

Route Plans 2007
Route 25
Highlands

Network Rail



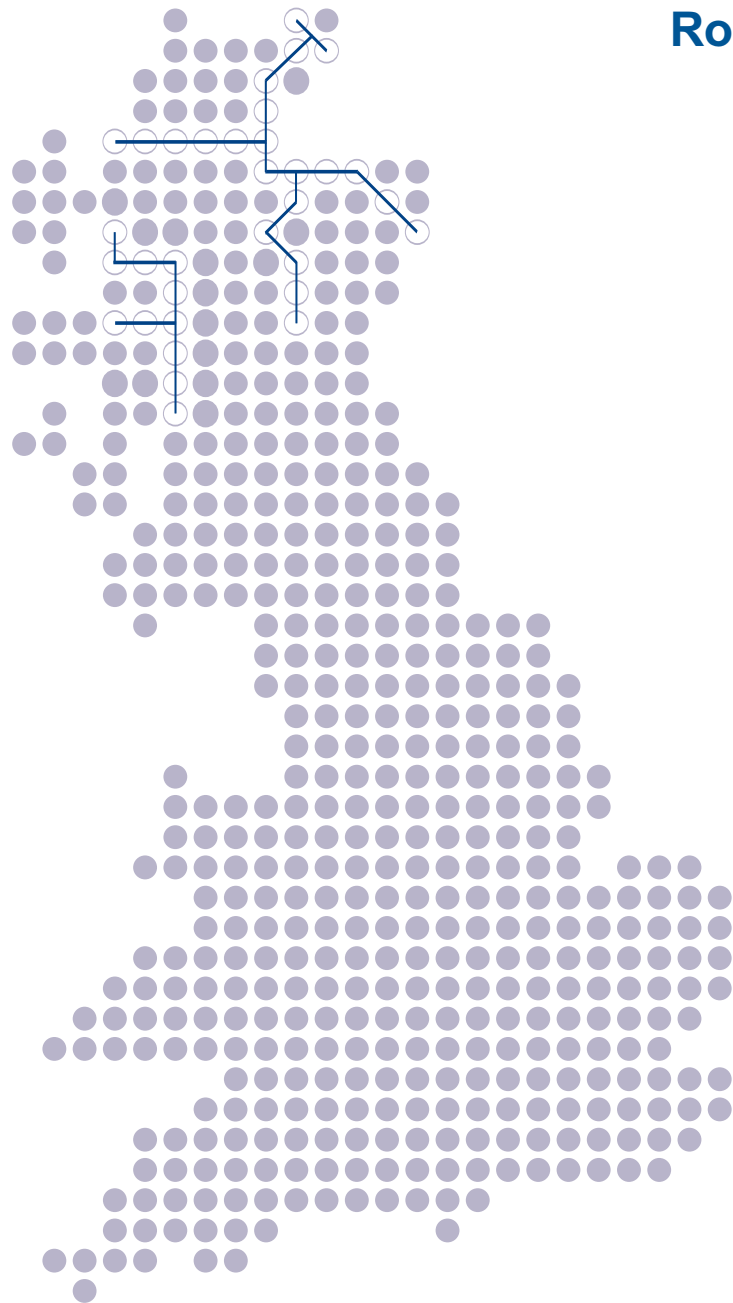
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Route 25 Highlands

Today's route

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

- the line between Perth and Inverness (25.03);
- the line between Aberdeen and Inverness (25.04);
- the North Highland Line from Inverness to Wick and Thurso and the branch from Dingwall to Kyle of Lochalsh (25.01); and
- the West Highland Line from Craigendoran (on Route 26) to Fort William and the branches from Crianlarich to Oban and Fort William to Mallaig (25.02).

Route context

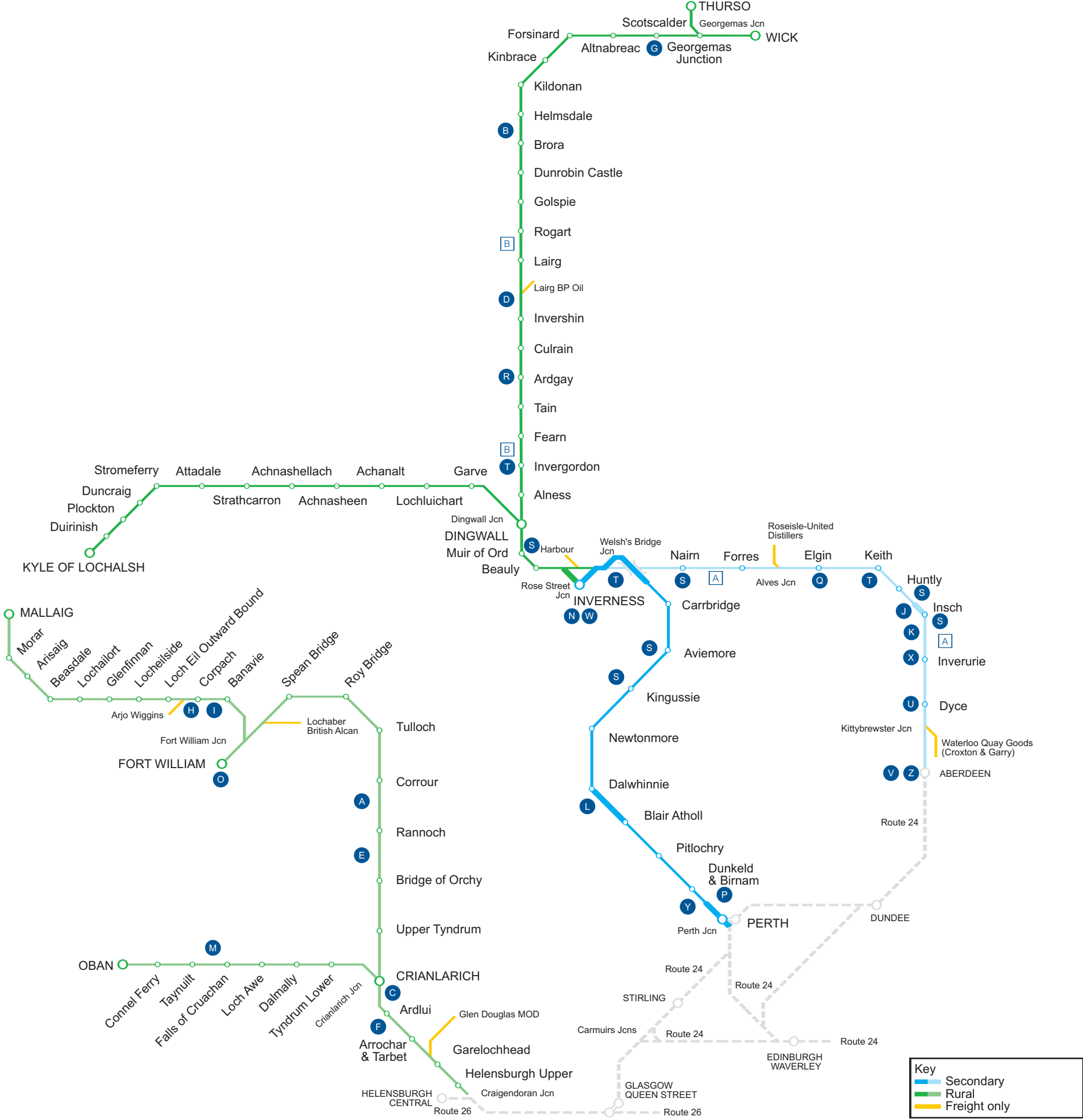
The Highlands Route serves a large number of rural communities across the North of Scotland, providing access to the social and commercial facilities of the major towns of Inverness, Wick, Thurso, Oban and Fort William. These towns also serve as significant transport interchanges with buses and, in some cases, shipping services to the Scottish island communities. Tourism plays a major role in the Highland economy, and these scenic rail lines are well patronised in the summer months by domestic and foreign tourists.

The route also serves a number of freight terminals.

Transport Scotland commissioned its Scottish Planning Assessment (SPA), as one of the inputs to the development of their strategy for rail in Scotland, and Network Rail published the Route Utilisation Strategy (RUS) for Scotland in March 2007. Both of these pieces of work have informed the development of this Route Plan.

In addition Highland and Islands Enterprise published a Room for Growth study of the Highland rail network in 2006. This considered the current capabilities of the route and future options for its development.

Route 25 Highlands



Passenger and freight demand

The Highlands route serves a large number of rural communities across the north of Scotland, providing access to Inverness, Wick, Thurso, Oban and Fort William. These towns also serve as significant transport interchanges with buses and, in some cases, shipping services to the Scottish island communities.

The major population centres on the route have experienced modest population growth in recent years, with the exception of Inverness where significant growth has occurred. This has been assisted by the re-location of several public bodies, principally Scottish Natural Heritage and Forest Enterprise Scotland. However this growth has been achieved in many cases at the expense of the hinterlands where there has been a steady structural trend of de-population from the rural areas in the Highlands.

An enhanced service on the lines radiating from Inverness (referred to as 'Invernet') was introduced in December 2005. This is aimed at providing peak hour services on corridors where they were not previously provided and closing some of the significant timetable gaps at other times.

The Scottish Planning Assessment (SPA) reported on current daily passenger numbers on a number of geographically aggregated sectors. The daily trip data for the sectors on this route are detailed in Figure 1.

In addition, further analysis was carried out as part of our development of the Scotland Route Utilisation Strategy (RUS). For further information see the published Scotland RUS at www.networkrail.co.uk.

There are wide seasonal variances in traffic volumes on the West and North Highland lines. This is addressed by strengthening of train formations in the peak summer months.

Demand for "Just In Time" services for Supermarkets and High Street retail chains is increasing. Factors such as environmental demands, the EU Working Time Directive and cost pressures have resulted in a number of suppliers considering the use of rail in their supply chain logistics.

Figure 1 Current passenger numbers

Sector	Daily Trips
To/From Inverness	2,500
West Highland Lines	630

Figure 2 Current train service level (trains per day)

Perth to Inverness	9
Aberdeen to Inverness	10
Inverness to Wick & Thurso	4
Inverness to Kyle of Lochalsh	4 Summer/3 Winter
Glasgow to Oban	3 (4 Summer Saturdays)
Glasgow to Fort William	3 (4 including the sleeper)
Fort William to Mallaig	4

Current services

The Highland Route carries mixed traffic between Perth, Inverness and Georgemas and between Craighendran and Fort William. The remainder of the route carries mainly passenger services with occasional charter and freight services. As the route is predominantly single track, certain sections have relatively high utilisation imposing constraints on the timetable.

First ScotRail operates the majority of passenger services on this route, including an overnight sleeper service from London Euston to Fort William and Inverness which forms part of the Caledonian Sleeper network. Great North Eastern Railway (GNER) operates a daily service between Inverness and London Kings Cross via the East Coast Main Line (ECML). A summer only steam tourist service is operated by The West Coast Railway Company between Fort William and Mallaig.

Freight services are principally operated by English Welsh and Scottish Railway Limited (EWS), with Freightliner Heavy Haul Ltd providing a service for cement products from Dunbar to Inverness via Perth.

The section of the route from Inverness to Perth continues to see healthy levels of freight, and the freight industry has plans to increase rail borne freight between Inverness and the central belt of Scotland.

With the exception of sections on the Aberdeen to Inverness line, current peak utilisation is within the practical capacity available on all parts of the route.

Figure 2 shows the service frequencies between principal stations.

Figure 3 shows the tonnage levels on the route.
Traffic volumes are summarised in Figure 4.

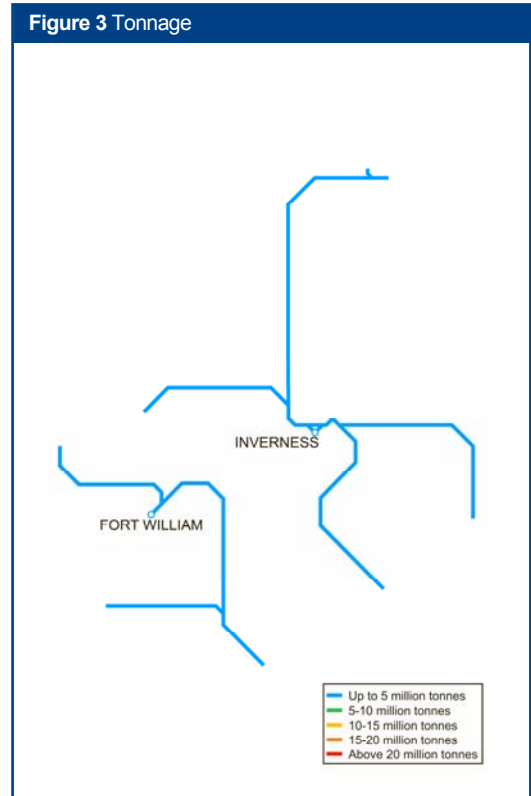


Figure 4 Current use

	Passenger	Freight	Total
Train km per year (millions)	4	0	5
Train tonne km per year (millions)	661	177	838

Current infrastructure capability

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

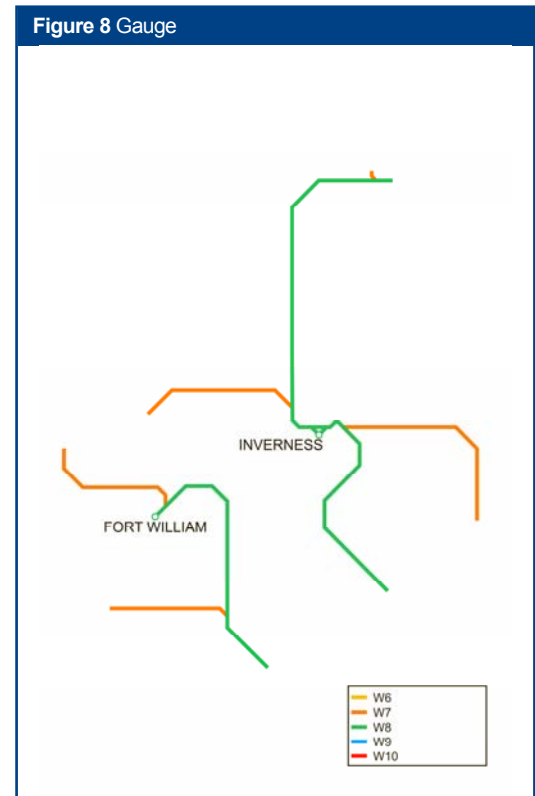
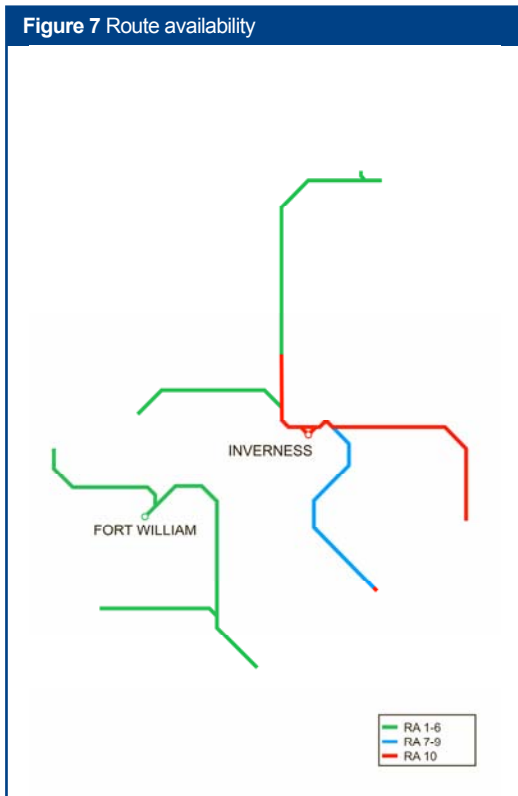
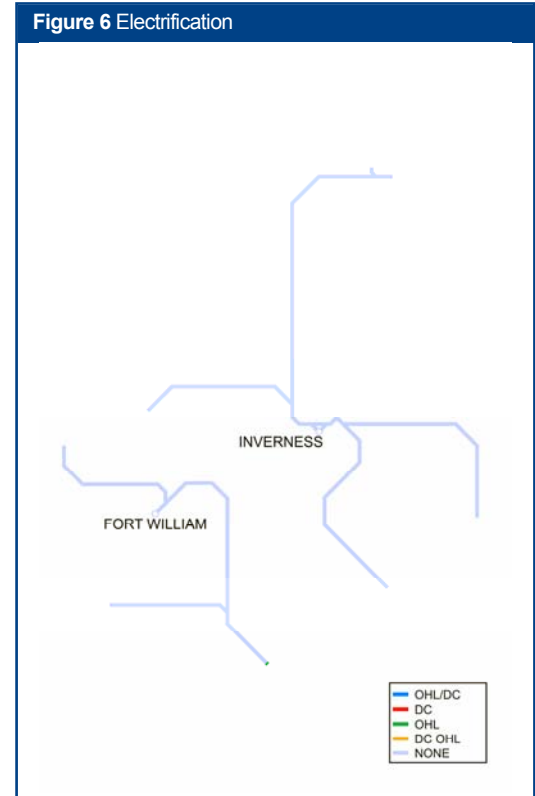
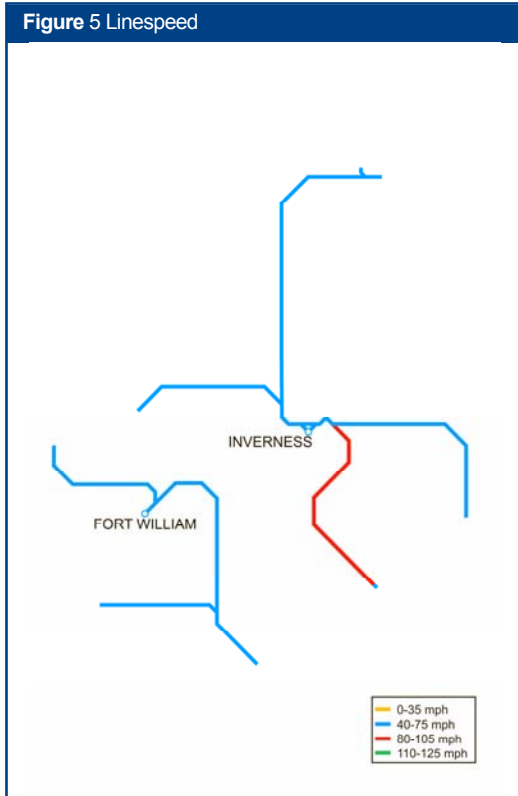


Figure 9 Current train service level (peak trains per hour)

Route section	Number of trains
Inverness – Dingwall*	4
Inverness – Kingussie*	3
Craigendoran – Crianlarich*	2
Inverness – Elgin*	2

* Trains in both directions over single line

Current capacity

The baselining work carried out as part of our Scotland Route Utilisation Strategy (RUS) work has confirmed that the current network can cope with present service levels, although there are several capacity constraints which could restrict growth in the future. Further information on these is included in the Future Capacity section below.

Figure 9 shows the current train service levels on the route during the busiest hour on each line.

Current performance

Figure 10 shows the current PPM for the main TOCs running along the route.

Performance across Scotland has improved dramatically over the last two years with an approximately 35 percent reduction in delay minutes leading to an improvement in First ScotRail's PPM from 83.1 percent to 88.9 percent. To achieve this, the focus has been on attention to detail particularly to ensure the reliability of strategic points and signalling equipment at key nodes.

Traditionally the Autumn period has resulted in a significant dip in performance. Great efforts, (for example, targeting lineside vegetation at high risk sites) have been made to minimise these seasonal delays which resulted in the Autumn of 2006 showing a great reduction in delay across the route.

The route consists mostly of long single line sections with passing loops. On such routes any perturbations can have a significant impact.

Despite that, performance on the route remains generally satisfactory. Between Inverness and Wick a number of issues came together to dramatically worsen punctuality during 2005/06, and we worked with First ScotRail to resolve these through a review and subsequent revision of the planning rules.

The Network Rail and First ScotRail controls are co-located within the same office in Glasgow to ensure prompt and effective response to any incidents in order to mitigate subsequent delays. During 2007 we will work towards integration of the control centre to combine maintenance and operations into one control. We will continue to work with First ScotRail, the principal train operator in Scotland, to ensure rapid decision making during perturbed working to enable normal working to be resumed as quickly as possible.

The control centre will deliver effective real time management of planned and un-planned disruptive events, to minimise the impact on passengers, and to deliver better anticipation and avoidance of foreseeable disruptions.

A number of specific initiatives are being progressed on this route to effect performance improvements. Examples of these are:

- life extension works to the West and North Highland RETB systems (25.02/25.01);
- renewal and rationalisation of signal cables on the Highland Main Line (25.03);
- targeted track renewals at remote locations;
- introduction of new operating instructions for managing animals on the line; and
- enhanced vegetation management regimes.

Figure 10 Current PPM MAA (2006/07)

TOC	MAA	As at period
First ScotRail	88.9%	11
GNER	83.6%	11

Future requirements

Strategic direction

Improved use of the rail network is a central element of the Scottish Executive's plans for effective delivery of its rail objectives. Scottish Ministers published 'Scotland's Railways' in December 2006, which promotes sustainable economic growth and sets the context for the development of transport solutions for Scotland over the next 20-25 years. This strategy promotes connectivity between major towns and cities, supports faster journey times on key routes and aims to improve quality, accessibility and affordability of Scotland's railways. This strategy will feed into the Scottish High Level Output Specification (HLOS) which will determine the rail services which Scottish Ministers wish to purchase from Network Rail.

On behalf of the rail industry, Network Rail has recently published the Scotland and Freight Route Utilisation Strategies. These documents summarise the current operating restrictions on the network and analyse future growth and the impact on rail. A number of options have been proposed, which will address the current and predicted restrictions on the network. These options set out the strategic direction for the rail infrastructure over the next 10 years. Within Route 25 these options predominately focus on additional infrastructure to facilitate increased line capacity between Aberdeen and Inverness. In addition, the RUS incorporated

the option to enhance the infrastructure between Perth and Inverness to permit an increased frequency and reduced journey time. This option was originally developed for the Room for Growth Study published by Highlands and Islands Enterprise. It is primarily focussed on journey time reductions and frequency improvements through level crossing upgrades, line speed enhancements and re-doubling of sections of track.

Highland Council is promoting the construction of a deep water port facility in the Inner Moray Firth area. This would provide a UK link into the proposed 'northern maritime corridor' with feeder shipping services from the proposed international container port at Scapa on Orkney. If implemented, it could result in a significant increase in rail freight traffic on the Perth to Inverness and Inverness to Invergordon lines.

Future demand

The Scotland Route Utilisation Strategy reported on the projected daily passenger numbers on a number of geographically aggregated sectors during the morning peak period over the next 10 years. Figure 11 highlights the projected passenger numbers and projected increases between 2004/05 and 2016.

Figure 11 Projected passenger numbers

	Morning peak trips		Change relative to 2004
	2004/05	2016	2016
To/From Inverness	500	525	+ 5%
West Highland Lines	93	96	+ 3%
Far North Lines	46	48	+3%

Additional analysis on growth predictions within Route 25 is included within the Scotland Route Utilisation Strategy, which is available at www.networkrail.co.uk.

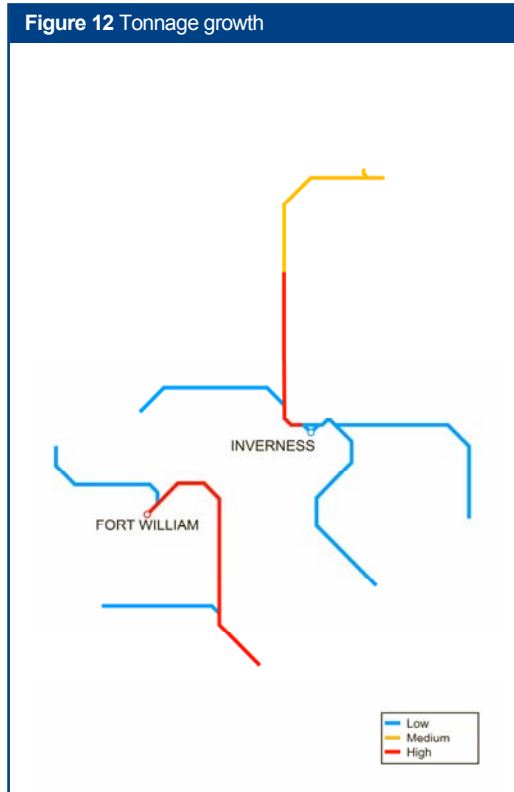
The Room for Growth study mentioned above has been carried out by Highland and Island Enterprise supported by HITRANS (the Regional Transport Partnership) and the Highlands and Islands Rail Partnership. This study supported the growth forecast in the Scottish Planning Assessment (SPA) and proposed a number of options to address the gaps identified.

Future freight demand on the route will be affected by any initiatives arising from the Inner Moray Firth proposals referred to above. Other significant factors are the increased use of rail on trunk flows within the logistics chain, national recycling strategy and the construction of the associated waste transfer stations and the availability of grants towards the creation of new freight terminals. We have published a national Freight Route Utilisation Strategy that has provided a robust forecast for future freight growth on the route.

Future services

Improved use of the rail network is a central element of the Scottish Executive's plans for effective delivery of its rail objectives. Reduced journey times, with the development of a new rolling stock strategy are key elements of both funders and operators in Scotland. Within Route 25, reduced journey times and increased frequency between the Central Belt and Inverness and between Inverness and Aberdeen are key aspirations for Scottish Ministers.

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



Future capability

The Mossend to Elgin gauge enhancement project is currently being implemented. This work is being funded by Transport Scotland. This will allow rail to achieve a higher market share of traffic conveyed in the latest size of maritime containers, principally distillery products from the North East of Scotland.

Future capabilities of the network will be designed in-line with Scottish Ministers' aspirations to reduce journey time between the major conurbations.

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 provided to Network Rail a set of 10 year traffic forecasts, which we have used in developing the Freight RUS. The key route section within this route that has been identified as a fragile route and has clearly defined additional tonnage/train numbers projected by the industry is Helensburgh – Fort William. Our current assessment of the anticipated traffic increase is that it will be within the capability of the route.

Future capacity

On the Aberdeen to Inverness (25.04) and Perth to Inverness (25.03) lines there are stakeholder aspirations for regular hourly passenger services with reduced journey time. These could only be accommodated with the provision of additional and improved infrastructure as a result of the following constraints:

- the single line sections on the Aberdeen to Inverness line, the most significant of which is the 18 mile section between Keith and Elgin (25.04) and;
- the single line sections on the Perth to Inverness line, the most significant of which are the 13 mile sections between Dunkeld and Pitlochry and Dalwhinnie and Kingussie (25.03).

On the Far North lines (25.01), the finite capacity of the Radio Electric Token Block (RETB) equipment limits the number of additional trains that could be handled on this part of the network.

Traffic levels on the remainder of the route can generally be accommodated without recourse to the provision of additional infrastructure

The Room for Growth Study considered how current constraints could be eased and performance enhanced through timetable restructuring particularly on the Far North (25.01) and West Highland (25.02) lines.

Future performance

To achieve the targeted 90 percent PPM for First ScotRail (and to support the achievement of the targets for other TOCs) a further reduction of 4 percent in delay minutes across the industry is required. To deliver this we will continue to focus on ensuring the reliability of points and signalling.

There have been a number of severe weather events over the last few years, most notably the very heavy rainfall during December 2006. It appears these "1 in 100 year" events are becoming more frequent and we are examining options to further protect the network particularly against flooding. In the longer term we need to work with stakeholders and funders to determine the value of this increased resilience particularly on key strategic route sections. This might include, for example, the area where the River Tay regularly floods at Dalguise between Dunkeld and Pitlochry, where any protection is likely to be very expensive.

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.

Figure 13 Forecast reduction in delay minutes

	2007/08	2008/09
% reduction in delay minutes	4%	5%

Figure 14 Forecast PPM MAA

TOC	2007/08	2008/09
First ScotRail	90.0%	90.4%
GNER	85.0%	87.2%

Engineering access

Engineering access on the route can largely be accommodated overnight with most lines having lengthy periods with no trains particularly at weekends.

A number of extended blockades are planned on this route over the next few years. These will allow major earthworks and track renewal works to be undertaken in the most efficient manner.

As has been the practice in recent years, these blockades will take place during the early spring and autumn periods when traffic levels are significantly lower. Details of these are being discussed with the affected train operators but are likely to include Perth to Aviemore, at Forsinard on the Far North Line and on the Kyle Line.

Opportunities and challenges

The future passenger growth and capacity requirements on this route can largely be met without significant infrastructure investment. The main exceptions to this are the Aberdeen and Perth to Inverness line (25.04) where the stakeholder aspiration to operate a regular hourly service cannot be achieved without the provision of additional passing loops.

The Far North Line (25.01) is also reaching the situation where further traffic growth will be limited by the capacity of the existing Radio Electronic Token Block (RETB) signalling system.

Delivering future requirements Summary

The Aberdeen and Perth to Inverness (25.04) enhancements referred to above are being developed as separate enhancement proposals. We will ensure that any works we need to carry out on these lines in the short term are compatible with the emerging future specification.

The Far North (25.01) RETB signalling system is currently being life extended to allow it to continue to function satisfactorily for approximately another 7 to 10 years until its ultimate renewal is required.

We will continue to ensure that our planned renewals on the route take account of forecast traffic growth aspirations wherever possible.

Expenditure

Figure 15 shows the planned level of expenditure on renewals on this route over the next two years. The precise timing and scope of these 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	9	9
Switches and crossings	–	2
Other	0	–
Track total	9	10
Civils		
Underbridges	5	4
Overbridges	0	1
Bridgeguard 3	0	–
Earthworks	5	5
Culverts	0	0
Coast and estuary defence	1	1
Retaining walls	0	–
Civils total	12	9
Signalling		
Minor works/other	1	2
Signalling total	1	2
Telecoms		
Customer information systems (CIS)	0	0
Other	1	0
Telecoms total	1	1
Operational property		
Stations		
Franchised	0	0
Depots		
Light maintenance	2	2
Operational property total	3	2
Plant and machinery		
Fixed plant		
Point heating	0	0
Other	0	0
Plant and machinery total	0	0
Total Renewals	26	25

Enhancements (funded by)		
Network Rail (RAB)		
Potential schemes	0	–
Total	0	–
Scottish Executive		
Potential schemes	0	–
Total	0	–
Other third party		
Planned		
Other	0	–
Total	0	–
Potential schemes	0	–
Total	0	–
Total Enhancements	0	–

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 and 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.

Figure 16 Forecast volumes		
	2007/08	2008/09
Track		
Plain line (km)		
Rail	21	25
Sleepers	13	16
Ballast	13	16
Total	48	57
Switches & crossings (no.)		
Complete renewal	–	3
S&C (equivalent units)	–	3
Other (km)		
Drainage	0	–

Civils		
Underbridges (m ²)	2,744	2,638
Overbridges (m ²)	–	810
Bridgeguard 3 (m ²)	153	–
Earthworks (m ² slope surface)	22,435	26,270
Culverts (m ²)	44	–
Coast and estuary defence (lm)	400	250
Retaining walls (m ²)	220	–
Telecoms		
Concentrators		
CIS (stations)	–	3

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	19	18

Infrastructure investment

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

Project	Project description	Output change	Main asset type(s)	Funding	GRIP stage	Completion year
A Rannoch Viaduct (25.02)	Bridge works	Steelwork repairs	Structures	Network Rail	4	2007/08
B Brora/Helmsdale (25.01)	Coastal Defence Improvements	Renewal	Earthworks	Network Rail	2	2008/09
C Glen Falloch, Nr Crianlarich (25.02)	Underbridge Repairs	Painting/weatherproofing	Structures	Network Rail	3	2008/09
D Oykel Viaduct, Nr Lairg (25.01)	Bridge Painting	Painting/weatherproofing	Structures	Network Rail	6	2007/08
E River Gaur, Nr Rannoch (25.02)	Bridge Painting	Painting/weatherproofing	Structures	Network Rail	4	2007/08
F Rudha Glas, Nr Arrochar (25.02)	Bridge Repairs	Steelwork strengthening	Structures	Network Rail	1	2009/10
G River Thurso (25.01)	Bridge Repairs	Steelwork strengthening and painting	Structures	Network Rail	4	2008/09
H Annat East, Nr Ft William (25.02)	Level Crossing Renewals	Renewal	Signals	Network Rail	1	2008/09
I Annat West, Nr Ft William (25.02)	Level Crossing Renewals	Renewal	Signals	Network Rail	1	2008/09
J Gartly, Nr Huntly (25.04)	Level Crossing Renewals	Renewal	Signals	Network Rail	1	2011/12
K Oyne, Nr Insch (25.04)	Level Crossing Renewals	Renewal	Signals	Network Rail	1	2012/13

Figure 18 Planned infrastructure investment

Project	Project description	Output change	Main asset type(s)	Funding	GRIP stage	Completion year
L Blair Atholl/Dalwhinnie (25.03)	Track Circuit Renewals	Improved reliability	Signals	Network Rail	1	2009/10
M Pass of Brander, Nr Oban (25.02)	Signalling Renewals	Improved performance	Signals	Network Rail	1	2008/09
N Far North (25.01)	RETB Life Extension	10 year life extension to system	Signals & telecoms	Network Rail	5	2007/08
O West Highland (25.02)	RETB Life Extension	Life extension to system	Signals & telecoms	Network Rail	5	2009/10
P Perth (25.03)	Signalling & Telecoms Renewals	Renewal	Signals & telecoms	Network Rail	1	2008/09
Q Mossend/Eigin Corridor (25.04)	Gauge Enhancement Programme	Facilitate additional freight traffic	All	Transport Scotland	6	2007/08
R Track Renewals, S&C. Ardgay		Renewal	Track	Network Rail	Various	2008/09
S Track Renewals, S&C. Kingussie, Aviemore, Huntly, Nairn, Inverness, Muir of Ord		Renewal	Track	Network Rail	Various	2009/10
T Track Renewals, S&C. Moy, Invergordon North, Keith		Renewal	Track	Network Rail	Various	2010/11
U Raiths Farm, nr Dyce (25.04) New Freight Terminal		New freight facility	All	Union Square Developments	5	2009/10

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	
V	Aberdeen Crossrail (25.04) Additional passenger services in N.E. Scotland	Increased service frequency	Track & signals	To be Determined	2	
W	Inverness Freight Terminal (25.03) New track and signalling layout connecting new terminal to rail network	New freight facility	Track & signals	To be Determined	1	
X	Inverurie Transport Interchange (25.04) New station transport interchange	Station environment enhancement and additional car park facilities	Property	To be Determined	2	

Figure 20 highlights route enhancement aspirations

Figure 20 Route enhancement aspirations					
Project	Project description	Output change	Main asset type(s)	Funding	Status
Y	Central Belt/Inverness Timetable Recast and infrastructure works	Reduced journey times and increased frequency	All	Transport Scotland	
Z	Inverness/Aberdeen Timetable Recast and infrastructure works	Reduced journey times and increased frequency	All	Transport Scotland	

Non infrastructure developments

Figure 21 highlights a significant timetable scheme for the route which is under development

Figure 21 Timetable development			
Description	Key issues	Actions or options being developed	Benefits
Resilient Timetables	Rules of the Plan update	Headways and Running Times being reviewed	Performance improvements
			Target timetable implementation
			Ongoing

Appendix

Figure 22 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
25.01	Far North plus Kyle Line	WCK (KYL)	Rural	Transport Scotland	No	W8 (W7)	10(5)	75(60)	none	RETB	15"	1
25.02	West Highland Line	WHL (MLG)	Rural	Transport Scotland	No	W8 (W7)	5	70(55)	none	RETB	15"	1
25.03	Perth – Inverness	HGL	Secondary	Transport Scotland	No	W8	8	80	none	TB(AB)	15"	1(2)
25.04	Aberdeen – Inverness	ANI	Secondary	Transport Scotland	No	W7	10	75	none	TB(AB)	20"	1(2)

Capacity and operational constraints

- Aberdeen – Inverness: single line close to capacity
- Inverness – Wick/Kyle: RETB signalling approaching capacity

Note

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

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

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

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

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

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

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



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