



## Route 26 Strathclyde and South West Scotland

### Today's route

The principal elements of the Strathclyde and South West Scotland Route are described below. The relevant Strategic Route Section is shown in brackets:

- the Glasgow North Electric network from Helensburgh, Balloch and Milngavie in the west to Springburn and Drumgelloch in the east via Glasgow Queen Street Low Level (26.04);
- local diesel lines from Glasgow Queen Street High Level to Cumbernauld and Anniesland (26.12);
- the Scottish Central line from Motherwell to Greenhill Lower Jcn via Mossend and Cumbernauld (26.10);
- the Argyle Line network (26.04) from points west of Partick to Motherwell via Bellshill (26.01) and Hamilton, Larkhall (re-opened in 2005), Coatbridge Central (26.10) and Lanark (26.11);
- the Glasgow South Electric network from Glasgow Central High Level to Neilston, Newton and the Cathcart Circle (26.09);
- the section of the West Coast Main Line between Glasgow Central High Level and Carstairs (26.01);
- local diesel lines from Glasgow Central High Level to Paisley Canal (26.06), Kilmarnock, East Kilbride (26.07), Whifflet (26.10) and Edinburgh via Shotts (26.02);
- the Inverclyde network from Glasgow Central High Level to Wemyss Bay and Gourock (26.03);
- the Ayrshire network from Glasgow Central High Level to Ayr and Largs (26.03);
- the South West network from Ayr to Stranraer (26.05) and Kilmarnock to Gretna (26.08) with connecting links between Kilmarnock and Barassie (26.08) and Mauchline and Newton on Ayr; and
- freight branches to Watsonhead (26.01), Deanside (26.03), Chalmerston (26.05), Killoch (26.03), Knockshinnoch and Greenburn (26.08).

### Route context

The Strathclyde and South West Scotland Route predominantly comprises the local Glasgow suburban rail network, the largest local passenger network in the UK outside London. These services operate in a mature market where quality of service and reliability are key to retaining and growing modal share. Reliable performance delivery is therefore of paramount importance to our customers and their passengers.

The South Western lines have an important role for the communities they serve, particularly where interchanges exist with other transport modes including ferry generated passenger traffic to and from Stranraer and Anglo-Scottish passenger traffic to Carlisle and Newcastle.

Long distance passenger traffic from the West Coast Main line via Carlisle and the East Coast Main Line via Edinburgh also joins the route at Carstairs.

The route also serves a number of freight terminals. The Kilmarnock to Gretna Junction section carries significant volumes of coal traffic from Ayrshire opencast sites and the deep water terminal at Hunterston to English power stations. Transport Scotland commissioned its Scotland Planning Assessment (SPA), as one of the inputs to the development of their strategy for rail in Scotland, and we are currently progressing the Route Utilisation Strategy (RUS) for Scotland. Both of these pieces of work have informed the development of this route plan.



### Passenger and freight demand

In recent years Scotland's economy has been re-structured away from the traditional manufacturing base towards a service led economy. As a consequence, Glasgow's population has been in decline since the 1960s. Key beneficiaries of this population outflow have been the adjacent council areas where significant additional demand has arisen on commuter services into Glasgow. During 2004 a programme of platform extension works was undertaken on the East Kilbride line to provide additional capacity to accommodate increased demand on this corridor.

The recently completed 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.

These numbers will be further reviewed in the RUS to ensure accurate inclusion of multi-modal ticket information. For further information, see the published Scotland Planning Assessment at <http://www.transportscotland.gov.uk>

The SPA also reported on current peak hour load factors on individual service groups, averaged over the morning peak. The load factors for services that operate on this route are detailed in Figure 2.

**Figure 1** Current passenger numbers

Sector	Daily Trips
Central Glasgow	42,600
South West Scotland	17,170
North West Strathclyde	14,150
South East Strathclyde	12,150
South Strathclyde	12,070
Shotts and Livingston	3,470
North East Strathclyde	3,300

**Figure 2** Peak loading

Service	Load Factor
Electrics – South West	110%
Electrics – South East	77%
Edinburgh to Glasgow via Falkirk	76%
Electrics – North West	69%
Diesels (Stirling Corridor)	66%
Diesels (Barrhead/East Kilbride/Paisley Canal)	48%
Diesels (Maryhill/Cumbernauld)	48%

31% of all commuting trips into Glasgow in the morning peak are made by rail. This is only just below the modal share achieved by rail in London where the problems of road congestion are much more acute. As can be seen from the above table, overcrowding is experienced on the Ayrshire corridor, even though the majority of services are now worked by 6 car formations. This is exacerbated by the growth of traffic at Prestwick Airport where rail has the highest modal share of passengers (30%) of any UK airport.

Freight traffic on the route is dominated by the coal traffic from Hunterston deep water port in Ayrshire to Longannet power station which accounts for some 4 million tonnes per year. Following the closure of Scotland's last deep coal mine at Longannet in 2002 and the introduction of limits for sulphur dioxide emissions which can only be met by the use of imported low sulphur coal, all of the power station's coal requirements are now fed by rail. This traffic, which is routed via Glasgow, Falkirk and the Forth Bridge, crosses a number of capacity constrained sections on the route.

In addition to this traffic, there is also a significant flow of imported coal from Hunterston and opencast coal from Ayrshire to English power stations of some 4 million tonnes per year which is routed via the G&SW line.

In addition to these coal flows, significant volumes of wagonload, bulk cargoes and intermodal traffic are also carried, employing both diesel and electric traction.

#### Current services

First ScotRail operates local passenger services in the Glasgow suburban area using a mix of electric and diesel trains. They also operate the South Western services as well as overnight sleeper services from Glasgow and Fort William to London Euston. Virgin West Coast, Virgin Cross Country and GNER provide Anglo Scottish daytime services from Glasgow Central.

EWS, Freightliner Ltd, Freightliner Heavy Haul Ltd, DRS and GBRailfreight provide freight services over the route.

#### Current traffic

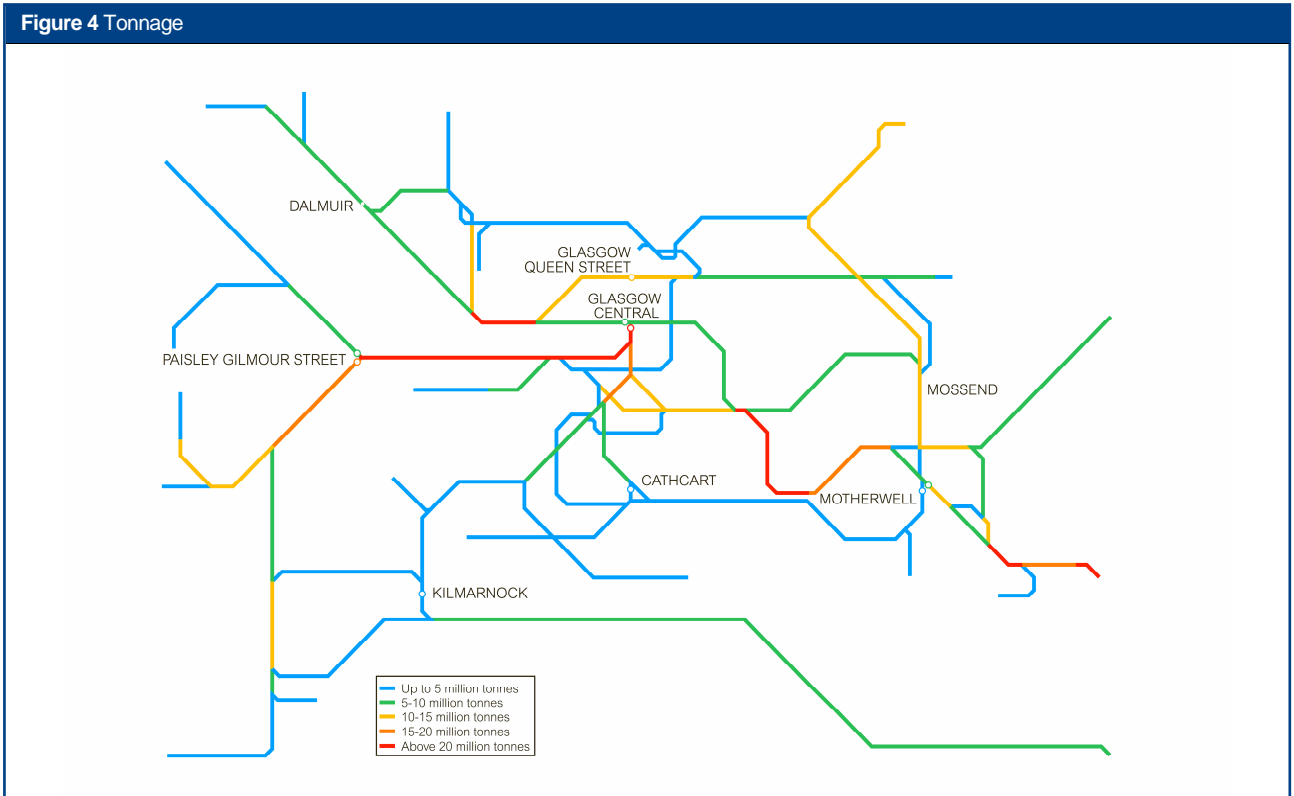
The Strathclyde and South West Scotland network carries mixed traffic, with a significant range of speed, acceleration and stopping patterns of trains. On many corridors this involves a complex mix of freight, urban, and interurban services with speeds up to 100 mph. There is little traffic segregation on the main corridors. As the route is predominantly two track with significant sections of single track, this leads to high levels of utilisation, imposing constraints on the timetable. Several sections of the route particularly around Glasgow and between Mauchline and Gretna are operating at or close to capacity.

Traffic volumes are summarised in Figure 3.

**Figure 3** Current use

	Passenger	Freight	Total
Train km per year (millions)	18	3	21
Train tonne km per year (millions)	2,840	2,475	5,315

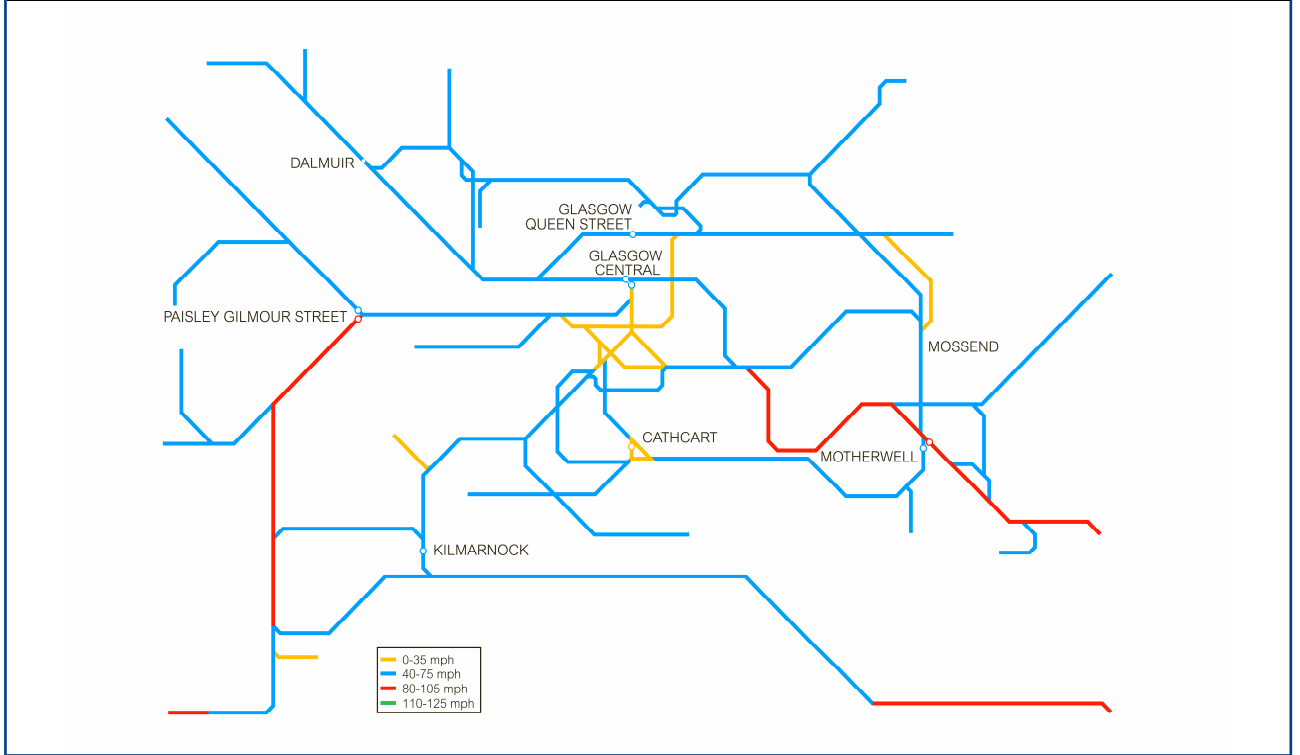
Figure 4 shows the tonnage levels on the route.



**Current infrastructure capability**

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

**Figure 5 Linespeed**



**Figure 6 Electrification**

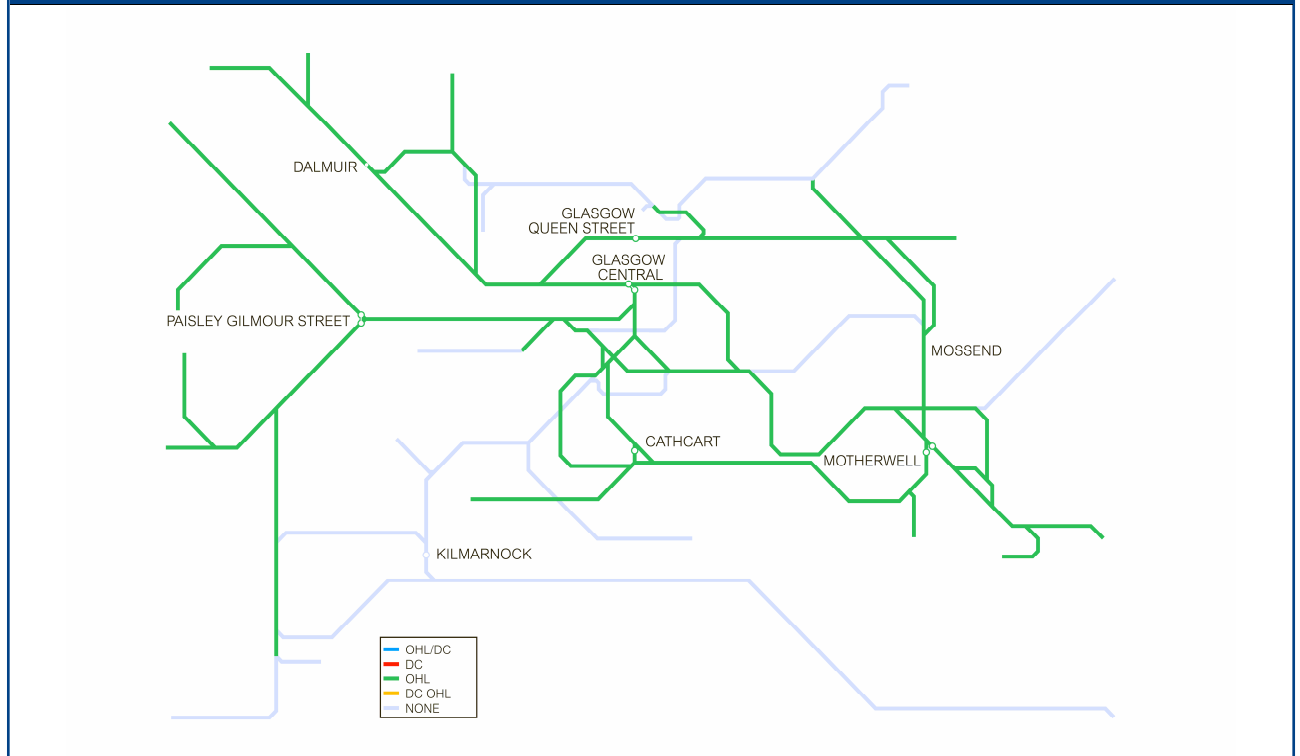


Figure 7 Route availability

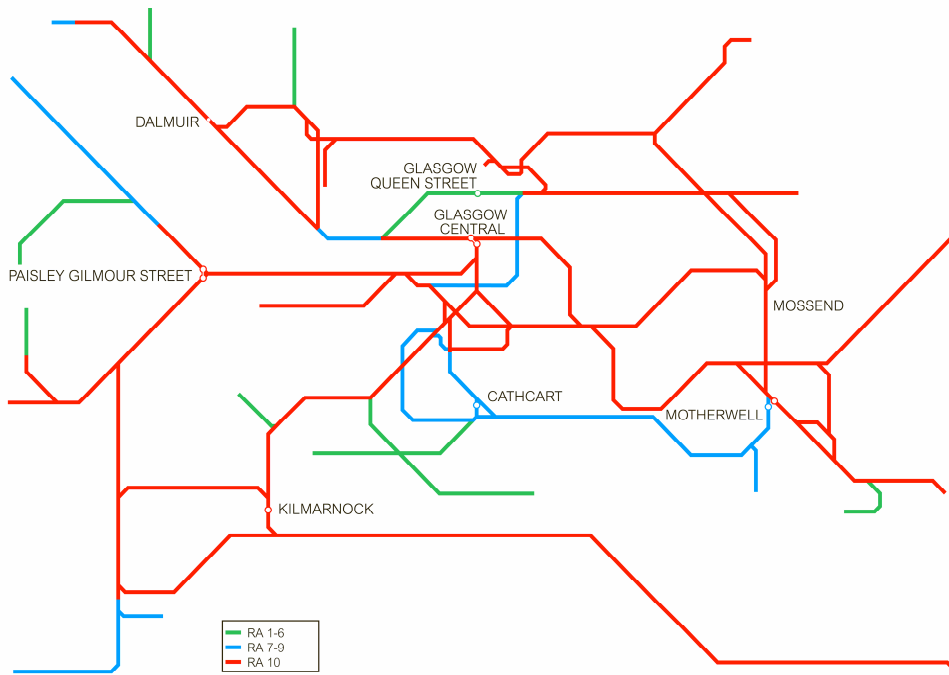
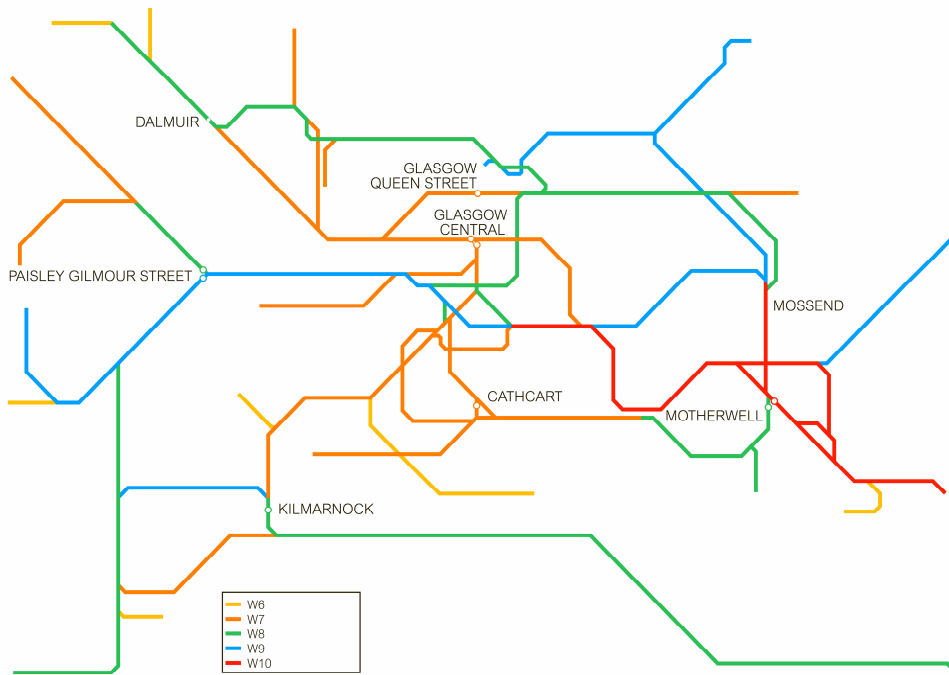


Figure 8 Gauge



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

	Peak	Off Peak
Glasgow Queen Street LL to Helensburgh	3	2
Glasgow Queen Street LL to Airdrie	6	4
Glasgow Queen Street HL to Cumbernauld	2	2
Glasgow Queen Street HL to Anniesland	2	2
Glasgow Central LL to Larkhall	3	2
Glasgow Central LL to Lanark	3	2
Glasgow Central HL to Neilston	3	2
Glasgow Central HL to Newton	2	2
Glasgow Central HL to Paisley Canal	2	2
Glasgow Central HL to Kilmarnock	2	1
Glasgow Central HL to East Kilbride	4	2
Glasgow Central HL to Edinburgh via Shotts	1	1
Glasgow Central HL to Whifflet	2	2
Glasgow Central HL to Wemyss Bay	2	1
Glasgow Central HL to Gourrock	4	3
Glasgow Central HL to Ayr	3	2
Glasgow Central HL to Largs	2	1

**Current capacity**

The baselining work carried out as part of our current Scotland RUS work has confirmed that there are a number of significant capacity constraints on the existing network. The most significant of these constraints for passenger services on this route are:

- the congested approaches to Glasgow Central High Level station (26.01/26.03);
- the congested section between Finnieston and Hyndland (26.04);
- the congested section between Paisley Gilmour St and Glasgow Central High Level (26.03);
- restrictive platform lengths at a number of stations, most significantly Glasgow Central High Level and stations on the line to Kilmarnock (26.01/26.07);
- the following single line sections:
  - the Balloch Branch (26.04);
  - the Milngavie Branch (26.04);
  - Airdrie to Drumgelloch(26.04);
  - the Cowlairs South to Sighthill West Chord (24.01);
  - Hamilton to Motherwell (26.10);
  - The Lanark Branch (26.01);
  - the Paisley Canal Branch (26.06);
  - Barrhead to Kilmarnock (26.07);
  - Busby to East Kilbride (26.07);
  - the Wemyss Bay Branch (26.03);
  - Ardrossan to Largs (26.03);
  - Annan to Gretna (26.08); and
  - Kilmarnock to Barassie (26.08).
- Key single lead junctions at Westerton (26.04), Bellgrove (26.04), Newton (26.01) and Busby Junctions (26.07).

In addition to the above, key constraints for freight services are:

- the single line section between Mauchline and Newton on Ayr (26.08);
- a lack of stabling capacity at Mossend (26.10) and Falkland Yards (26.03);
- restrictive loading gauge and route availability; and
- lack of passing loops of adequate size to accommodate current maximum train lengths. This is particularly acute between Kilwinning and Hunterston (26.03) and Gretna and Kilmarnock. (26.08).

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

Route section	Number of trains
Partick – Hyndland	17
Cardonald – Paisley	13
Cambuslang – Newton	12
Crossmyloof – Pollokshaws West	9

**Figure 11** Current PPM MAA (2005/06)

TOC	MAA	As at period
First ScotRail	84.5%	10
GNER	81.5%	10
Virgin Cross Country	80.2%	10
Virgin West Coast	80.3%	10

### Current performance

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

The route is characterised by a large number of flat junctions and single line branches. For example a train between Milngavie and Lanark, a distance of 37 miles, traverses 9 flat junctions with a single line branch at each end of the journey. Thus any delay can have serious knock-on effects across the network. To minimise this, enhanced maintenance regimes for strategic points and signalling equipment at these key nodes are being implemented.

Long distance high speed and slower local stopping passenger services jointly operate over a number of sections of this route. This mix of traffic can lead to performance problems during times of perturbation. We are therefore enhancing the contingency plans for individual service groups in partnership with our train operating customers to ensure that overall delay is minimised in the event of any incident and allow normal services to be resumed as soon as possible. These enhanced plans have recently been introduced for North Electric and South Electric services. We are also undertaking reviews of the timetable on individual parts of the network to identify where adjustments would result in an improvement in service reliability. The Paisley Canal line has been identified as an area where such changes would deliver performance benefits.

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.

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

- enhanced possession availability in the Glasgow Central (26.01) area to improve maintenance access opportunities;
- renewal of hydraulic point motor hoses on the North Electric routes (26.04);
- flood mitigation works at Milliken Park, West Kilbride, Fairlie (26.03) and Queen Street Low Level (26.04);
- removal of long standing speed restrictions on the Neilston branch (26.09);
- anti-vandal measures at feeder stations and track section cabins;

- vermin control to prevent cable damage at various locations, in particular Hyndland (26.04); and
- enhanced vegetation management regimes.

### Future requirements

#### Strategic direction

Scottish Ministers are developing a rail strategy for Scotland and this will feed into the Scottish High Level Output Statement (HLOS) which will determine the future direction of the route. On most sections of this route the growth predictions in the SPA would not significantly worsen capacity issues.

A series of initiatives, with many significant impacts on the Strathclyde and South West Scotland route, is envisaged over the next few years. These are highlighted below:

- we are lodging the Parliamentary Bill seeking powers to re-instate the Airdrie to Bathgate rail line in early 2006 on behalf of Transport Scotland. Once complete in 2009, the project will allow four trains per hour to operate between Edinburgh and Glasgow on this corridor which will provide some relief to the current main Edinburgh to Glasgow route via Falkirk High. In addition this line would give a new direct connection between principal communities in North Lanarkshire and Edinburgh and West Lothian and Glasgow;
- the proposals to provide a heavy rail link to Glasgow Airport are also at an advanced stage of development. This link will be achieved by building a single track branch from Paisley St James, on the Paisley Gilmour St to Gourrock line, into the Airport. A dedicated 4 train per hour service will operate from Glasgow Central High Level. These additional services drive a requirement to enhance the existing network at Glasgow Central High Level station and between Shields Junction and Paisley to provide additional passenger capacity on this corridor; and
- following the implementation of the Government's Rail Review proposals, Network Rail is now responsible for the strategic development of the network in partnership with our key industry stakeholders. A Discretionary Fund has been established to allow enhancements to be progressed where an industry business case can be made. Potential schemes on this route that are being considered for funding by this route are track and signalling

**Figure 12** Projected passenger numbers

Sector	Morning peak trips			Change relative to 2003	
	2003/04	2016	2026	2016	2026
North West Strathclyde	2,502	2,468	2,685	- 1%	+ 7%
North East Strathclyde	567	563	615	- 1%	+ 8%
South Strathclyde	2,156	2,191	2,330	+ 2%	+ 8%
South East Strathclyde	2,134	2,180	2,319	+ 2%	+ 9%
Central Glasgow	28,686	29,347	32,273	+ 3%	+ 13%
South West Scotland	4,791	5,753	6,671	+ 20%	+ 39%

enhancements in the Glasgow Central area, extension of Stevenston loop and the re-modelling of Hyndland East Junction.

#### Future demand

Increased demand will occur on services on this route from the implementation of the following politically committed major rail enhancement schemes detailed in the preceding section between 2007 and 2011:

- Glasgow Airport Rail Link; and
- Airdrie to Bathgate.

We are currently discussing the level of additional demand that each of these will generate with the individual scheme promoters.

In addition to the above additional demand generated by specific major projects, the recently completed SPA forecast that the services that operate over the route would enjoy economic growth over the next 20 years. This arises largely as a result of the significant re-generation works planned for the inner areas of Glasgow combined with the associated forecast employment growth. Significant population growth is therefore predicted in the city centre and the small and medium sized towns in the adjoining areas. These changes are supported by Local Structure Plan policies which seek to deliver plan-led expansion in many of these areas. A key component of these policies is the provision of high quality rail links into Glasgow.

The SPA reported on projected daily passenger numbers on a number of geographically aggregated sectors during the morning peak period over the next 20 years. The trip data for the sectors on this route are detailed in Figure 12.

For further information, see the published Scotland Planning Assessment at <http://www.transportscotland.gov.uk>

Future freight demand on the route is forecast to grow now that Scottish Power has agreed to fit the necessary Flue Gas De-sulphurisation equipment at Longannet power station to meet the requirements of the emissions control directive. Other factors that will affect future freight demand on the route are the increased use of rail on trunk flows within the logistics chain, the national recycling strategy and the construction of the associated waste transfer stations and the availability of grants towards the creation of new freight terminals. If the proposed container development at Hunterston comes to fruition, there will also be significant further pressure on the route towards Glasgow.

Figure 13 Tonnage growth

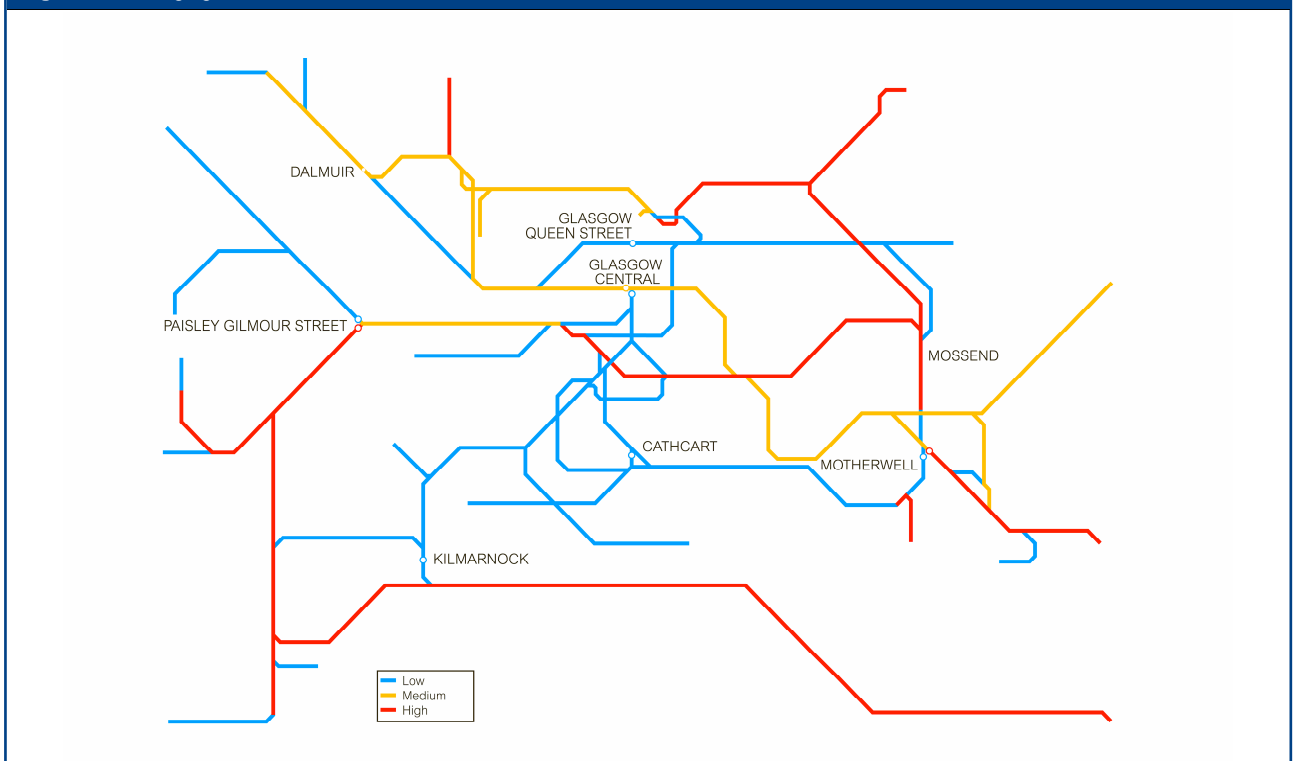


Figure 13 indicates the forecast percentage change in tonnage to 2015.

#### Future capability

A number of initiatives are being considered to enhance the capability of the route. The most significant of these are summarised below:

- the Mossend to Elgin gauge enhancement project to provide clearance for a wider range of freight vehicles on the route;
- speed improvements as part of planned S&C renewals; and
- signalling improvements as part of planned S&C renewals.

#### 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 presently assessing their implications. The key route sections within this route that have been identified as fragile routes and have clearly defined additional tonnage/train numbers projected by the industry are Glasgow & South Western and Dalrymple – Stranraer.

#### Future capacity

Traffic levels on the route have increased incrementally over recent years without any

significant investment in additional capacity. As a consequence, the route is now operating at maximum capacity over a number of sections. The following measures are planned to address this:

- the current Scotland Route Utilisation Strategy is considering how current pinch points could be eased and performance enhanced through timetable re-structuring; and
- a number of opportunities have been identified where modest infrastructure enhancement would yield significant improvement in the outputs that the network can deliver. Typically the optimum time to undertake these works is as an add-on to a planned renewal. In such cases the incremental enhancement cost is significantly lower than the cost of delivery as a stand alone project.

Several further measures are envisaged as being necessary to accommodate the predicted growth. The most significant of these are considered to be:

- provision of additional freight capacity on the Kilmarnock to Gretna line through a combination of track re-doubling and provision of additional intermediate block sections; and
- relieving the identified single line and single lead junction bottlenecks as major renewals fall due.

**Figure 14** Forecast reduction in delay minutes

	2006/07	2007/08	2008/09
% reduction in delay minutes	9%	16%	23%

Certain stations will require works to enable them to cope with the predicted growth in passenger numbers. Partick station is currently being re-constructed to improve the interchange between trains, the subway, buses and taxis. The design also includes additional passenger circulating areas to relieve the current congestion that is experienced.

Platform extensions were carried out at a number of stations in 2004 to permit six coach trains to operate on the East Kilbride line. Current growth predictions suggest that platform extensions will also be required to permit longer trains to operate on the Glasgow to Kilmarnock and Glasgow to Ayr and Largs lines. Options for delivering these extensions will be considered in the RUS.

#### Future performance

Figure 14 shows the forecast reduction in Network Rail delay minutes compared with 2005/06.

Figure 15 shows the forecast PPM for the main TOCs running along the route.

#### Engineering access

A number of extended blockades are planned on this route over the next few years. These will permit switch and crossing, track and bridge renewal work to be undertaken in the most efficient manner. Significant blockades planned for 2006 are on the Neilston and Wemyss Bay branches and between Gretna and Dumfries.

Details of these are being discussed with the affected train operators.

#### Opportunities and challenges

Modest growth in passenger numbers is forecast on this route as a consequence of two factors. The first of these is Transport Scotland's programme of major enhancement projects, in particular the Airdrie to Bathgate and Glasgow Airport Rail Link projects. The second is the background growth on existing services that arises as a consequence of the growth in the Glasgow economy and the continued migration of population from the city to the adjoining hinterland.

Modest freight growth is forecast, now that the long term future of Longannet power station has been assured.

The key challenge to the rail industry in the coming years will be to deliver the planned increased service levels and maintain performance.

#### Delivering future requirements

##### Summary

We believe that the solution to passenger growth and future capacity requirements on this route will be met by a combination of several separate initiatives. The most significant of these are:

- a review of existing service patterns to optimise the efficient balance between longer distance and local services;
- a programme of incremental capacity enhancement (which can be delivered as improvements to planned renewals); and
- limited stand alone capacity enhancements at critical locations.

Certain infrastructure constraints on this route do not lend themselves to a solution in the foreseeable future. These factors therefore form an upper limit to the route's ability to cope with future growth. The most significant of these are detailed below:

- there are a number of single line sections where the railway line was originally built as a single line and the costs of doubling would be prohibitive;
- there are several flat junctions on the route, but there is insufficient space available for grade separation at many of the locations that would benefit from it; and
- the approaches to Glasgow Central High Level station which are on viaduct, including a major bridge across the River Clyde.

**Figure 15** Forecast PPM MMA

TOC	2006/07	2007/08	2008/09
First ScotRail	87.3%	88.7%	90.0%
GNER	83.6%	85.5%	87.7%
Virgin Cross Country	81.6%	83.5%	84.3%
Virgin West Coast	85.5%	87.8%	88.6%

## Expenditure

Figure 16 shows the planned level of expenditure on renewals on this route over the next five 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 16** Forecast expenditure

£m (05/06 prices)	2006/07	2007/08	2008/09
<b>Renewals</b>			
<b>Track</b>			
Plain line	21	17	16
S&C	5	6	5
Drainage	1	1	1
<b>Track Total</b>	<b>28</b>	<b>24</b>	<b>22</b>
<b>Civils</b>			
Underbridges	2	1	5
Overbridges	0	0	0
Bridgeguard 3	(0)	0	–
Footbridges	–	–	0
Earthworks	1	2	0
Tunnels	2	3	0
Culverts	–	–	0
Coastal & estuary defence	0	–	1
Retaining walls	0	–	–
Other	4	0	0
<b>Civils Total</b>	<b>10</b>	<b>6</b>	<b>7</b>
<b>Signalling</b>			
Resignalling	16	41	30
Minor works/other	4	2	5
<b>Signalling Total</b>	<b>20</b>	<b>44</b>	<b>36</b>
<b>Electrification</b>			
<b>AC systems</b>			
HV switchgear	–	2	1
HV cables	–	0	0
Booster transformers	0	0	0
OHL re-wiring	14	4	0
OHL campaign changes/refurbishment	1	0	0
OHL structures	0	0	0
Other	6	14	0
<b>Electrification Total</b>	<b>20</b>	<b>20</b>	<b>2</b>

<b>Telecoms</b>			
DOO CCTV	3	2	1
CIS systems	0	–	–
Telecoms cables	0	0	0
Other	0	1	2
<b>Telecoms Total</b>	<b>3</b>	<b>3</b>	<b>3</b>
<b>Plant and machinery</b>			
Fixed plant	0	0	0
Point heating	0	0	0
Signal supply point	0	0	–
Mobile plant/vehicles	0	0	0
<b>Plant and machinery Total</b>	<b>1</b>	<b>0</b>	<b>1</b>
<b>Operational property</b>			
Stations	2	6	2
Light maintenance depots	0	–	1
Lineside buildings	0	1	0
<b>Operational property Total</b>	<b>2</b>	<b>7</b>	<b>3</b>
<b>Total Renewals</b>	<b>84</b>	<b>103</b>	<b>72</b>
<b>Enhancements (funded by)</b>			
<b>Network Rail</b>			
West Coast Route Modernisation	3	3	0
<b>Network Rail Total</b>	<b>3</b>	<b>3</b>	<b>0</b>
<b>Network Rail (RAB)</b>			
Glasgow and South west enhancements for increased coal traffic	3	3	–
Hyndland East junction renewal	–	3	–
Other	1	0	–
<b>Network Rail (RAB) Total</b>	<b>4</b>	<b>6</b>	<b>–</b>
<b>Transport Scotland</b>			
Glasgow Central airport link	0	10	30
Mossend to Elgin gauge enhancements	2	2	–
Airdrie to Bathgate	3	125	100
Other	0	0	0
<b>Transport Scotland Total</b>	<b>5</b>	<b>138</b>	<b>130</b>

<b>Other Third Party</b>			
M74 project & enabling works	1	2	3
Perth station transport study	0	0	3
SPT Hyndland Station/Gartnavel	0	5	10
Lockerbie DDA footbridge	1	–	–
Finnieston to Hyndland corridor east junction renewal	–	3	–
Glasgow to Kilmarnock service enhancement	0	3	7
Stranraer station relocation	–	0	3
West Coast Route Modernisation	2	0	0
Other	2	1	1
<b>Other Third Party Total</b>	<b>8</b>	<b>15</b>	<b>25</b>
<b>Total Enhancements</b>	<b>19</b>	<b>161</b>	<b>156</b>

The planned volume of renewals is detailed in Figure 17.

<b>Figure 17 Forecast volumes</b>			
	<b>2006/07</b>	<b>2007/08</b>	<b>2008/09</b>
<b>Track</b>			
<b>Plain line (km)</b>			
Rail	41	39	39
Sleepers	28	26	26
Ballast	29	28	28
<b>Switches &amp; crossings (no)</b>			
Complete renewal	8	9	9
Partial renewal/reballasting	14	15	15
Fencing (km)	–	0	–
Drainage (km)	3	3	3
<b>Civils</b>			
Underbridges (square metres)	944	2,231	1,358
Overbridges (square metres)	478	4	27
Footbridge (square metres)	–	–	25
Embankments (square metres)	13,859	8,669	160
Tunnels (square metres)	3,167	1,561	1,114
Culverts (square metres)	–	–	31
Coastal & estuary defence (linear metres)	20	–	500
Retaining walls (square metres)	2	–	–
<b>Signalling</b>			
Resignalling (SEUs)	–	–	291
<b>Electrification</b>			
<b>AC systems</b>			
HV switchgear (CBs)	–	13	7
HV cables (km)	62	15	1
Booster transformers (no)	2	14	10
Grid supply points (CBs)	2	1	–
OHL re-wiring (tension length)	234	49	1
OHL spanwires (no)	1	1	–
OHL structures (no)	1	1	1
<b>Telecoms</b>			
DOO CCTV (systems)	132	40	12
<b>Other</b>			
Long line PA (systems)	11	23	23
<b>Plant and machinery</b>			
Signalling supply points (no)	8	–	–
Point heating (point end)	50	–	20

**Figure 18** Forecast expenditure

£m (05/06 prices)	2006/07	2007/08	2008/09
Maintenance	32	29	27

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

## Infrastructure investment

Figure 19 highlights committed schemes that are planned for completion in the financial year shown.

Figure 19 Planned infrastructure investment						
Project	Scope	Enhancement or output change	Main asset type(s)	Third party funding	GRIP stage	Completion year
<b>A</b> Airdrie/Bathgate (26.04)	New Rail Link	Reinstatement of disused line	All	Transport Scotland	4	2008/09
<b>B</b> GARL (26.03)	New Link to Glasgow Airport	Provision of a rail link between Glasgow Central and Glasgow Airport	All	SPT/Transport Scotland	2	2008/09
<b>C</b> Mossend/Elgin Corridor (26.12)	Gauge Enhancement Programme	Facilitate additional freight traffic	All	Transport Scotland	4	2007/08
<b>D</b> Gartlea Road, Airdrie (26.04)	Re-decking and widening of overbridge	Allows for replacement of double track for Airdrie/Bathgate scheme	Civils	None	4	2007/08
<b>E</b> Drumlanrig Tunnel (26.08)	Tunnel Lining Repairs	Lining and air shaft excavations	Civils	None	3	2007/08
<b>F</b> Colgrain, Nr Cardross (26.04)	Coastal Defence Works	Rock armour placement	Civils	None	2	2008/09
<b>G</b> Kelvinhaugh Tunnel, Glasgow (26.04)	Tunnel Lining Repairs	General repairs	Civils	None	2	2007/08
<b>H</b> Enterkine Viaduct, Ayrshire (26.08)	Timber Decking Replacement	Viaduct remedial works	Civils	None	2	2008/09
<b>I</b> Benston Burn, Nr Auchinleck (26.08)	Underbridge Repairs	Bridge strengthening work	Civils	None	2	2008/09

Figure 19 Planned infrastructure investment

Project	Scope	Enhancement or output change	Main asset type(s)	Third party funding	GRIP stage	Completion year
J Cook Street, Glasgow (26.03)	Underbridge Repairs	Bridge strengthening work	Civils	None	2	2008/09
K High Street Tunnel, Glasgow (26.04)	Tunnel Lining Repairs	General repairs	Civils	None	2	2007/08
L Dunlop Road, Lugton (26.07)	Underbridge Repairs	Structure renewal	Civils	None	2	2007/08
M Shields/Gourock and other Glasgow suburban routes (26.03)	OHL Renewals	Renewal	E & P	None	5	2007/08
N Glasgow Central (26.01/26.03)	Renewal of Signalling Interlocking	Renewal	Signals	None	3	2008/09
O Cathcart SC (26.09)	Renewal of Signalling Interlocking	Renewal	Signals	None	1	2008/09
P Glasgow to Paisley Corridor (26.03)	Renewal of Signalling Interlocking	Renewal	Signals	None	1	2010/11
Q Paisley to Gourock/Wemyss Bay Corridor (26.03)	Signal Life Extension Programme	Renewal	Signals	None	1	2009/10
R Gailes/Ardmore East Level Crossings (26.03)	AHB Renewals	Renewal	Signals	None	1	2007/08

Figure 19 Planned infrastructure investment							
Project	Scope	Enhancement or output change	Main asset type(s)	Third party funding	GRIP stage	Completion year	
S	G&SW (Various Sites) (26.08)	Renewals & Rewiring	Renewal	Signals	None	1	2007/08
T	Barrhead/Lugton (Various sites)	Renewal of Signalling Interlocking	Renewal	Signals	None	1	2008/09
U	Strathclyde	Renewal of DOO Station Equipment	Renewal	Telecoms	None	3	2007/08
V	Gourock Station (26.03)	New Interchange	Relocation of existing station	All	Inverclyde Council	4	2008/09
W	Hyndland Station (26.04)	Station Re-siting	Relocation of existing station	All	SPT	2	2008/09
X	Glasgow/Kilmarnock (26.07)	Service Enhancements	Half hourly service over route	All	SPT	1	2008/09
Z	Glasgow Area (26.04/26.01)	M74 Enabling Works	Works to manage interface between motorway and railway	Civils	Glasgow City Council	1	2008/09
AA	Finnieston/Hyndland Corridor (26.04)	Renew & Possible Upgrade	Renewal and capacity improvements	All	None	1	2007/08
AB	Stranraer (26.05)	Station Relocation	Relocation of station nearer to town centre	All	Dumfries and Galloway Council	1	2008/09
AC	Allandale (26.12)	New Station	New park and ride station facility	All	Falkirk City Council	1	2008/09
AD	Strathclyde	Station CCTV Control System Upgrade	Station security improvements	Telecoms	None	1	2006/07

Project	Scope	Enhancement or output change	Main asset type(s)	Third party funding	GRIP stage	Completion year
A6	Track Renewals, S&C S&C Renewals at Barassie, Annan, Hunterston, Glasgow Central	Renewals	Track	None		2006/07
A6	Track Renewals, S&C S&C Renewals at Shields, Smithy Lye, Bank Jn, Kirkconnel, Thornhill, Ardrossan, Dubbs, Garnqueen North	Renewals	Track	None		2007/08
A6	Track Renewals, S&C S&C Renewals at Falkland, Gartcosh, Dumfries, Mauchline, New Cumnock, Hyndland, Langloan, Whifflet North	Renewals	Track	None		2008/09
A6	Partick Station (26.04) Reconstruction	Enhancement.	Station	SPT	5	2007
A1	Hamilton Central (26.10) Covered Walkway	Enhancement	Station	South Lanarkshire Council	4	2006

Figure 19 Planned infrastructure investment

Figure 20 highlights uncommitted schemes under development.

Figure 20 Infrastructure investment under consideration						
Project	Scope	Enhancement or output change	Main asset type(s)	Status		
Ⓐ G&SW Enhancements (26.08)	Anglo Scottish coal route works	Greater capacity for Anglo Scottish coal	All	Potential NRDF scheme		
Ⓗ Glasgow Crossrail (26.07 & 26.04)	New cross-Glasgow link	Greater connectivity	All	Client undertaking further evaluation		
Ⓐ Ravenscraig (26.10)	New Station	Enhancement	All	Client undertaking further evaluation		
Ⓗ Anniesland station (26.04)	New DDA compliant platform ramp	Enhancement	Station	Land issue to be resolved		
Ⓗ South Ayr (26.05)	New station	Enhancement	Station	Client undertaking further evaluation		
Ⓗ Barrhill (26.05)	New timber loading terminal	Enhancement	All	Client undertaking further evaluation		
Ⓗ Kilwinning (26.03)	New transport interchange	Enhancement	Station	Client undertaking further evaluation		

### Non-infrastructure developments

The following significant timetable scheme for the route is under development.

**Figure 21** Timetable development

Description	Key issues	Actions or options being developed	Benefits	Target timetable implementation
Resilient Timetables	Rules of the Plan update	Headways and Running Times being reviewed	Performance improvements	2007

## Appendix

Figure 22 Strategic route sections												
Predominant aspect recorded (secondary aspects recorded in brackets). ELR is Engineers Line Reference and RA is Route Availability												
SRS	SRS Name	ELR	Classification	Funding	Community Rail	Freight Gauge	RA	Speed	Electrification	Signalling Type	Signalling Headway	No of Tracks
26.01	WCM: Glasgow Central – Carstairs	WCM	Primary	Transport Scotland	No	W10	10	100(60)	AC	CL	4"(3")	4(2)
26.02	Midcalder Jn – Holytown Jn	EGS	Secondary	Transport Scotland	No	W9	10	70	none	CL	8"	2
26.03	Ayr lines, Wemyss Bay and Gourrock	AYR (GOU)	Secondary	Transport Scotland	No	W9 (W7)	10(7)	90(70)	AC	CL	4"(2")	2(1)
26.04	Glasgow North electric routes	NEM (YKR)	Secondary	Transport Scotland	No	W8 (W7)	10(7)	60(50)	AC	CL	4"(3")	2
26.05	Stranraer – Ayr	STR	Rural	Transport Scotland	No	W8	8	65(20)	none	TB (ETB)	15"	2(1)
26.06	Paisley Canal Branch	CNL	Secondary	Transport Scotland	No	W7	10	50	AC (partial)	CL	5"	1
26.07	Muirhouse Jn – East Kilbride/Kilmarnock	GBK (EKE)	Secondary	Transport Scotland	No	W7 (W6)	10(5)	70(40)	none	TB (AB)	15"	2(1)
26.08	Gretna Jn – Kilmarnock – Barassie Jn	GSW (BAK)	Secondary	Transport Scotland	No	W9 (W8)	10	80(70)	none	AB (TB)	20"	2(1)

**Figure 22 Strategic route sections**

Predominant aspect recorded (secondary aspects recorded in brackets). ELR is Engineers Line Reference and RA is Route Availability												
SRS	SRS Name	ELR	Classification	Funding	Community Rail	Freight Gauge	RA	Speed	Electrification	Signalling Type	Signalling Headway	No of Tracks
26.09	Eglinton Street Jn – Neilston/Newton including Cathcart Circle	KHL (NNH)	Secondary	Transport Scotland	No	W7	7(5)	50(40)	AC	CL	4"(2")	2
26.10	Newton – Gartsherrie South/Rutherglen Jn	RCB (SCM)	Secondary	Transport Scotland	No	W9	10	75(70)	AC	CL	6"(4")	2
26.11	Lanark Branch	LNK	Secondary	Transport Scotland	No	W6	5	60	AC	OTW	10"	1
26.12	Knightswood North Jn – Cowlairs Jn plus Cowlairs Jn – Carmuir Jns	MRL (CBD)	Secondary	Transport Scotland	No	W9 (W8)	10	70(60)	none	CL	8"(5")	2
26.13	Freight Lines	CND (LGS)	Freight	Transport Scotland	No	W9	9	20(5)	none	OTW	20"	1

**Capacity and operational constraints**

- A Finnieston – Hyndland: double track at capacity
- B Barrhead – Kilmarnock: single line section
- C Milngavie branch: single line section
- D Bellgrove – Finnieston: signalling headways and limited track capacity
- E Glasgow Central – Paisley Gilmour Street: double track at capacity
- F Paisley Gilmour Street – Kilwinning: signalling headways
- G Ardrossan – Largs: single line passenger section
- H Barassie – Kilmarnock: single line section
- I Busby – East Kilbride: single line with limited crossing facility
- J Gretna – Annan: single line section

**Other issues on the route**

- K Mauchline Junction – Annan: high freight usage