options proposed by the CL RUS and some developing options from the GA RUS are discussed in this route plan.

Today's route

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

- the North London Line (NLL) which comprises the Richmond to Stratford Low Level route (06.01, 06.06, 06.07 and 06.09) – the section between Stratford Low Level and North Woolwich (06.11) closed to traffic from Sunday 10 December 2006 – the Gospel Oak to Barking route (06.03 and 06.05), the Dudding Hill lines (the freight route between Cricklewood, on the Midland Main Line, and Acton Wells Junction – 06.10) and associated connections to all of London's main radial routes; and
- the Thameside route comprises of the main line (06.02) and loop together with a line connecting Chafford Hundred station (close to the Lakeside shopping complex) with Upminster and Grays (06.04). There is also a freight only branch line to Thames Haven (part of 06.08).

Route context

The North London Line is a vital part of London's transport infrastructure and a major link between key arterial routes to and from the capital. It is an important freight route and provides a key urban passenger service around London with connections to/from every arterial route north, east and west of London. The Thameside route runs from London Fenchurch Street to Shoeburyness, with a loop line between Barking and Pitsea via Tilbury and a branch between Upminster and Grays, which carries a mixture of commuter and leisure traffic, and substantial freight movements to and from North Thameside. The main markets are commuter and leisure travel into and around London, in particular to the city, the Docklands and north London from Essex and the Thames gateway as well as the London boroughs. The North London Line part of the

route is included in the Cross London Route Utilisation Strategy (RUS). Following consultation the final document, which was published in August 2006, proposed a range of measures for meeting growth on London's orbital routes up to 2016. The Cross London (CL) RUS was established by the ORR on 30 October 2006. The Thameside part of the route is included in the Greater Anglia Route Utilisation Strategy (RUS), which examines future growth and how it will be met over a time period of ten years commencing from the RUS Establishment date (expected to be December 2007). A draft document for consultation is due to be published in April 2007. The Eastern Regional Planning Assessment (RPA), covering the period from 2011 to 2021, was published by the DfT on 16 February 2006. The RPA sets out scenarios

Passenger and freight demand

Passenger demand has been growing rapidly on the North London line (peak loadings rose by 7.8% between 2005 and 2006) but has been fairly flat on the Thameside route. The North London Line serves local communities and provides both journey to work as well as all day business, leisure and shopping travel. The Thameside route sees a large volume of commuter traffic into central London and the Docklands (over 27,000 peak passengers in 2006) as well as leisure traffic, especially to the major shopping development at Lakeside between Grays and Uxminster.

Some parts of the North London Line compete with alternative modes of public transport such as bus and tube as well as car journeys on a congested road network, although in other sections rail has little competition in terms of journey time. The Thameside route competes with the A127, A12 and A13 highways, which extend right through Docklands and into central London.

On the North London line demand is driven by increasing employment and population in Stratford, Docklands, north east and west London. On the Thameside route demand is driven by employment in the City and Docklands and future growth will be driven by the projected housing growth in the Thames Gateway.

Passenger demand is predicted to increase by 1 to 1.5% a year during the morning peak across the North London and Thameside routes. Around 20% of the potential growth is expected to be crowded off if capacity is not increased in line with demand. On the North London Line, eastbound passenger demand growth is predicted to be about double that of the westbound trips.

Although the majority of the current demand from Thameside is into Fenchurch Street, a significant number of passengers interchange at West Ham with onwards journeys via the underground Jubilee Line and Docklands Light Railway.

There are several interchanges along the North London Line route for onward travel. The main interchanges are at Stratford (LUL Jubilee Line, DLR and the Great Eastern route), Blackhorse Road (LUL Victoria Line), Highbury & Islington (LUL Victoria Line) and West Hampstead (LUL Jubilee Line and Thameslink/Midland Main Line stations are nearby). Stratford is the gateway to the Docklands from the North London Line and employment in Docklands is expanding. Stratford itself is set to benefit from new development, and demand is set to grow.

Freight demand, especially in intermodal deep sea containers from the east coast ports at Felixstowe and Harwich is growing year on year by 4-5%. This demand will be further increased by the impending port developments at Felixstowe South (approved February 2006), and Bathside Bay, Harwich (approved March 2006), as well as the development of a deep sea port at Shell Haven, located on the Thames Haven branch.

Aggregates are the most significant bulk commodity crossing London and in terms of volume growth has been the most successful bulk rail business over the last 5 – 10 years. Demand is set to see steady growth across the North London Line and Tilbury Loop due to major construction initiatives, including the provision of additional housing in London and the East of England, the growth of the City and Docklands, as well as construction of the Olympic venues.

This will increase demand for train paths across the North London Line & Thameside route and is further explored in the capability and capacity sections below.

Figure 1 Current train service level (trains per hour)

Service	tph
Richmond to Stratford Low Level	4
Gospel Oak to Barking	2

Current services

Passenger services on the North London Line are operated by Silverlink, while those on the Thameside route are operated by c2c. EWS, Freightliner and GB Railfreight operate freight services.

The passenger service structure on the core North London Line offers 4tph between Richmond and Stratford Low Level (the line to North Woolwich closed in December 2006 in preparation for transfer to the DLR). In the peaks the orbital service is supplemented by two additional services between Stratford Low Level and Camden Road/Clapham Junction to relieve overcrowding.

Figure 1 contains the tph frequencies on the North London Lines (excluding additional peak services between Stratford Low Level and Camden Road/Clapham Junction)

On the Thameside route the passenger service structure is affected by the complexity of the network and the different stopping patterns. There are a variety of peak and off peak services:

- to Fenchurch Street via the main line from Laindon, Shoeburyness and Thorpe Bay;
- to Fenchurch Street via the Ockendon branch from Pitsea, Southend Central and Stanford-le-Hope; and
- to Fenchurch Street via the Tilbury Loop from Grays and Pitsea.

Figure 2 contains the off peak tph frequencies into Fenchurch Street.

Figure 3 contains the morning peak arrivals at Fenchurch Street between 08:00 and 09:00.

The North London Line provides a vital cross London link for several long distance freight flows, from the East Coast ports of Felixstowe and Harwich and from Tilbury on Thameside. The whole route also sees significant volumes of freight to local terminals and yards, including aggregates and mixed commodities. It is the freight arterial route around London.

Figure 2 Current train service level (trains per hour)

Service	tph
Grays via Tilbury Loop	2
Shoeburyness via main line	4
Southend Central via Ockendon	2

Figure 3 Current train service level

Service Origin and route	No. of services
Grays via Tilbury Loop	1
Laindon via main line	4
Pitsea via Ockendon	3
Pitsea via Tilbury Loop	3
Shoeburyness via main line	6
Stanford-le-Hope via Ockendon	1
Thorpe Bay via main line	2

Figure 4 Tonnage

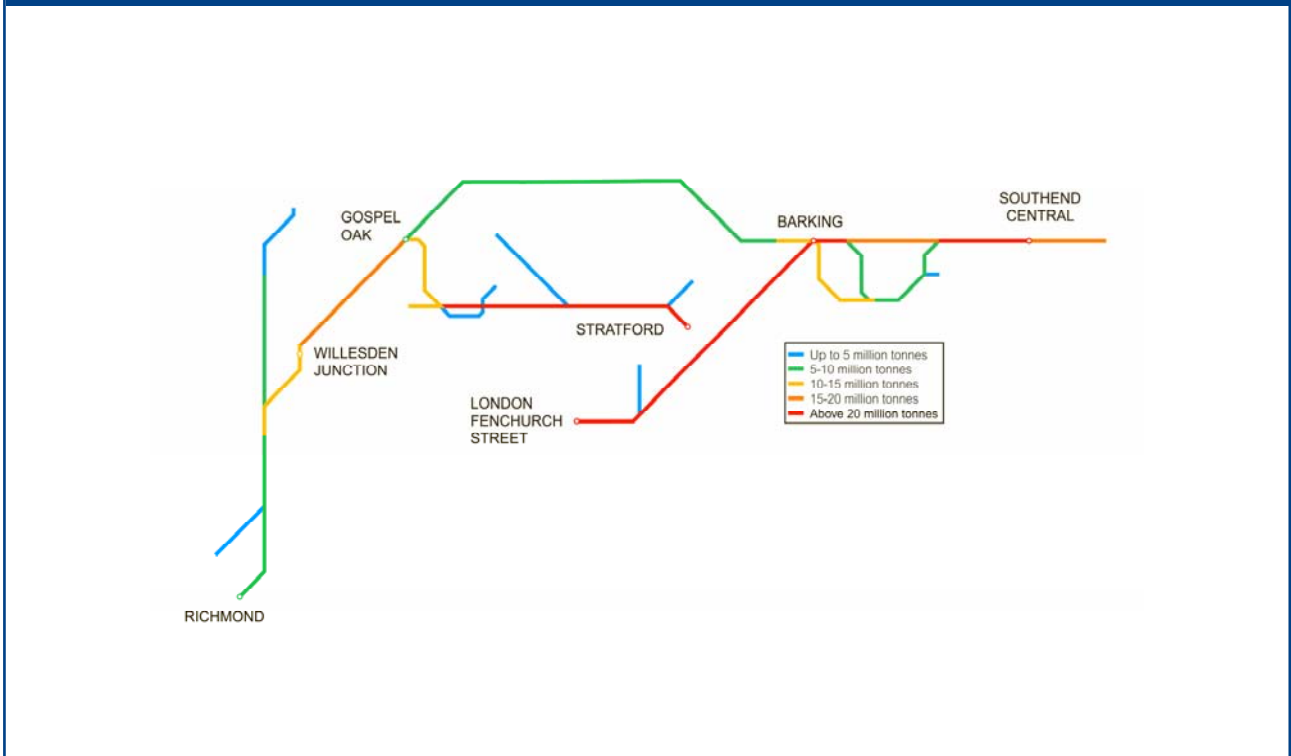


Figure 4 shows the tonnage levels on the route.

Traffic volumes are summarised in Figure 5.

Figure 5 Current use

	Passenger	Freight	Total
Train km per year (millions)	8	1	9
Train tonne km per year (millions)	1,952	571	2,522

Current infrastructure capability

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

Figure 6 Linespeed



Figure 7 Electrification

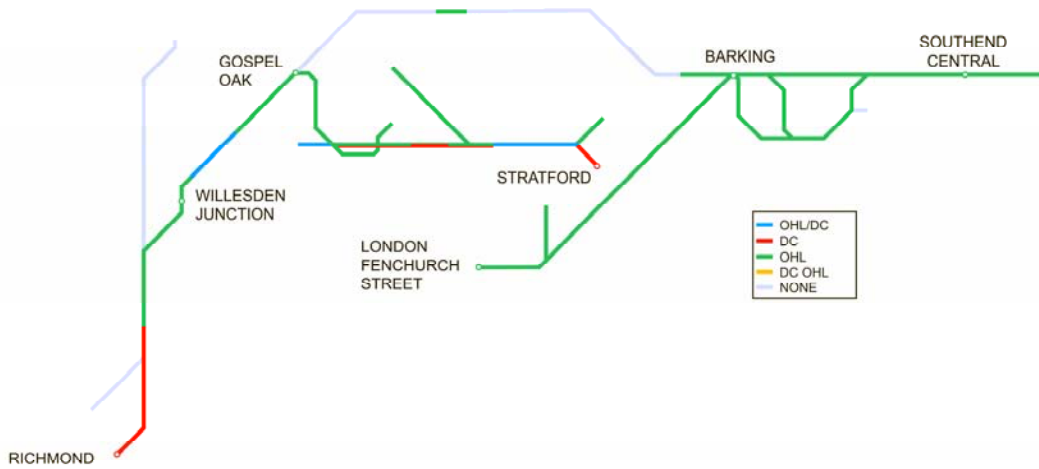


Figure 8 Route availability

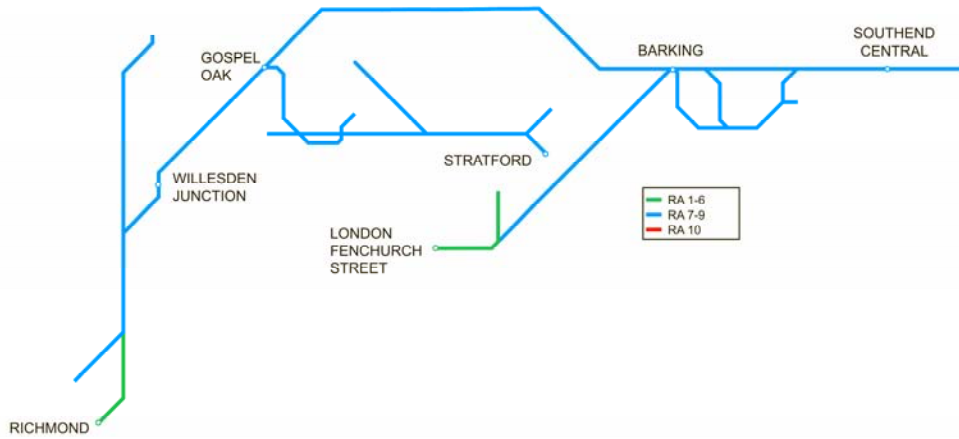
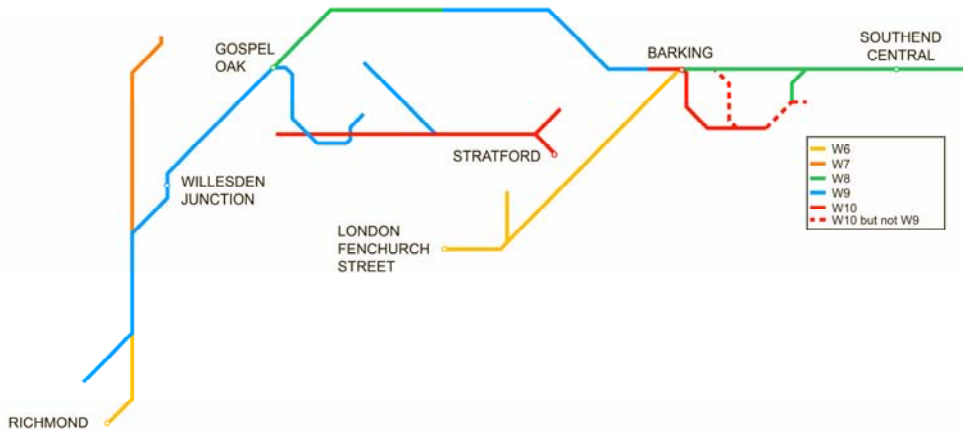


Figure 9 Gauge



Current capacity

The North London Line capacity issues are documented in detail in the Cross London RUS and are therefore only mentioned briefly below. However, the whole North London Line & Thameside route is governed by the mixture of services and stopping patterns, complex junctions, and station occupancy. These issues are often interlinked and overall route capacity is constrained by a combination of these factors. Additionally on the Thameside section the opening of West Ham station and introducing an extra stop on a fast section of line has restricted the track capacity into Fenchurch Street and makes it difficult to run additional trains.

Key issues on the route are:

- current and future levels of both passenger and freight services on the North London lines;
- lack of a W10 and W9 diversionary routes for container traffic;
- long signalling headways and the large number of junctions on the North London Line;
- weight issues for freight trains on the Gospel Oak-Barking line;
- limited signalling capacity to allow additional trains to stop at West Ham, which reduces the available capacity between Fenchurch Street and Barking;
- the single line track section between Upminster and Grays that has only one passing loop; and
- passenger overcrowding at a number of stations on the North London Line including Blackhorse Road, Highbury & Islington, Dalston Kingsland and Homerton at peak times and high levels of transfers to/from the underground. On the Thameside section passenger crowding is an issue at West Ham owing to interchange with the DLR and the underground as passenger numbers here have increased since the opening of the Jubilee Line.

Figure 10 shows the current train service level on key sections of the route.

Figure 10 Current train service level (peak trains per hour)

Route Section	
Stratford Low Level to Camden Road	6
Gospel Oak to Willesden Junction High Level	5
Willesden Jcn High Level to Willesden HL Jcn (inc. 3 Clapham Jcn services)	7
Gunnersbury to Richmond (inc. LUL services)	12
Shoeburyness to Thorpe Bay	6
Thorpe Bay to Laindon	8
Pitsea to Stanford-le-Hope	6
Stanford-le-Hope to Grays	7
Ockendon branch (Grays to Upminster)	4
Laindon to Upminster	12
Upminster to Barking	16
Grays to Barking	4
Barking to Fenchurch Street	20

Figure 11 Current PPM MAA (2006/07)

TOC	MAA	As at period
c2c	94.0%	11
Silverlink	90.9%	11

Current performance

Figure 11 shows the current PPM for the main TOCs running along the route.

The metro passenger train services on the North London Line are operated by Silverlink. Silverlink's Public Performance Measure above also includes their County services that they operate on the southern end of the West Coast Main Line. The passenger train services on Thameside are operated by c2c.

As a result of the route operating at close to track capacity for most of the day, there are difficult performance issues. The current mix of fast and stopping services, passenger and freight services on the North London Line and intensity of the peak service on the Thameside route means that when a problem occurs there is a knock on effect on following services that can quickly cause large amounts of reactionary delay for what might be initially a small specific incident.

Analysis of recent performance shows the main problems on the North London lines to be broken rails and track faults, points failures, track circuit failures and vegetation obstructing the infrastructure.

On the Thameside lines analysis of recent performance shows the main problems to be track circuit failures and overhead line faults.

Services on both parts of the route have been affected by trespass incidents.

Future requirements Strategic direction

We expect that the route will continue to see high levels of passenger and freight growth especially on the orbital routes and in the Thames Gateway area. The main drivers of this will continue to be growth in commuting to central London and the Docklands, and the increased leisure market. Stratford continues to expand with the development of 'Stratford City', the interchange with the High Speed One line to the Channel Tunnel, the new DLR link to London City Airport and as the main centre for the Olympic Games in 2012. On the North London Line developments will also be tied in with TfL's longer term proposals for the route.

We believe that the solution to passenger growth and future capacity requirements can be potentially met by a combination of several initiatives:

- train lengthening, supported by platform lengthening and other rolling stock changes, which will require a complete review of the available traction power supply;
- incremental enhancements delivered as improvements to planned track and signalling renewals together with stand alone enhancements. These will improve performance (necessary for growth), enable increases in train paths and facilitate timetable restructuring; and
- provision of additional passenger capacity at Stratford station.

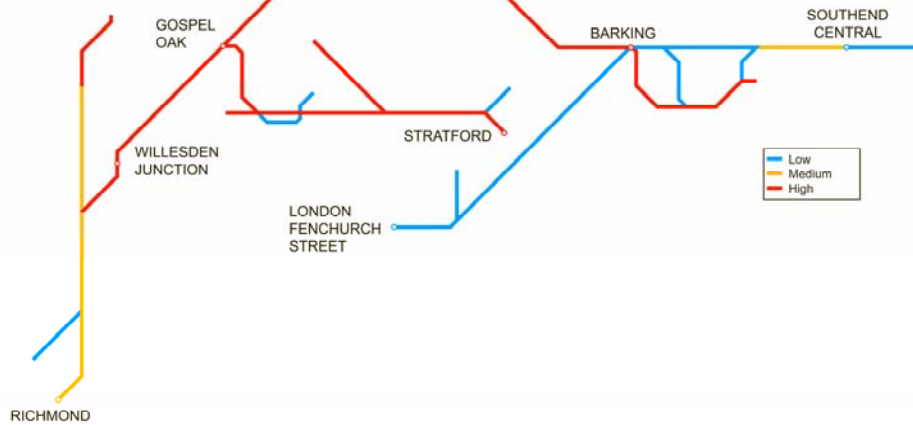
Port developments at Felixstowe, Bathside Bay and Shell Haven will bring significant demand for increased freight services across the route, which will make providing diversionary routes for W10 gauge freight traffic a high priority if overall capacity is not to be compromised. Construction of further phases of the ELL via Dalston will add additional journey opportunities.

To accommodate the high levels of growth the current capacity and capability of the North London Line will need to change, which is currently planned to include the construction of additional tracks between Camden and Dalston on the core route and upgraded capability on the Gospel Oak to Barking route section to allow the passage of W10 gauge freight trains. On Thameside train lengthening is likely to meet passenger growth and this will require some platform lengthening. More details can be found in the capacity and gauge sections below.

Future demand

The emerging Regional Spatial Strategy focuses housing development in the Thames Gateway and continued growth is expected into central London as well as Docklands where employment is expanding. London Plan growth in east, north east and west London will also fuel rising demand on the orbital services.

Figure 12 Tonnage growth



Stratford is likely to see the most development including a new interchange station with the High Speed One line. The DLR has recently opened up an extension to the London City Airport (and will shortly commence construction of a new link from Stratford to SE London). There is also a direct rail service between Stratford and Stansted Airport.

London has been chosen as the host city for the 2012 Olympics and development work is underway. Network Rail is working with the Olympic Delivery Authority to ensure that the increased demand for travel to Stratford is met during the course of the games.

Deep sea container traffic continues to grow and this will fuel a demand for freight paths from the east coast ports and Shell Haven. Aggregates will see steady growth around the North London Line driven by major construction initiatives such as the Olympic venues/Lower Lea Valley Development, Thames Gateway and Crossrail.

The following factors are likely to influence the growing demand on the North London Line & Thameside route:

- peak commuting is growing to central London, the Docklands and around the orbital route;
- the Stratford City development;
- developments in the Docklands;

- expansion of the east coast ports and development of the Shell Haven deep sea port; and
- the lack of diversionary routes for increasing W10 gauge intermodal freight services and W9 gauge freight traffic.

The RUSs are exploring these growing areas of demand. The Cross London RUS, which was established in November 2006 contains a number of capacity improvements, which are now being developed by Network Rail with funding from TfL (the Concessionaire for the London Metro services). These improvements are summarised in the capacity section below. The Greater Anglia RUS, which covers demand on the Thameside route, commenced in February 2006 and the consultation document is planned to be published in April 2007.

Future services

Figure 12 indicates the forecast percentage change in tonnage to 2016.

The predominant passenger operator (London Lines, covering both c2c and Silverlink Metro) is broadly supportive of the proposals outlined in this document, however, they consider that the rate of growth on the Thameside route may be as high as 3% pa, which will be sensitivity tested in the GA RUS. It is expected that train lengthening is likely to meet future demand. London lines are also keen to see additional services call at West Ham and

longer train services from Grays by the extension of the bay platform to 8 cars.

TfL have worked with Network Rail on the Cross London RUS and are also involved in the GA RUS. On the North London Line they are now funding the capacity enhancements, which are under development. These will include both train lengthening and increased services as well as the introduction of new rolling stock. Eventually they see scope for a further increase in services between Stratford and Camden Road.

The freight operators have provided industry forecasts for future freight growth and have been keen to ensure that the NLL upgrade plans allow for forecast freight growth.

More detail on future services has been incorporated into the capacity section below.

Future capability Gauge

Network Rail and the SRA carried out physical works to introduce W10 gauge freight traffic along the Great Eastern route from the east coast ports of Felixstowe and Harwich to the West Coast Main Line via Ipswich tunnel, Stratford and the North London Line (via Primrose Hill). These works, which were completed in September 2004, also opened up the route from Tilbury and North Thameside, via Forest Gate Junction and Stratford, to the W10 network.

The use of 9' 6" high containers is increasing and is predicted to account for the majority of current growth in the deep sea container market, however there is still no alternative diversionary route for the current W10 gauge freight traffic from the east coast ports and further expansion is proposed at both Felixstowe and Bathside Bay (near Harwich), which would bring increased W10 gauge traffic to the North London Line. The West Anglia cross country route from Ipswich to the East Coast Main Line via Bury St Edmunds, Ely, March and Peterborough has therefore been identified as one of the highest priority routes for upgrading, which would divert some freight services away from the congested North London Line. The upgrade between Felixstowe and Peterborough/Yorkshire will be funded through 'Section 106' planning commitments from the port developers.

There is no diversionary route from the Thameside route to the WCML and a deep sea port is being developed at Shell Haven, which will generate additional freight traffic. These services would need a diversionary route across the North London Line via Barking, Gospel Oak and Kensal Green in order

to relieve the congested North London Line and Great Eastern route between Forest Gate junction and Stratford. However Hampstead Heath tunnel is a major obstacle and options to improve the gauge through this structure are being assessed. Also the Barking to Gospel Oak route, which runs mainly on viaducts and embankments, may need to be moved to a higher track maintenance band due to increased tonnages if it is to carry freight in the long term. Freight routeing issues (including those relating to diversionary routes) are being considered as part of the Freight RUS and a TIF bid has been submitted for improvement to the Thameside – Tottenham – Willesden route.

Line speed

An option to improve line speed on part of the Thameside route, which could contribute towards additional capacity or improved performance, is currently being considered.

Tonnage

Increased demand for freight traffic to and from the east coast ports on the Great Eastern route and Shell Haven will cause much higher tonnages to be sustained across the North London Line, which will bring both capacity issues and the need for additional maintenance due to increased wear and tear on the assets. The following parts of the route are predicted to see the highest increases of freight tonnage carried:

- Stratford Central Junction to Camden Junction via Primrose Hill;
- Shell Haven to Barking via Purfleet; and
- Barking to Forest Gate Junction via Woodgrange Park.

Additionally the following route sections would require gauging to W10 & W9 to allow a diversionary route for Thameside freight away from the congested Great Eastern route between Forest Gate and Stratford:

- Woodgrange Park Junction to Gospel Oak; and
- Gospel Oak to Acton Wells Junction (including Hampstead Heath Tunnel).

Platform lengths

It is generally accepted that the practical approach to continued growth is the incremental lengthening of trains, especially as this solution is flexible, caters for the wide range of different growth scenarios and makes better use of scarce and high value paths.

On the North London Line platforms are to be extended to allow 4 car operation. On the Thameside route growing demand will require

mainline trains to be extended to 12 car and on the Ockendon Branch and Tilbury loop, as the housing developments are built, platforms will need to be extended to permit the operation of 12 car trains.

Fragile routes

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

The rail freight industry has recently provided to Network Rail a set of 10 year traffic forecasts, and we are currently assessing their implications. The key route sections within this route that has been identified as a fragile route and has clearly defined additional tonnage/train numbers projected by the industry are: the Dudding Hill Branch (Cricklewood – Acton Wells) and Gospel Oak – Barking.

Future capacity

The forecasts of significant further growth, as detailed in the future demand section above, pose significant problems and are driving a requirement for additional capacity.

The Cross London RUS contains the strategy for increasing capacity on the North London Line and these are briefly detailed below:

- On the North London line in the short term new high capacity rolling stock is to be introduced, followed by the construction of the platform extensions mentioned above. In the medium term capacity is to be enhanced by resignalling and improving signalling headways to allow frequencies to be increased to at least 4 tph all day on all legs of the route (including the link to the East London Line extension). This enhanced capacity also allows for freight growth across the route; and
- On the Gospel Oak – Barking line in the short term higher capacity diesel trains are to be introduced. In the medium term TfL are considering upgrades to both the route and train services. The growth of Shell Haven requires

the upgrade of the route as discussed above.

The Greater Anglia RUS is examining the growth and capacity issues on the Thameside route and is likely to recommend running longer services on all routes. The strategy is also examining the case for infrastructure improvements to permit more trains to call at West Ham. In the longer term the single line Ockendon route may have to be addressed if additional services are required via this route.

Future performance

Figure 13 shows the forecast reduction in Network Rail delay minutes compared with 2006/07.

Figure 14 shows the forecast PPM for the main TOCs running along the route

The delivery of improvements in train performance is one of our key priorities. This is being progressed by ensuring that infrastructure and network management caused delays are systematically reduced. This is being addressed by the recent introduction of a fully integrated control centre for East Anglia, which is already starting to bring benefits by improving communications, streamlining the decision making process and delivering an improved service to customers.

On the North London Line amendments to station dwell times have improved performance and on the Thameside route the benefits of the resignalling scheme are now being felt.

We are progressing with our rewiring strategy to reduce the possibility of the OLE causing delays and track circuit failures are being dealt with via our renewals programmes. Other improvements in performance are being achieved through the Joint Performance Improvement Plans.

We are continuing with our day to day maintenance and our policy of targeting our enhanced maintenance and renewals at performance hotspots.

We also carry out regular reviews of the renewal

Figure 13 Forecast reduction in delay minutes

	2007/08	2008/09
% reduction in delay minutes	10%	15%

Figure 14 Forecast PPM MAA

TOC	2007/08	2008/09
c2c	93.5%	93.8%
Silverlink	91.0%	

job banks to assess the scope for enhancing them to include performance and capacity improvements. Where a business case is proven these schemes are funded through the NRDF. Schemes currently being considered include removal of a speed restriction at Tottenham, as well as extension to the bay platform at Grays and the additional stops at West Ham mentioned above. As part of our Cross London and Greater Anglia RUS work we are looking at junction margins and allowances, and the potential for timetable improvements.

Engineering access

The high level of capacity on the route has meant that there has been difficulty in gaining access for maintenance and renewals work. As a result a pattern of cyclical possessions has been agreed for the North London Line comprising of five to six hour possessions each weeknight, for the maximum lengths of line that the overnight freight service will permit, on a twelve weekly cycle grouped into convenient lengths.

On the Thameside part of the route, twelve week cyclic maintenance is sustained on weeknights over the main line between Fenchurch St and Shoeburyness. On the Tilbury Loop maintenance is carried out in twelve 27-hour annual possessions over the whole line between Barking and Pitsea.

Although the introduction of cyclical access onto the North London Line & Thameside route is delivering improved maintenance and performance in most places, the need to run ever increasing services to cater for rising demand may require a revision of the current regimes. Options for improvement in this area on the NLL are being developed as a result of the CL RUS and on Thameside will be explored as part of our GA RUS.

Opportunities and challenges

We anticipate that accommodating growth in commuting to central London and the Docklands, together with developments around Stratford, will be a significant challenge on the parts of the core North London Line and other sections of the route, which are already operating at, or very close to, capacity.

Suggested options for improving passenger and freight growth and future capacity requirements on the North London Line are discussed in detail in the Cross London RUS and links to this document can be found on our website www.networkrail.co.uk. In addition we are working with TfL on a number of enhancements to improve capacity both for the Olympics and to meet TfL's longer term aspirations as part of their North London Railway franchise, which may include possible electrification of the Gospel Oak – Barking route.

For Thameside, different scenarios are being explored in the Greater Anglia RUS with significant input from our stakeholders.

Suggested initiatives and options for provision of the capacity and performance improvement required from the North London Line & Thameside network are set out below and where not already committed will be thoroughly assessed by the RUSs.

Delivering future requirements

Expenditure

Figure 15 shows the planned level of expenditure on renewals on this route over the next two years. However, the precise timing and scope of renewals remains subject to review to enable us to meet our overall obligations as efficiently as possible consistent with the reasonable requirements of operators and other stakeholders.

Figure 15 Forecast expenditure

£m (2006/07 prices)	2007/08	2008/09
Renewals		
Track		
Plain line	3	9
Switches and crossings	–	5
Track total	3	13
Civils		
Underbridges	4	4
Overbridges	0	0
Bridgeguard 3	1	0
Footbridges	0	0
Earthworks	1	2
Other	2	–
Civils total	8	7
Signalling		
Resignalling	1	0
Minor works/other	1	1
Over-planning	(1)	–
Signalling total	1	1
Electrification		
AC systems		
HV switchgear	2	1
Booster transformers	–	0
OLE re-wiring		0
OLE campaign change/refurbishment	1	1
OLE structures	0	0
Other	1	1
DC systems		
Conductor rail	0	0
Other	0	0
Electrification total	5	4
Telecoms		
Concentrators		
Large	–	0
Small	0	–
DOO CCTV	0	1
Customer information systems (CIS)	4	2

Other	0	0
Telecoms total	5	3
Operational property		
Stations		
Managed	0	1
Franchised	2	1
Depots		
Light maintenance	–	0
Lineside buildings	0	–
Operational property total	2	2
Plant and machinery		
Fixed plant		
Point heating	0	0
Signal supply points	0	0
Other	0	1
Plant and machinery total	0	1
Total Renewals	24	32
Enhancements (funded by)		
Network Rail (RAB)		
Potential schemes	0	1
Total	0	1
Other third party		
Planned		
Capacity enhancements	6	24
Other	1	1
Total	7	25
Potential schemes	0	0
Total	7	25
Total Enhancements	8	26

Figure 16 Forecast volumes

	2007/08	2008/09
Track		
Plain line (km)		
Rail	6	13
Sleepers	5	12
Ballast	6	13
Total	16	38
Switches & crossings (no.)		
Complete renewal	–	10
S&C (equivalent units)	–	10
Civils		
Underbridges (m ²)	2,188	1,241
Overbridges (m ²)	68	9
Bridgeguard 3 (m ²)	105	96
Earthworks (m ² slope surface)	6,200	77,150
Electrification		
AC systems		
HV switchgear (cb)	19	7
OLE re-wiring (t. length)	–	4
OLE campaign change/refurbishment (t. length)	116	67
OLE structures (no.)	–	2
DC systems		
Conductor rail (km)	0	2
Telecoms		
Concentrators		
Small (no.)	2	–
DOO CCTV (systems)	–	18
CIS (stations)	17	14

The planned volume of renewals is detailed in Figure 16.

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

Figure 17 Forecast expenditure

£m (2006/07 prices)	2007/08	2008/09
Maintenance	18	16

Infrastructure investment

Figure 18 highlights schemes that are planned for completion in the financial year shown.

Figure 18 Planned infrastructure investment							
Project	Project description	Output change	Main asset type(s)	Funding	GRIP stage	Completion year	
A	Gunnersbury Chiswick Park development (06.07)	Station improvements including new footbridge	Improved asset condition	Station	Developer	4	2008/09
B	North London Line Resignalling (06.01, 06.06, 06.07 and 06.09)	Like for like resignalling scheme. Expected to be brought forward to 2010 in conjunction with TfL enhancement proposals, currently subject to discussion	Renewal	Signalling	Network Rail	1	2013
B	North London Line Signalling Life Extension (06.01, 06.06, 06.07 and 06.09)	Life extension works prior to full resignalling project	Renewal	Signalling	Network Rail	4	2007/08
D	Gospel Oak S&C (06.06)	S&C renewal	Renewal	Track	Network Rail	3	2008/09
E	North London Line capacity enhancements (06.01)	Capacity enhancements as described in Cross London RUS	Increased capacity	Track and signalling	TfL	1	2010
F	Caledonian Road and Highbury Sewer renewal (06.01 and 06.09)	Improvement works to prevent flooding of track bed	Renewal	Structures	Network Rail	1	2006-2008
I	Victoria Park S&C	S&C Renewal	Renewal	Track	Network Rail	4	2008/09
J	North London Line conversion to Dockland Light Railway (06.01 and 06.11)	DLR takeover of NLL between Stratford and North Woolwich. Provide new NLL terminating platforms. Works to western subway including lifts and stairs	New assets and interchange link. Release of North Woolwich branch assets removes current maintenance liability	All asset types	DLR	4	2009
L	c2c CIS refurbishment	Like for like renewal	Renewal	Telecoms	Network Rail	0	2009/10
N	Katherine Road Bridge strengthening (06.02)	Strengthen bridge to take 40 tonne lorries	Renewal with part enhancement	Structures	Network Rail and Local Authority	3	2007/08

Figure 18 Planned infrastructure investment

Project	Project description	Output change	Main asset type(s)	Funding	GRIP stage	Completion year
Q Grays bay platform extension (06.04)	Extend bay platform to take 8 car trains	Improved capacity	Station	Network Rail Discretionary Fund	0	2008/09
S Dunton Bank Earthworks (06.02)	Strengthening and stabilisation of the embankment	Renewal	Earthworks	Network Rail	1	2009/10
T Timberlog Lane Cutting (06.02)	Like for like renewal	Renewal	Earthworks	Network Rail	3	2008/09
U Pitsea OLE (06.02)	Contact wire renewal	Renewal	OLE	Network Rail	6	2007/08

Figure 19 highlights other schemes under consideration.

Figure 19 Infrastructure investment under consideration					
Project	Project Description	Output change	Main asset type(s)	Funding	Grip stage
E East London Line extension (phase 1) (06.01)	New connection between ELL and North London Line	Allows extension of East London Line Services to Highbury & Islington	All asset types	TfL	1
K Gospel Oak to Barking freight upgrade (06.05)	Provide a W10 gauge diversionary route for Thameside freight. Improvements to earthworks, bridges, track and signalling	Alternative freight route for W10 gauge traffic across London	Structures, track, signalling	Transport Innovation Fund for gauging and minor capacity works	Early stages of development
M West Ham additional stops (06.02)	Additional signals to allow more trains to stop at West Ham	Improved capacity	Signalling	Network Rail Discretionary Fund	Early stages of development
O Barking LUL District Line Link	Provision of a new fully signalled connection between Network Rail and LUL	Will allow transfer of engineering trains and new rolling stock	Track and signalling	3 rd Party	2
R Thames Haven branch doubling (06.08)	Conversion of single track line to double track	Improved capacity to facilitate services to a new deep sea port at Shell Haven	Track and signalling	3 rd Party	3

Figure 20 highlights Route Enhancement aspirations

Figure 20 Route Enhancement aspirations					
Project	Project Description	Output change	Main asset type(s)	Funding	Status
C West Hampstead station (06.06)	Station improvements	Improved asset condition and interchange	Station		Potential TfL and developer funded scheme
H Hackney Central to Hackney Downs Pedestrian link (06.01)	New pedestrian link between stations on routes 6 and 5	Improved interchange between two stations	Station		Potential TfL funded scheme

Figure 20 Route Enhancement aspirations

Project	Project Description	Output change	Main asset type(s)	Funding	Status
P Tilbury Loop 12 car trains (06.04)	Platform lengthening on Tilbury Loop to take 12 car formations	Improved passenger capacity to accommodate growth	Station		Potential DfT funded scheme being considered in Greater Anglia RUS

Non infrastructure developments

The following significant timetable schemes for the route are under development.

Figure 21 Timetable development

Description	Key issues	Actions or options being developed	Benefits	Target timetable implementation
Cross London RUS	Overcrowding and freight capacity	Final options under development	Improved capacity and performance. Reduced ..	December 2007
Greater Anglia RUS	Overcrowding, freight capacity and regional growth	Early stages of option development	Improved capacity and performance. Reduced	December 2008

Figure 22 Other projects

Description	Key issues	Actions or options being developed	Benefits	Start date
London 2012	To deliver increased capacity to meet demand.	Numerous schemes in development to facilitate passengers travelling to and from the Olympic venues.	Improved capacity.	Ongoing.
Smartcard introduction	Revenue protection and flexible ticketing	TfL/ATOC to take forward	Revenue increase and potentially demand management improvements.	

Appendix

Figure 23 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
06.01	NLL: Gospel Oak – Stratford	various	London & SE	DfT	No	W10 (W9)	8	various	25kv AC (Third rail DC)	TCB	Various mins	2
06.02	Fenchurch Street – Shoeburyness	FSS2 (FSS1 & 3)	London & SE	DfT	No	W8 (various)	8 (3)	75 (various)	25kv AC	TCB	3 (2)	2
06.03	Forest Gate Jn – Barking	various	London & SE	DfT	No	W10 (W6)	8	45 (25)	25kv AC	TCB	3	2
06.04	Barking – Pitsea	TLL (UPG)	London & SE	DfT	No	W10 (W8)	8	70 (60)	25kv AC	TCB	3 (OTIS)	2 (1)
06.05	Gospel Oak – Woodgrange Park	TAH (GOJ)	London & SE	DfT	No	W8 (W9)	8	various	None (25kv AC)	TCB (AB)	various	2
06.06	NLL: Willesden Jn – Gospel Oak	BOK2 (BOK3)	London & SE	DfT	No	W9	8	45 (20)	25kv AC	TCB	various	2
06.07	NLL: Richmond/Old Kew Jn – Willesden Jn	various	London & SE	DfT	No	various	8 (6)	various	various	TCB	various	2

Figure 24 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
06.08	Other Freight Lines	various	Freight	DfT	No	various	various	< 40	various	TCB (OTW)	various	2 (1)
06.09	NLL: No1 Lines	various	Freight	DfT	No	W10 (W9)	8	20 (15)	25kv AC	TCB	various	2 (1)
06.10	Dudding Hill Line	CAW (BDH)	Freight	DfT	No	W7 (W9)	8	30	None	AB (TCB)	AB (5)	2
06.11	NLL: Stratford – North Woolwich	DWW2	London & SE	DfT	No	W6	8	45 (25)	Third rail DC	TCB	various	2 (1)

Capacity and operational constraints

- Ⓐ Fenchurch Street – Barking: Trains stopping at West Ham reduce available capacity
- Ⓑ Upminster – Grays: Single line track section with only one passing loop

Other issues on the route

- ① Hampstead Heath tunnel Freight gauging issue prevents the use of 9' 6" containers on standard wagons.
- ② Route section would need an upgrade to allow a diversion of strategic freight flows (to release Forest Gate – Stratford capacity, see route 7).

Note

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

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

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

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

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

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

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



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