7.18 Corridor 18: Glasgow to North West England and beyond

7.18.1 Setting the Context

Corridor 18 covers the area between Glasgow and the border with the North West of England. The corridor is approximately 136 kilometres in length and includes part of the local authority areas of North Lanarkshire, South Lanarkshire, East Ayrshire and Dumfries and Galloway. The total population within the corridor is 307,500[747] and is concentrated at the northern end of the corridor which lies within the Central Belt of Scotland. Towards the central and southern areas, the corridor encompasses the road and rail routes between the towns of Kilmarnock and Dumfries as shown in Figure 7.18.1. The corridor therefore plays a key role in linking the Central Belt of Scotland with the north of England and beyond via the M74 / M6 and West Coast Main Line routes, while the northern section provides for commuter traffic to Glasgow.

Figure 7.18.2 shows the expected areas of changes in population and employment between 2005 and 2022. The population in the corridor is forecast to decrease by approximately 12,700 between 2005 and 2022, a decrease of four per cent[747]. At the same time, the number of households in the area is forecast to increase by around 6,400, an increase of four per cent[747]. This indicates a reduction in household size and population dispersal. There are major housing developments due to take place in the towns of Hamilton and East Kilbride[748]. Both developments are community growth areas with approximately 2000-2500 new houses in each but they are some distance from the existing railway stations.

Employment in the corridor is expected to increase by two per cent between 2005 and 2022[747].

The single biggest land use development planned in this corridor is the regeneration of the former Ravenscraig Steelworks site in Motherwell. It is projected that once completed this site will accommodate 3,500 houses[749] and provide new jobs as well as a range of local amenities.

Within the corridor inactivity rates are generally higher than the national average of 21 per cent[747]. East Ayrshire has the highest economic inactivity rate of 25 per cent, compared with 23 per cent in North Lanarkshire and 22 per cent in South Lanarkshire[747]. Dumfries and Galloway at 19 per cent is slightly lower than the national average[747]. Inactivity rates are expected to fall 22 per cent between 2005 and 2022. This is generally as a result of the northern part of this corridor being located within the commuter zone for much of Central Scotland.

[747] TELMoS
[748] Glasgow and Clyde Valley Structure Plan, 2006
[749] www.ravenscraig.co.uk

Median gross weekly earnings for East Ayrshire and South Lanarkshire are slightly above the Scottish average of £412 per week at £417 and £420 respectively. In Dumfries and Galloway and North Lanarkshire, median gross weekly earnings are lower than the national average at £380 and £375 respectively[750]. Indeed the average earnings in North Lanarkshire are amongst the lowest in Scotland.

Car ownership in the corridor, measured as a percentage of households with access to a car, is just below the national average of 67 per cent in the more densely populated areas towards the Central Belt. In Dumfries and Galloway, car ownership is significantly higher than average at 75 per cent[751], which reflects the generally rural nature of this area.

[750] Scottish Economic Statistics 2006, table 4.20
[751] Scotland's Census 2001: www.scrol.gov.uk Table KS17

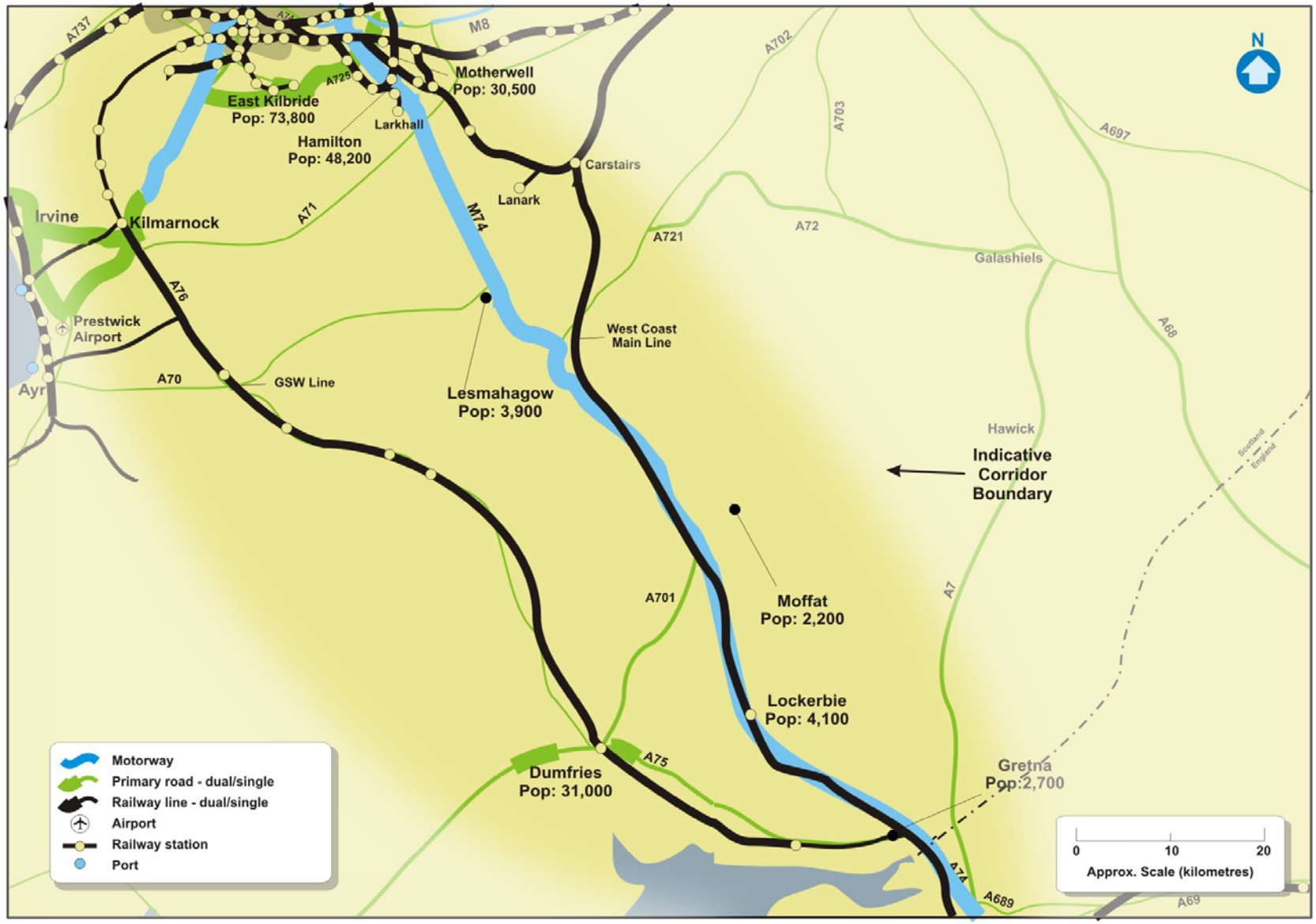

Figure 7.18.1: Setting the Context, Corridor 18 - Glasgow to NW England and Beyond

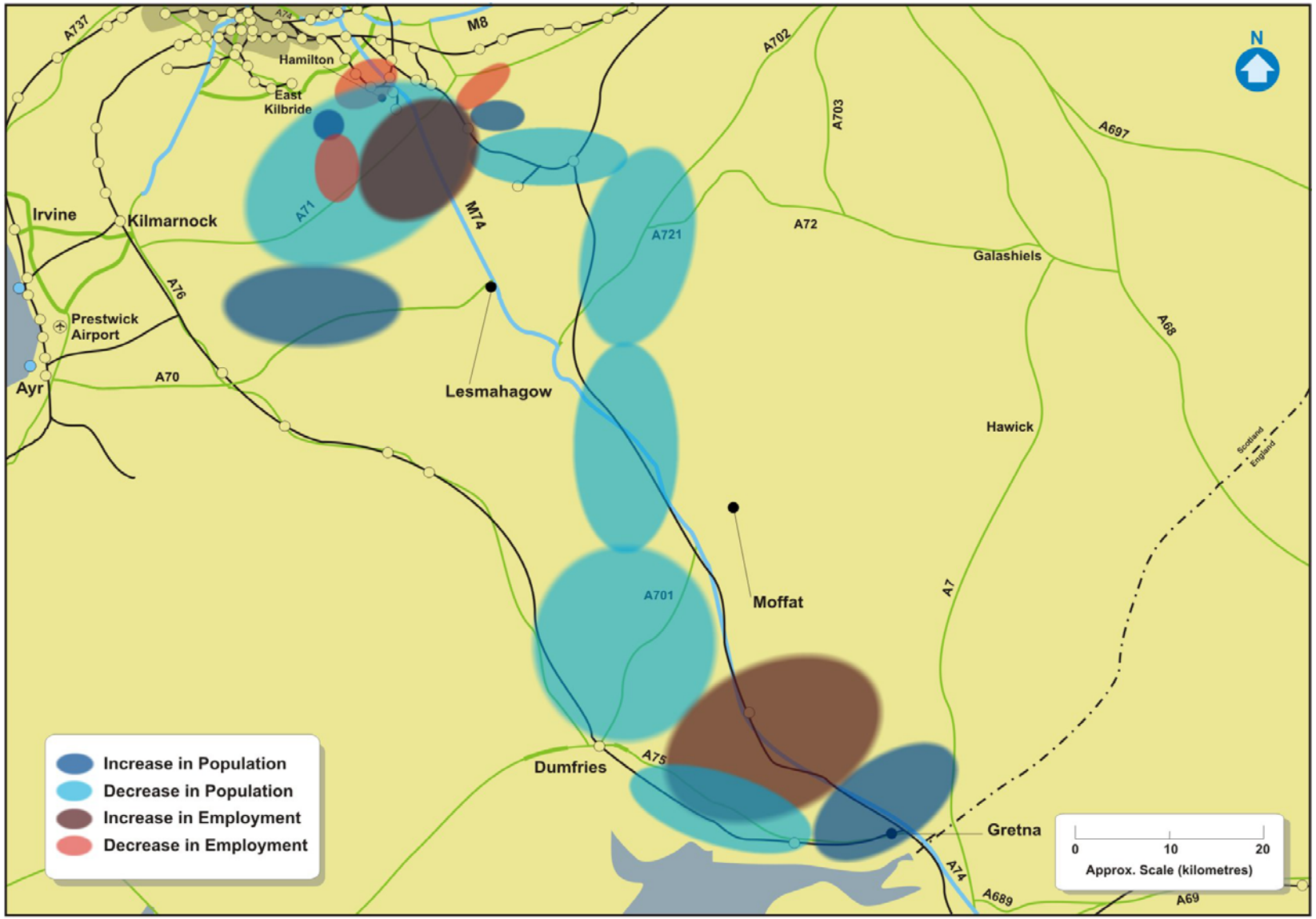

Figure 7.18.2: Changes in Population and Employment, 2005 & 2022, Corridor 18 - Glasgow to NW England and Beyond

7.18.2 Transport Network and Operations

Infrastructure and Services

The principal elements of the transport network that play a national strategic role are shown in Figure 7.18.1.

The M74 forms the main spine of the road network. It serves Glasgow, linking to the M73 at the northern end of the corridor and the A74 dual carriageway and then M6 through north western England at the south of the corridor. Also linking with the M74 is the A702 Trunk Road from Edinburgh (part of Corridor 19). The M74 is constructed as a mix of dual two and dual three-lane motorway. Other important elements of the road network include:

- A76 Trunk Road linking Ayrshire with Dumfries and Galloway and the south (single carriageway);
- A725 Trunk Road linking East Kilbride with M74 Junction 5 and continuing to Bellshill (dual carriageway route with grade separated junctions throughout);
- A71 Trunk Road between Kilmarnock and M74 Junction 8 (single carriageway); and
- A70 Trunk between Ayrshire and M74 Junction 12 (single carriageway).

The corridor is well served by rail, with electrified, mainly double track, suburban routes from Glasgow to Hamilton, Larkhall, Motherwell and Lanark and a single track diesel branch to East Kilbride. The electrified West Coast Main Line between Glasgow and the border is double track and carries a considerable volume of Anglo-Scottish passenger traffic. It has limited stops within the corridor, serving Motherwell and, less frequently, Lockerbie. The West Coast Main Line also carries freight traffic including at least ten intermodal trains operating every day[752] and is the only railway line between England and Scotland with a loading gauge sufficient to allow the movement of deep-sea containers on standard height railway wagons. The Glasgow and South Western Railway line is also double track between Kilmarnock and Annan and is an important route for local passenger and freight services. This route serves as a diversionary route for the West Coast Main Line and also the main route for the transport of coal from the Clyde port of Hunterston and the opencast coal sites in Ayrshire to electricity generators in England. Motherwell railway station serves as a major interchange between West Coast Main Line services and local services in Lanarkshire. This interchange serves an important purpose in providing a path for rail journeys from the North West of England to the towns south east of Glasgow, without them having to interchange in Glasgow itself.

[752] Network Rail

Service patterns are generally:

- Eleven trains per day between Glasgow and London via the West Coast Main Line (some services stop at Motherwell);
- One train every two hours between Glasgow and South West England (some services stop at Motherwell and Lockerbie); and
- One train every two hours between Kilmarnock and Carlisle via Dumfries.

A number of strategic bus and coach services on the corridor are provided by National Express, Megabus, Stagecoach and Silver Choice.

There is a bus station in Hamilton which is in the town centre and adjacent to the railway station, providing good integration between bus and rail. There are proposals to rebuild the bus and rail stations to create a modern transport interchange. The bus station in East Kilbride is also located in the town centre, however the railway station is some distance away resulting in poor integration between modes.

Integrated tickets in the corridor are available in the form of the *PLUSBUS* ticket and the SPT ZoneCard. *PLUSBUS* covers rail journeys into Glasgow, Kilmarnock and Dumfries and provides the addition of unlimited bus travel within the destination. The SPT ZoneCard is widely used and gives unlimited travel on bus, rail, subway and certain ferry services within designated zones in the SPT area which covers the northern section of the corridor.

Asset Management

In 2007, eight per cent of the trunk road network pavement[753] in this corridor is judged to require structural strengthening as it has no theoretical residual strength. This compares with a national level of four per cent[753][754]. Under Transport Scotland's planned maintenance schedule, the net figure for the corridor is expected to remain at eight per cent by 2012.

Further details on asset management, including bus and rail, are provided in Chapter 4.

Demand Management

The M74 is part of the country's 'National Driver Information and Control System' which provides pre-journey travel advice, on-journey travel advice and helps to detect and respond to incidents on the network. There are no bus priority schemes in this corridor. Many of the railway stations on the suburban network have car parks. The major towns in the corridor have a mixture of free and paid parking. This mixture of provision and the charging regimes in place are such that parking is not used in the same way as Glasgow as a demand management measure.

[753] Transport Scotland SERIS Database
[754] STS No. 25 (2006) Table 5.5

Programmed Schemes

The following programmed infrastructure schemes and developments that will affect the corridor are shown graphically in Figure 7.18.3:

- M74 Completion project; to relieve congestion issues in Glasgow by improving the urban motorway network around the city centre;
- A76 Glenairlie Improvement Scheme to provide safer overtaking opportunities;
- M74 Raith Interchange, grade separation and widening to reduce queuing on the approaches;
- M8 Associated Network Improvements Study, options to improve capacity on the M8, M74 and M73;
- A76 Ellisland Junction improvements, to improve safety for turning right and overtaking;
- Redoubling of the railway between Annan and Gretna;
- Intermediate signals on the Glasgow and South Western Railway; and
- Passing loop on the rail line between Lugton and Stewarton.

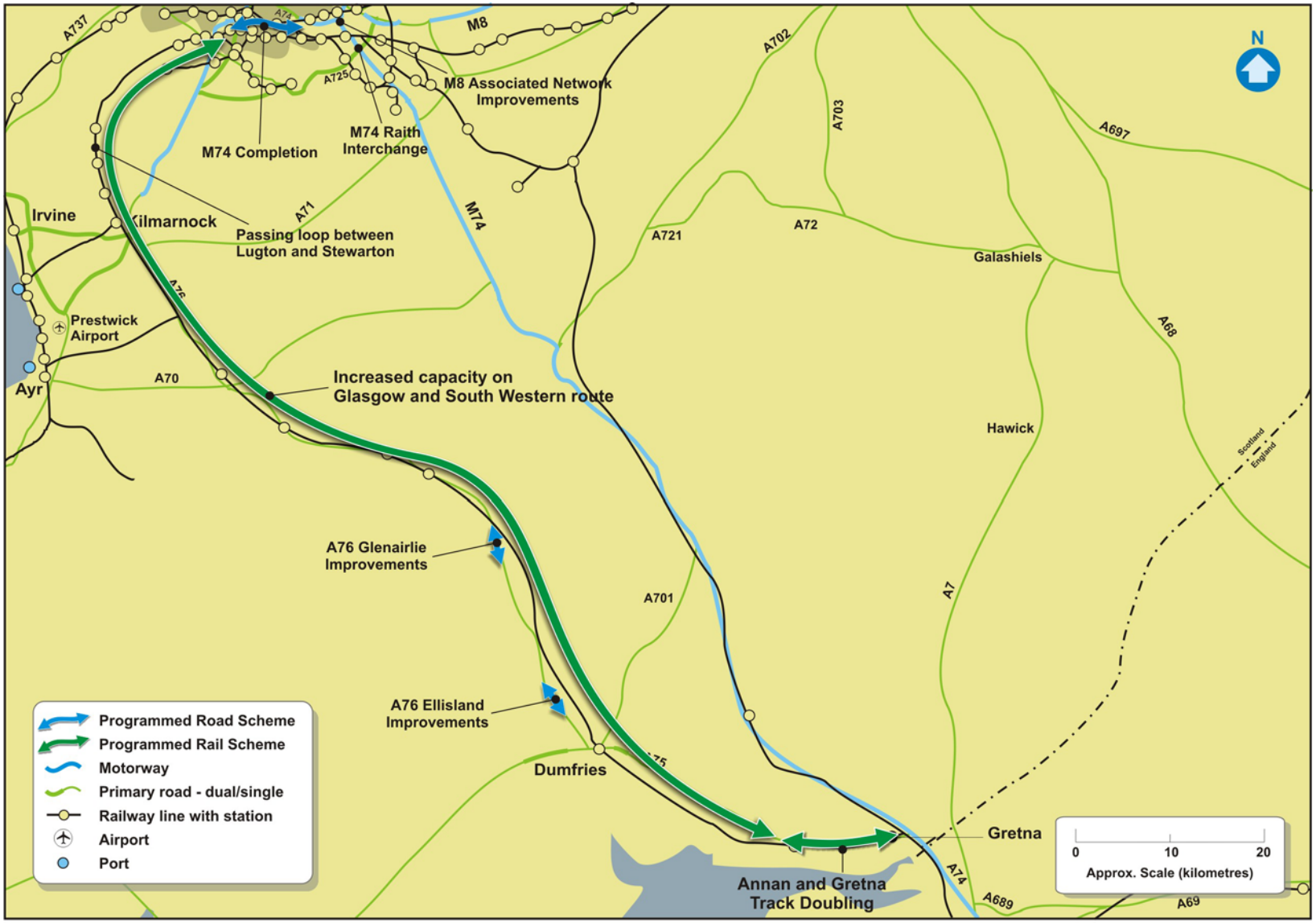

Figure 7.18.3: Programmed Transport and Land Use Developments, Corridor 18 - Glasgow to NW England and Beyond

7.18.3 Travel Patterns

Travel patterns in the corridor are presented in Figure 7.18.4. In 2005, there were approximately 427,800 trips in the corridor in an average 12-hour day of which 51,000 (12 per cent) were by public transport. By 2022, it is forecast that while the total number of daily trips will increase to 487,300 the number of trips made by public transport is expected to fall to 45,300. Compared to 2005 this represents an increase of 14 per cent for total trips and a decrease of 11 per cent for public transport trips. Table 7.18.1 summarises travel demand and public transport share within the corridor. It should be noted that due to the nature of the zone system within TMfS the number of local trips on the corridor will be underestimated. Likewise, the model does not extend into England in any great detail and therefore the robustness of the demand and public transport share data should be treated with caution.

Table 7.18.1: Summary of Demand (12 Hour) and Public Transport Share[755]

		Between Glasgow and England	Within Corridor	Between Corridor and Glasgow	Between Corridor and England	Between Corridor and other destinations	Total Trips
2005	Total Trips	31,300	120,700	133,100	2,500	140,200	427,800
	% of Corridor	7%	28%	31%	1%	33%	100%
	PT Trips	9,900	19,100	15,200	200	6,600	51,000
	PT Share	32%	16%	11%	8%	5%	12%
2022	Total Trips	34,000	120,400	155,300	2,400	175,200	487,300
	% of Corridor	7%	25%	32%	<1%	36%	100%
	PT Trips	11,400	15,100	13,200	200	5,400	45,300
	PT Share	34%	13%	8%	8%	3%	9%
Change	Total Trips	+9%	-<1%	+17%	-4%	+25%	+14%
	PT Trips	+15%	-21%	-13%	0%	-18%	-11%

[755] TMfS:05

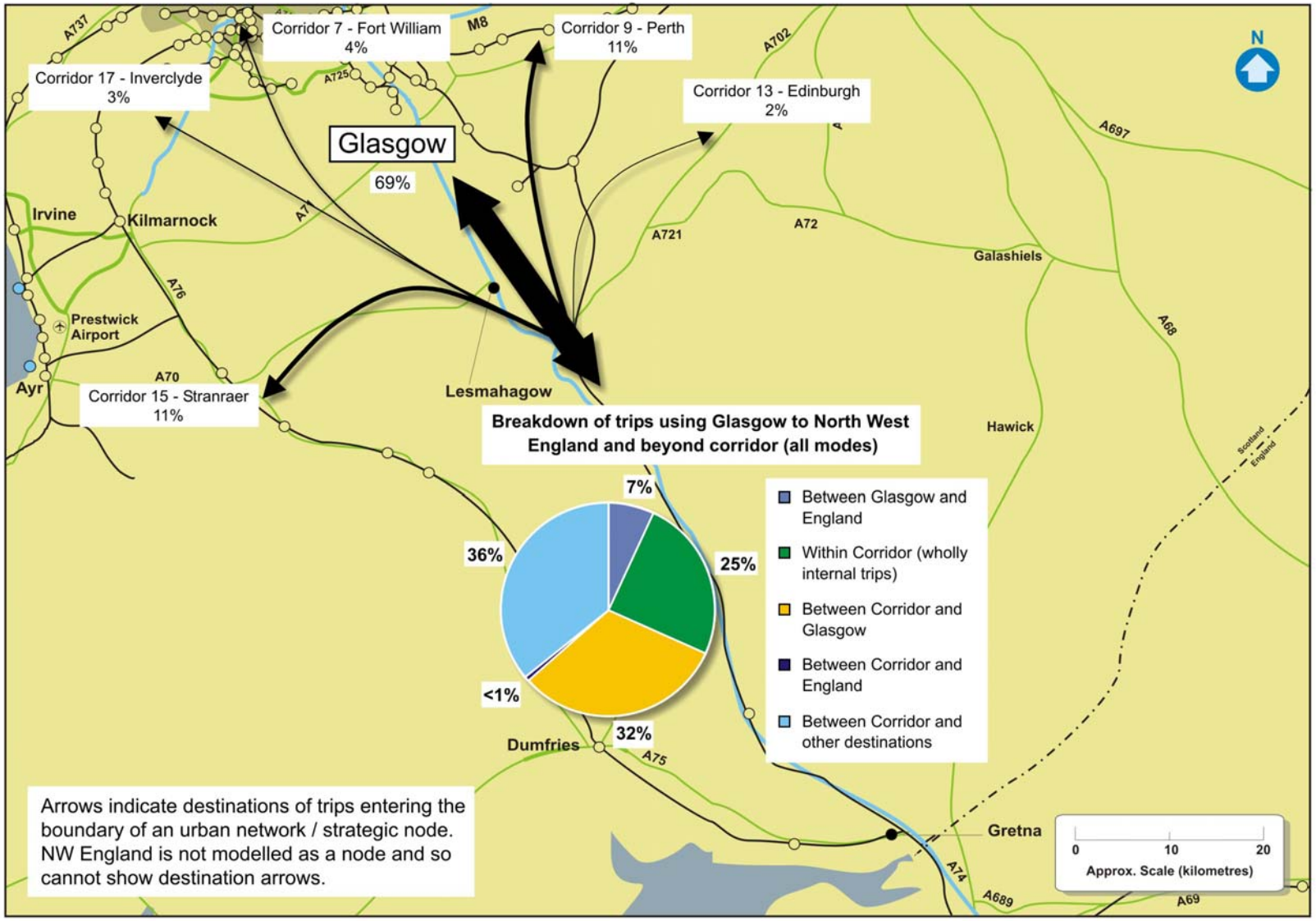

Figure 7.18.4 Travel Patterns 2022, Corridor 18 – Glasgow to NW England and beyond

The trips within this corridor fall into three different categories. Almost one third of trips (31 per cent) are between the corridor and Glasgow. This is largely commuter travel from the major urban areas in South Lanarkshire at the northern end of the corridor which includes a good suburban rail network and frequent bus services. Of these trips, 11 per cent are made by public transport, from the main population centres in the corridor, for example Hamilton and East Kilbride.

A third of trips (33 per cent) are between the corridor and other destinations. This consists of a number of elements such as freight movements from Lanarkshire, commuter travel to areas in the Central Belt other than Glasgow, particularly along the corridor between Glasgow and Edinburgh, and tourist and commercial travel to the north via the M74 and M73.

Almost a third of trips (28 per cent) are wholly within the corridor accessing and supporting the local economy. Public transport trips for journeys wholly within the corridor are forecast to decrease by 21 per cent between 2005 and 2022 partly due to the TMfS model including details of major housing developments within the corridor however the bus network is not expanded into these areas.

Although there is only a small percentage of trips travelling between Glasgow and England (seven per cent) the public transport share for this movement is high (32 per cent). This reflects the good rail and bus / coach services between Glasgow and England.

The daily traffic flows observed in 2006 on the M74 varied along the corridor from approximately 16,000 near Gretna at the English border and up to 42,000 on the approaches to Glasgow. The daily traffic flows on the A76 varied along the corridor from flows of 12,000 on the southern approach to Kilmarnock to 6,000 on the northern approach to Dumfries, with flows of approximately 3,000 to 7,000 across the remainder of the corridor[756]. This traffic on the A76 is primarily local, with increased commuting flows at Kilmarnock and Dumfries. Commercial and leisure trips are of importance at Carronbridge, north of Dumfries[757].

ATC data from the SRTDb gives a figure of approximately 21 per cent HGV traffic on the M74 between Junction 7 and Junction 6, and 17 per cent on the A76 at Mennock[758]. This high proportion of goods vehicles confirms this corridor's role as one of the busiest freight routes in Scotland and this is forecast to continue in the future. A significant amount of rail freight also travels throughout this corridor, with the main terminals at Hunterston and Mossend / Coatbridge responsible for significant levels of rail freight, with a number of coal and intermodal trains running each day.

The railway stations in this corridor have a total throughput of some 8.7 million passengers per annum (2005), with Motherwell and East Kilbride the busiest stations.[759]

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[756] Transport Scotland, Scottish Roads Traffic Database
[757] Scottish Executive Development Department, Small Scheme Appraisal Summary Tables – A76 Dumfries to Kilmarnock
[758] SRTDb
[759] Rail industry LENNON data (Station Usage 2004/2005) The total rail passenger trips do not include SPT zonecard trips

7.18.4 Performance Review

Journey Times and Connections

This section addresses the following questions from Table 3.1:

- Does the network offer competitive journey times?
- Is the network operating efficiently and reliably?
- What are the delays and when do they occur?

The average speed at which vehicles can progress through the network is a good indicator of the performance of the network. Figure 7.18.5a shows the current and expected average speeds for the M74 across the morning, evening and inter-peak periods. A typical end to end journey time also is indicated, from the outskirts of Glasgow. The average speed on the M74 between Glasgow and the North West of England is expected to remain relatively consistent across all three time periods when comparing 2005 and 2022. At about 80 per cent of the free flow speeds these are considered reasonable for this route, confirming that congestion is not forecast to be a major issue in the future outside of the Glasgow conurbation.

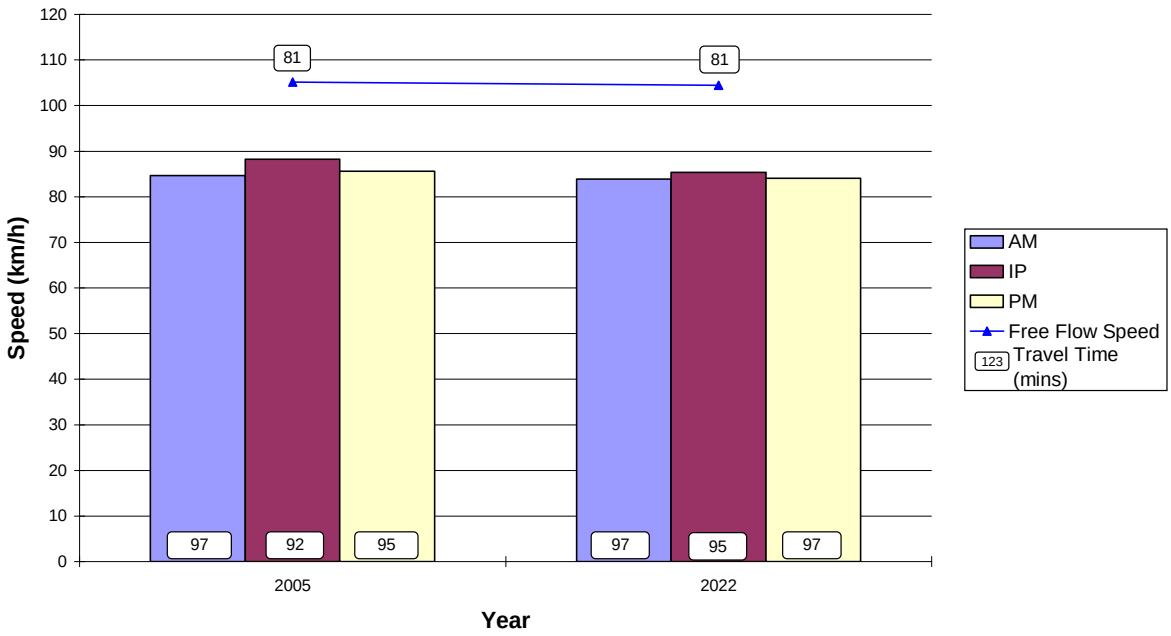

Figure 7.18.5a: Average Road Speeds on the M74 (Corridor 18)[760]

[760] TMfS:05

Travel time along the corridor in 2005 is broadly similar across all time periods at 1 hour 32, 1 hour 37 and 1 hour 35 minutes for off peak, morning peak and evening peaks respectively. The free flow travel time is quicker at 1 hour 21 minutes. In 2022, the travel times are more similar at 1 hour 37 minutes for both the morning and evening peaks, and 1 hour 35 minutes for the off peak. The free flow travel time in 2022 does not change from 1 hour 21 minutes.

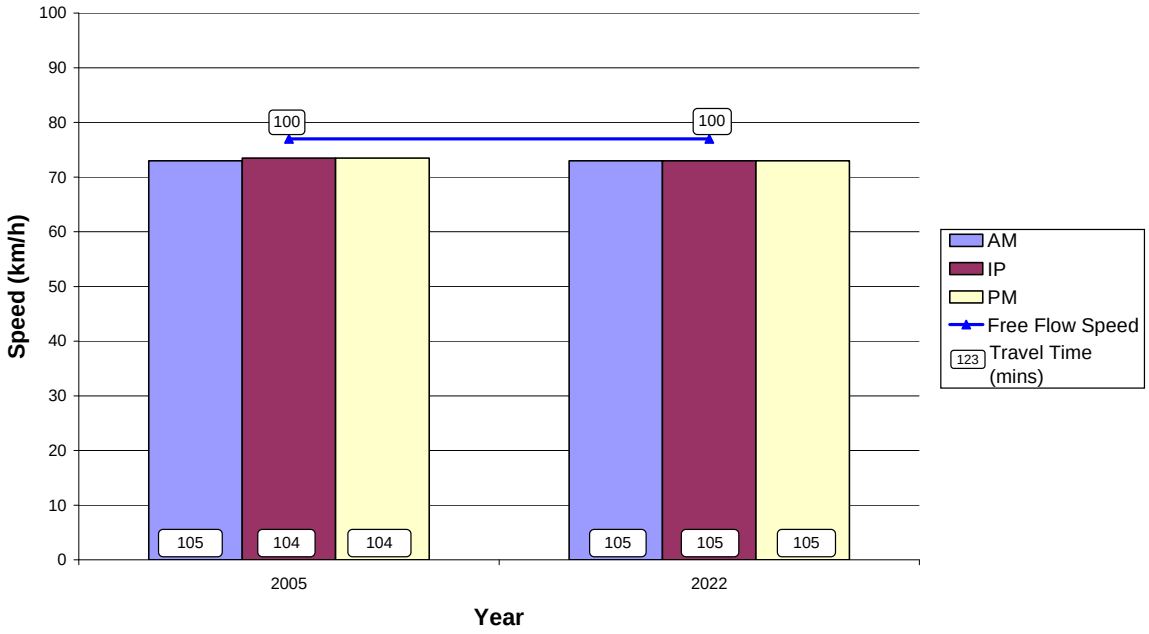

Figure 7.18.5b: Average Road Speeds on the A76 (Corridor 18)[761]

Figure 7.18.5b shows the current and expected average speeds for the A76 across the morning, evening and inter-peak periods. Travel time along the corridor in 2005 is broadly similar across all time periods at 1 hour 45 minutes for the morning peak and 1 hour 44 minutes for both the evening and inter-peak. The free flow travel time is 1 hour 40 minutes in 2005. In 2022, there is little change in travel times at 1 hour 45 minutes for all three peaks. The free flow travel time in 2022 does not change from 1 hour 40 minutes. The average speed on the A76 is expected to remain relatively consistent across all three time periods when comparing 2005 and 2022, at about 95 per cent of the free flow speeds, confirming that congestion is not forecast to be a major issue in the future. The greater journey times and lower average speeds however make the A76 less attractive for non-local journeys when compared to the M74.

[761] TMfS:05

Travel time isochrones are shown in Figure 7.18.6[762] for trips to Glasgow along the corridor in the morning peak. This schematic diagram provides a comparison of road and rail travel times and indicates that generally rail services are competitive. However the programmed improvements on the road network are forecast to result in reductions in the levels of congestion in key locations, resulting in a relative increase in the attractiveness of private car for many trips in the corridor.

Notwithstanding the above, the electrified rail lines from Glasgow offer a competitive alternative to the car for Hamilton, Motherwell, Larkhall, Lanark and intermediate settlements in terms of journey times and frequency. Beyond Lanark, journey times on long distance services via the West Coast Main Line become more competitive against car, although service frequency is less. However, the railway runs through sparsely populated parts of South Lanarkshire and Dumfries & Galloway, with few settlements of note. The only station on the West Coast Main Line in Dumfries & Galloway serves the town of Lockerbie. For rail travel on the Glasgow and South Western line, journey times by car are more competitive. This is in part due to the recently opened M77 and in part due to low line speeds on the railway and the fact that services call at a number of intermediate stations.

Overall there are no significant issues associated with the efficiency and reliability of the road network on this corridor. However some journeys in the morning and evenings peaks may have journey time reliability issues particularly within the Glasgow area, where journey times can be 20 per cent or 20 minutes longer than the daily average[763] . Peak hour congestion is experienced within the Glasgow urban network.

Rail service reliability is measured as the percentage of trains actually run in the last 12 months, split into seven service groups. The reliability of the services in Corridor 18 is:

- Strathclyde 94.1 per cent (target 94 per cent); and
- First ScotRail South West 91.8 per cent (target 92 per cent)[764].

Transport Scotland and Network Rail are working together to address the current problem on the rail network that impacts on the operation of the line between Glasgow and Kilmarnock. The provision of a new dynamic passing loop on the rail line between Dunlop and Stewarton will enable a higher frequency service to be operated between Glasgow and Kilmarnock and will improve journey times and reliability.

[762] Journey times for bus/rail include a 20 minute walk/wait time
[763] http://scottishexecutive.itisholdings.com/
[764] http://www.firstgroup.com/scotrail/content/aboutus/ourperformance.php

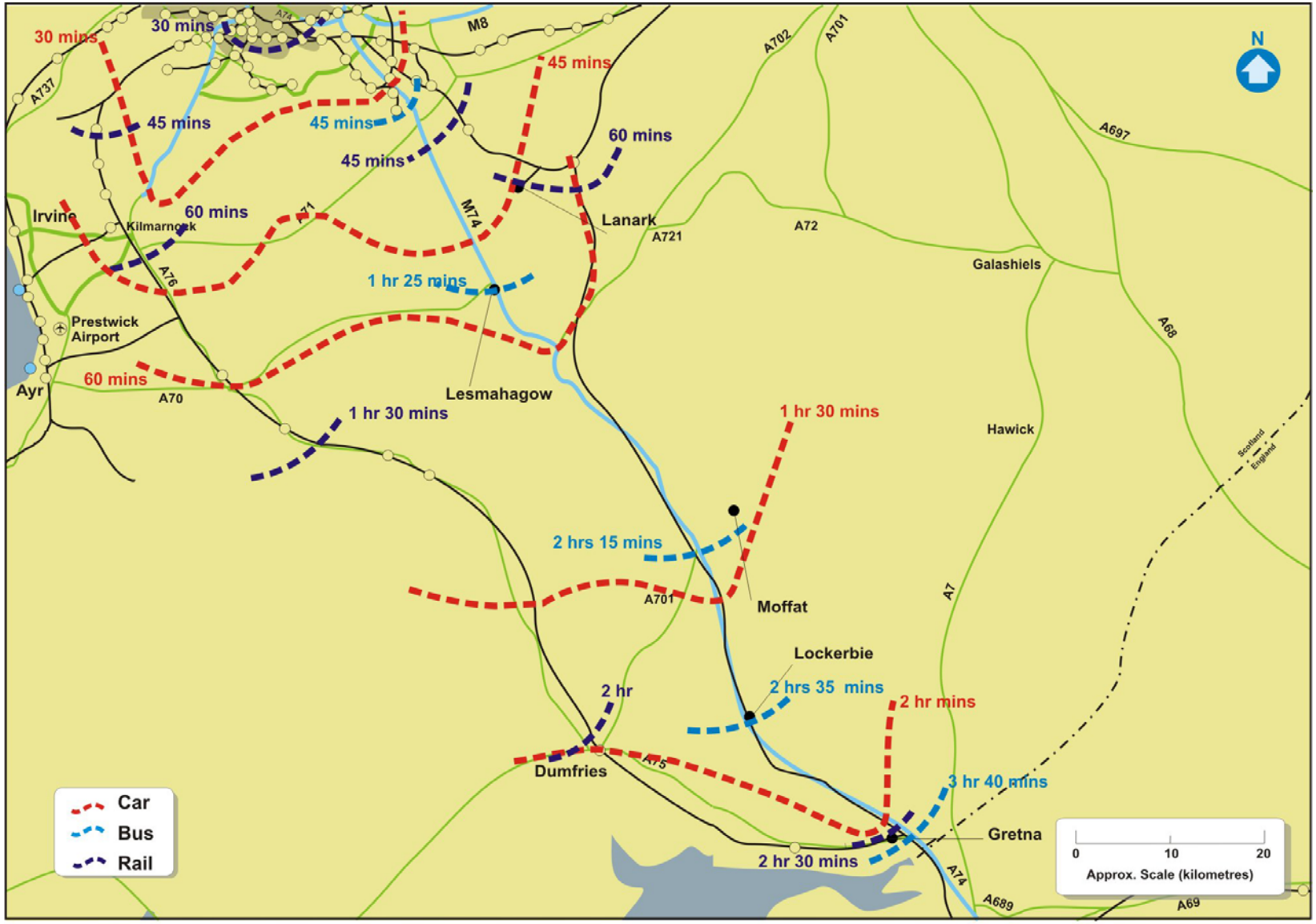

Figure 7.18.6: Journey Times to Glasgow City Centre (2005 am Peak), Corridor 18 - Glasgow to NW England and Beyond

Emissions (CO_2 only)

This section of the report addresses the issue:

- What is the level of transport based emissions within the corridor?

CO_2 per person kilometres are forecast to rise from 160 tonnes / million person kilometres to 184 tonnes / million person kilometres between 2005 and 2022 in this corridor. This is a result of CO_2 emissions rising at a slightly greater rate than person kilometres between 2005 and 2022[765].

The road based transport network produced 769,000 tonnes of CO_2 in Corridor 18 in 2005. This equates to approximately 12 per cent of the total road based transport related CO_2 emissions in Scotland.

By 2022, it is forecast that CO_2 emissions in Corridor 18 will rise to around 970,500 tonnes, approximately twelve per cent of Scotland's road based transport related CO_2 emissions in 2022.

A significant proportion of the rail network within Corridor 18 is electrified.

Quality / Accessibility / Affordability

The following paragraphs address the issues of:

- Does public transport provision match origin/destination analysis?
- How competitive is public transport compared with the car?
- Do capacity issues impact on public transport service?
- How safe is the network?

The public transport services on this corridor serve all the main settlements, by providing local, regional and national services. Future development of the Ravenscraig steelworks site will generate a significant demand for travel within the northern part of this corridor and it is expected that improvements to the public transport provision will be required to meet this demand.

Public transport is not very competitive with car, although accessibility levels are high for both, in areas close to Glasgow. Public transport accessibility is closer to car in areas served by rail close to Glasgow. Public transport will become less competitive in the future as new road schemes around southeast Glasgow increase car accessibility to a greater extent.

The infrastructure and service provision provide for effective business interaction between the centres of the corridor, although the geography of the corridor makes daily commuting unattractive over longer distances.

[765] TMfS:05

Turning to the issue of capacity, Table 7.18.2 shows the projected morning peak load factors (percentage of demand to supply) on the suburban rail services in the northern part of the corridor for various years, as reported in Network Rail's Route Utilisation Strategy[766]. These figures reflect the busiest section of the route. As these figures are averages across a number of train services, it suggests that some peak trains will suffer overcrowding in the future year scenarios, although the levels of congestion will be less than will be experienced on other parts of the rail network.

Table 7.18.2: Peak Load Factors (Rail)[767]

	Base	2011	2016	2026
South East-Lanark / Motherwell	0.65	0.73	0.74	0.81

Car parks at capacity at a number of railway stations in the corridor including; Bellshill, Blantyre, East Kilbride, Hamilton West, Lanark, Motherwell, Uddingston and Dumfries.

There are 30 bus services per day between Glasgow and North West England and beyond giving a capacity of approximately 1,620 seats per day. Table 7.18.3 provides an assessment of bus service quality on the strategic long distance services in the corridor. Assessment scores are presented on a scale of 1 to 5 with 1 as the poorest rating and 5 as the best. Frequency and coverage have been defined as good, with all other factors average.

Table 7.18.3: Assessment of Bus Service Quality[768]

Service Numbers	Service Provider	Annual Journeys	Reliability	Frequency	Simplicity	Value	Coverage	Vehicle Quality
335, 336, 533,536 - 539, 542, 588, 590, 592	National Express, Megabus, Silver Choice	18,200	3	4	3	3	4	3

Public transport is not very competitive with car in this corridor, which is forecast to continue into the future with little change. Around one per cent of the corridor population are people without cars in the Cumnock and Muirkirk area of the East Ayrshire Coalfields former Social Inclusion Partnership area. Public transport accessibility in this area is very low, suggesting that transport-related social exclusion occurs. This is forecast to continue in the future.

[766] Network Rail Scotland Route Utilisation Strategy March 2007
[767] Network Rail Scotland Route Utilisation Strategy, March 2007, Table 11
[768] Bus Users UK (Qualititative Assessment – 1: very poor; 5: excellent)

The accident rates for the M74 are similar to the national average. However, the fatal accident rate on the route of 0.25 per 100MVkm is greater than the national average of 0.19 per 100MVkm. Severe accidents in the corridor are spread across the road network, although some clusters were identified, particularly at or near junctions. The accident rates and fatal accident rates for the A76 are also similar to the national averages[769]. Initial analysis of severe accident clusters indicated that clusters exist at three locations on the A76: Catrine, New Cumnock and on approach to Dumfries.

Significantly more female rail passengers in North Lanarkshire (24 per cent) and East Ayrshire (27 per cent) expressed a view that they felt either 'not safe' or 'not particularly safe' than the national average of 21 per cent. However there are no such issues amongst female bus passengers, or amongst male passengers[770].

Summary of Infrastructure and Operational Constraints

Key constraints and congestion points are shown in Figure 7.18.7, including:

- Congestion on the M74 and other approaches to Glasgow;
- A725 congestion and journey time reliability issues;
- Car parks at capacity at the following railway stations: Bellshill, Blantyre, East Kilbride, Hamilton West, Lanark, Motherwell, Uddingston and Dumfries railway stations;
- High freight usage of line between Gretna junction and Carlisle; and
- Spacing of intermediate block signals between Dumfries and New Cumnock.

[769] Transport Scotland SERIS Database
[770] Scottish Household Survey 2003/04: Perceptions of safety from crime during evening bus/rail travel

Figure 7.18.7: Areas of Constraint on the Network, Corridor 18 - Glasgow to NW England and Beyond

7.18.5 Summary and Conclusions

Overall, how well does the transport network perform?

In general, the road network within the corridor operates well during most of the day, the core road network has good link capacity and there are no journey time reliability issues although there are some congestion points. Areas currently experiencing congestion include the M74, on the approaches to Glasgow, and on the A725.

The rail network operates well over most of the day but there is overcrowding on trains between Barrhead and Glasgow. There are capacity constraints on the line between Barrhead and Glasgow Central and between Annan and Gretna. Car parks at a number of railway stations are at capacity.

Will the transport network meet future demand, particularly in areas of economic activity?

The road network is expected to continue to offer a relatively good level of service, outside of the Glasgow Urban Network, with strategic journey times on the main route, the M74, increasing by only around two minutes in the evening peak when comparing 2005 and 2022. The M8 Associated Network Improvements including completion of the M74 extension and Raith Interchange will improve links from the corridor into Glasgow and to other corridors. These schemes are expected to relieve congestion in the northern part of the corridor. However congestion within Glasgow will continue to impact on journey times and reliability.

Some rail overcrowding is a problem that is forecast to worsen in the future, although not to the extent experienced on other routes in Scotland. Lack of car parking at some of the busier stations currently restricts rail use so can be expected to constrain demand growth.

An issue related to freight movement is the loading gauge on the Glasgow and South Western line.

The current rail system capacity is also unlikely to be able to offer adequate service for future development of the port facility at Hunterston for containers should it develop as a container port.

What are the key drivers that will impact on performance in the future?

Future land use plans include a significant amount of new housing, particularly in the northern parts of the corridor that will result in an increase demand in this section of the corridor. Elsewhere in the corridor the population is expected to decrease, which combined with the locations of new developments, may mean that providing effective access to public transport services becomes more difficult.

As the main route to the national border, it is of vital importance to Scotland's economy for the movement of goods in an efficient manner.

What are the key problems associated with delivering the KSOs?

A key issue in terms of rail will be establishing an effective balance between long distance traffic and the local commuter services. Peak loading on trains between Barrhead and Glasgow is close to capacity affecting passengers travelling on trains to Carlisle via the Glasgow and South Western route. The potential for high levels of rail passenger loading will impact on both journey time and performance through delays at stations and overcrowding on services.

The likely increase in population dispersal makes providing effective access to public transport more difficult.