7.13 Corridor 13: Glasgow to Edinburgh

7.13.1 Setting the Context

Corridor 13 extends from the west side of Edinburgh, to the east side of Glasgow, passing through the main urban areas of the Central Belt. It includes large parts of North Lanarkshire and West Lothian and is shown in Figure 7.13.1. The corridor is approximately 73 kilometres in length and excluding the two cities has a total population of approximately 292,500[615]. The corridor serves a number of significant settlements between the two cities, including Coatbridge, Airdrie, Whitburn, Bathgate and Livingston.

The corridor contains Scotland's highest capacity routes between east and west and is a major economic zone in its own right, supporting over 120,000 jobs[615] (excluding Glasgow and Edinburgh) and generating 19 per cent of Scotland's Gross Value Added[616].

The corridor performs three primary roles:

- Connecting the two cities and a number of major settlements in the corridor;
- Providing for commuting to the cities and employment centres within the corridor; and
- Providing a strategic east–west link for through traffic.

Figure 7.13.2 shows the expected areas of changes in population and employment. The overall population of the corridor is forecast to increase by five per cent by 2022[615], while the population of Glasgow City is forecast to decrease by 10 per cent and the population of the City of Edinburgh is forecast to increase by 14 per cent[615]. At the same time, the number of households within the corridor is forecast to increase in all areas[615]. The increasing number of households is forecast to outstrip population increases suggesting a reduction in household size throughout the corridor. The number of households is expected to increase by 13 per cent in the corridor between 2005 and 2022. Significant housing growth is planned in the corridor, including a large land release in West Lothian at Polkemmet, near Whitburn[617]. These developments will increase the pressure on the road and rail networks within this already busy corridor.

Significant areas of employment in the manufacturing and service sectors are located in North Lanarkshire and the areas around Livingston and Bathgate. The whole corridor is located within the one hour labour catchment areas of both Glasgow and Edinburgh.

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[615] TELMoS
[616] Scottish Enterprise: Glasgow Economic Review, State of the City Economy Conference November 2006
[617] Edinburgh and Lothians Structure Plan 2015

Across the corridor, employment is forecast to increase by 31 per cent by 2022[618]. Employment in Glasgow is forecast to decline by two per cent (8,500 jobs) and employment in Edinburgh is forecast to increase by 10 per cent (31,100 jobs)[618]. Economic inactivity is forecast to reduce in all areas of the corridor between 2002 and 2015 by 19 per cent with reductions of three per cent in North Lanarkshire and West Lothian, four per cent in Edinburgh and seven per cent in Glasgow mainly due to the significant forecast increase in employment. These decreases are however lower than the total for Scotland of 32 per cent[618].

The increases in population and employment suggest that demand for travel will increase throughout the corridor, particularly where employment growth outstrips population growth, resulting in an increase in commuting. This will be especially noticeable with trips to Edinburgh and the areas of West Lothian around Livingston and Bathgate where areas of employment growth are forecast.

Income levels for the corridor range from £375 per week in North Lanarkshire to £384 per week in West Lothian, ranging from 91 per cent to 93 per cent of the average for Scotland (£412)[619].

Car ownership per household within the corridor, with the exception of West Lothian, is lower than the national average of 67 per cent and exceptionally low in Glasgow due to the urban nature of the city, with high public transport provision and low average earnings levels. Car ownership levels for the areas served by the corridor are as follows:

- Glasgow: 44 per cent;
- City of Edinburgh: 60 per cent;
- North Lanarkshire: 63 per cent; and
- West Lothian: 72 per cent[620].

[618] TELMoS
[619] Scottish Economic Statistics 2006, table 4.20
[620] Scotland's Census 2001: www.scrol.gov.uk Table KS17

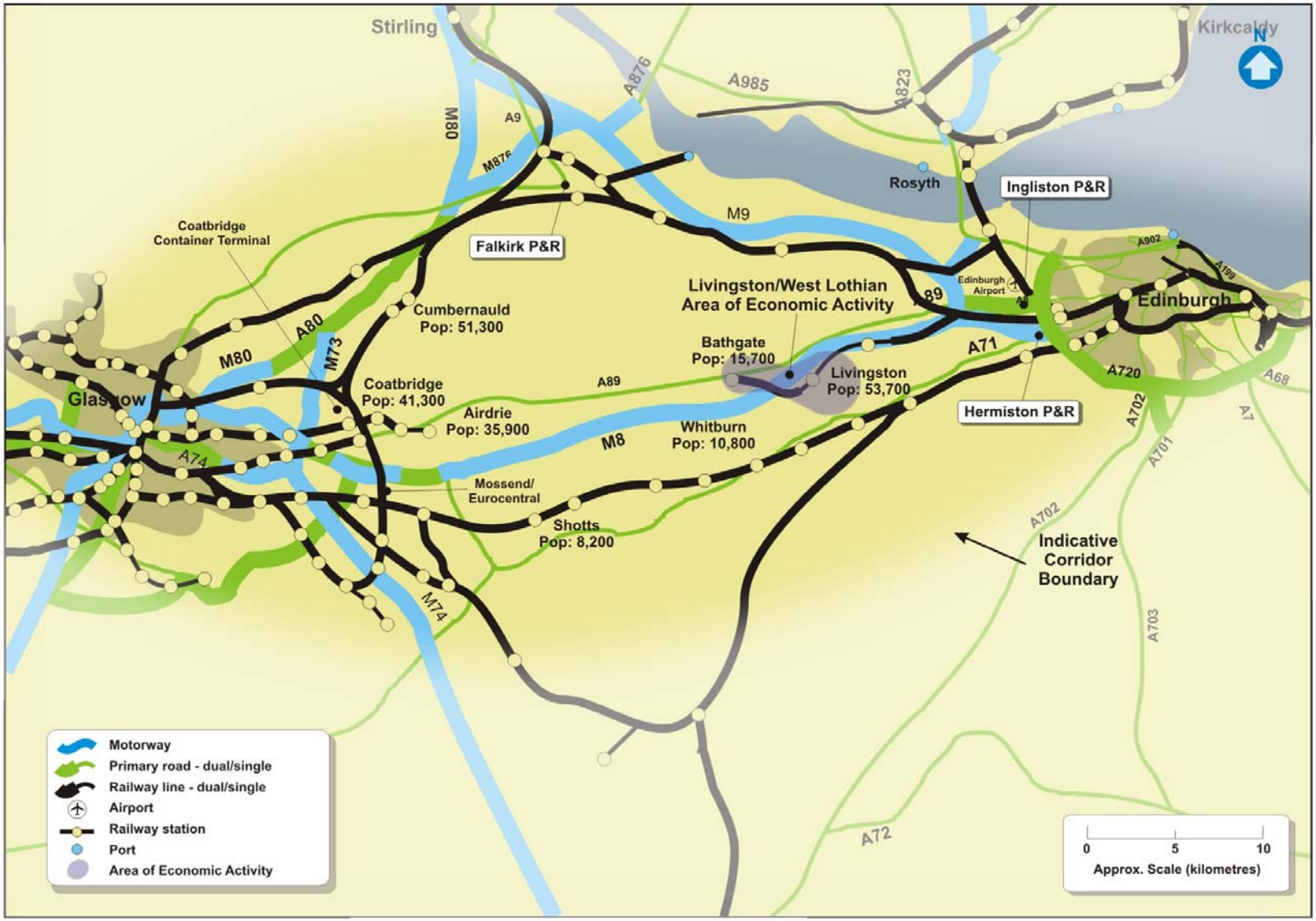

Figure 7.13.1: Setting the Context, Corridor 13 - Glasgow to Edinburgh

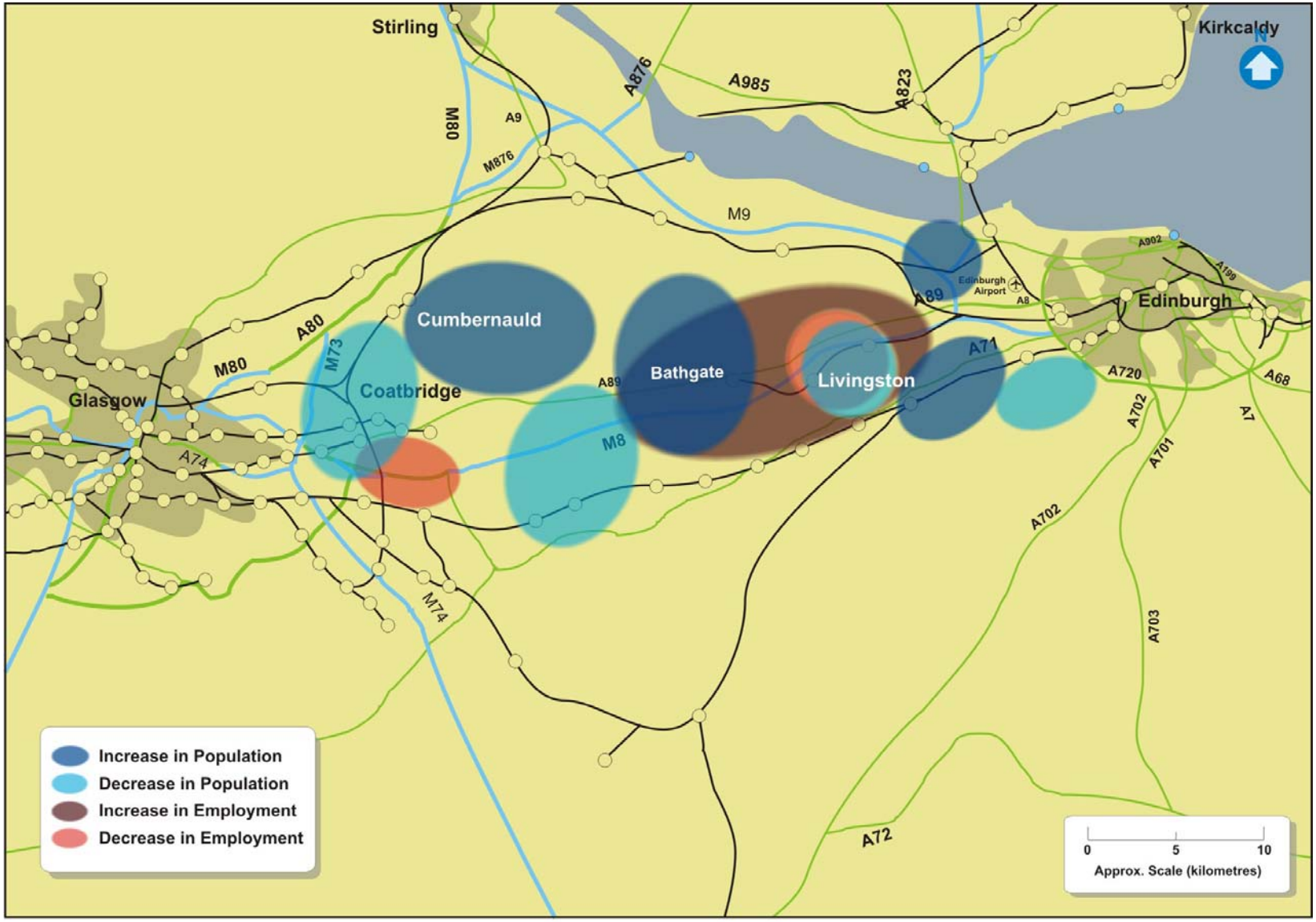

Figure 7.13.2: Changes in Population and Employment, 2005 & 2022, Corridor 13 - Glasgow to Edinburgh

7.13.2 Transport Network and Operations

Infrastructure and Services

The principal elements of the transport network that play a national strategic role are shown in Figure 7.13.1.

The M8 / A8 Trunk Road forms the main spine of the road network between Edinburgh and Glasgow. Other important elements of the road network include:

- The A89 that runs generally parallel to the M8, linking Glasgow and Edinburgh; and
- The A71 that runs from the A720 Edinburgh Bypass to the south of Glasgow, linking with Kilmarnock and Irvine.

The M8 / A8 between the outskirts of Edinburgh and Glasgow is predominantly dual carriageway or two-lane motorway between Glasgow and Edinburgh apart from a small section of three-lane motorway westbound at Livingston. Between Baillieston and Glasgow city centre the number of lanes increases up to dual five-lane and there are a significant number of grade separated junctions including those with the M73 and M80. In the east, the M8 links into the A720 Edinburgh City Bypass, the M90 towards the Forth Road Bridge and the M9 towards Stirling. To the north of the M8, the A89 is a parallel single carriageway road between Newbridge and Glasgow which passes through the settlements of Bathgate, Airdrie and Coatbridge. The A71 runs parallel to the south of the M8 between Edinburgh and North Lanarkshire within the corridor.

Due to the nature of the corridors in the Central Belt, the main Glasgow to Edinburgh rail line, via Falkirk, provides for passenger demand in Corridor 9 (Glasgow to Perth), Corridor 10 (Edinburgh to Stirling) as well this particular corridor. In addition to this route further rail provision exists between Glasgow and Edinburgh via Shotts. Trains on this line call at a number of smaller settlements on the corridor resulting in journey times that are 40 minutes slower than the main route. Passenger rail traffic in the corridor is also carried on the lines from Glasgow to Airdrie and Edinburgh to Bathgate. The re-opening of the Airdrie to Bathgate rail link will join settlements in North Lanarkshire and West Lothian with the cities of Glasgow and Edinburgh[621]. In addition the line will also provide an additional route between Glasgow and Edinburgh.

The Glasgow to Edinburgh via Carstairs rail route passes to the south of the corridor on Corridor 18 (Glasgow to northwest England) and Corridor 19 (Edinburgh to northwest England). This route is used by East Coast Main Line services between Glasgow and London.

[621] http://www.airdriebathgateraillink.co.uk/

Service patterns are generally:

- Four trains per hour between Glasgow and Edinburgh via Falkirk High;
- One train per hour between Glasgow and Edinburgh via Shotts;
- Two trains per hour between Balloch, Glasgow and Airdrie;
- Two trains per hour between Helensburgh, Glasgow and Drumgelloch; and
- Two trains per hour between Edinburgh and Bathgate.

The corridor provides access to two of Scotland's most important rail freight centres at Coatbridge and Mossend / Eurocentral. Onward rail connections to England are available from these locations, connecting south to the channel tunnel and the south England container ports. In addition, the rail route via Shotts is a critical freight corridor for the transit of imported low-sulphur coal from the west coast port of Hunterston to English coal fired power stations via the East Coast Main Line. The route is also used as an alternative route for Anglo-Scottish rail freight due to the inadequate existing capacity on the more direct route via the Glasgow South Western line and the Settle to Carlisle route. A section of the Edinburgh – Glasgow mainline is also utilised by coal traffic from Ayrshire and Hunterston Port bound for Longannet Power Station in Fife. However, this route for coal traffic is due to cease in 2008, with the opening of the Stirling to Kincardine alternative route.

Strategic bus and coach services on the corridor are provided by Citylink and First. Citylink runs two services, namely: service 900 between Glasgow and Edinburgh via the M8 and A8 and service 904 between East Kilbride and Edinburgh via the A725, B7012, A723, A775, M8 and A8[622]. First also operates a significant number of services along the corridor.

The volumes of traffic both to Glasgow and Edinburgh airports affect traffic levels in the corridor. The effect of this traffic (which is mainly by private car) is felt by all traffic in the corridor. The Rosyth ferry port within Corridor 12 (Edinburgh to Perth) which provides a direct overnight ferry service to mainland Europe is accessed via the Forth Road Bridge.

Integrated tickets in the corridor are available in the form of the *PLUSBUS* ticket, the 'One-Ticket' and SPT's ZoneCard. *PLUSBUS* covers rail journeys into Edinburgh, Glasgow, Bathgate, Livingston, Falkirk and Larbert and provides the addition of unlimited bus travel within the destination. The 'One-Ticket' gives unlimited travel on bus or bus and rail within designated zones radiating from Edinburgh towards Dundee, Perth, Stirling, Dunbar, Bathgate and Shotts. 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 western section of the corridor.

622 www.citylink.co.uk

Asset Management

In 2007, 27 per cent of the trunk road network pavement[623] 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[624]. The sections with the poorest residual strength are the M8 between Edinburgh and Newhouse and between Baillieston and Junction 13. Under Transport Scotland's planned maintenance schedule, the net figure for the corridor is expected to fall to nine per cent by 2012.

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

Demand Management

Bus journeys into Edinburgh from the corridor benefit from bus priority measures with Greenways provided on the A8 and A71[625]. These have the greatest beneficial impact on the shorter commuting journeys into Edinburgh from the corridor. There are no bus priority measures at present in the rest of the corridor; bus journeys in these areas are therefore affected by road congestion to the same extent as the car. City of Edinburgh Council has adopted a policy of discouraging parking provision within the city centre for commuters to encourage public transport use[626]. Bus based Park-&-Ride car parks are located at Ingliston on the A8 and Hermiston on the A71[627].

Station car parks on the main Edinburgh to Glasgow line, such as Croy and Falkirk, are at or close to capacity. These are discussed within Corridor 9 (Glasgow to Perth) and Corridor 10 (Edinburgh to Stirling).

Stations on the line via Shotts have total station car park facilities for approximately 150 cars[628]. On the Bathgate line there are parking spaces for over 300 cars and there are spaces for over 200 cars between Airdrie and Coatbridge station car parks which are both at capacity. The opening of the Airdrie to Bathgate rail line will include the provision of over 1,000 additional car parking spaces at new and existing stations[629].

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623 Transport Scotland SERIS Database
624 STS No. 25 (2006) Table 5.5
625 Edinburgh City Council: Greenways and Bus Lanes: www.edinburgh.gov.uk
626 Edinburgh City Council Local Transport Strategy
627 Edinburgh City Council "Easy Park & Ride": www.edinburgh.gov.uk
628 First ScotRail – Station Facilities: www.firstgroup.com/scotrail
629 http://www.airdriebathgateraillink.co.uk/

Programmed Schemes

The following programmed infrastructure schemes and developments that will affect the corridor are highlighted in Figure 7.13.3:

- A8 Baillieston to Newhouse upgrading to motorway standard;
- M8 Associated Network improvements;
- M8 Harthill Footbridge;
- The reopening of the Airdrie to Bathgate rail line;
- Edinburgh Waverley Station upgrade; and
- Improvements to the rail and road network within the connecting urban networks of Glasgow and Edinburgh.

The recently opened M9 Spur extension improves links and will reduce congestion between the corridor and the Forth Road Bridge, by replacing the single carriageway A8000 with a motorway link to the A90 south of the Forth Road Bridge. The upgrading of the A8 section between Baillieston and Newhouse to motorway standard will complete the 'missing link' of motorway between Glasgow and Edinburgh while the M8 Associated Network Improvement Study is investigating capacity improvements on the M8 adjacent to Baillieston Interchange.

On the rail network, completion of the Airdrie to Bathgate line will provide another link between Glasgow and Edinburgh. This line will also increase public transport availability for a large part of North Lanarkshire and West Lothian for trips to Glasgow and Edinburgh and within the corridor. A study into short, medium and long term options for improving the rail network between Edinburgh and Glasgow has been carried out as an early deliverable of the STPR. Proposals in the study include:

- Electrification of the rail line between Edinburgh and Glasgow via Falkirk;
- Journey time and service improvements on the Edinburgh to Glasgow via Shotts and Carstairs routes;
- An airport station at Gogar on the Fife railway line;
- An interchange with the tram and rail network; and
- A rail link between the Fife and Edinburgh to Glasgow routes.

The study also considers proposals to increase capacity in the main stations in Edinburgh and Glasgow.

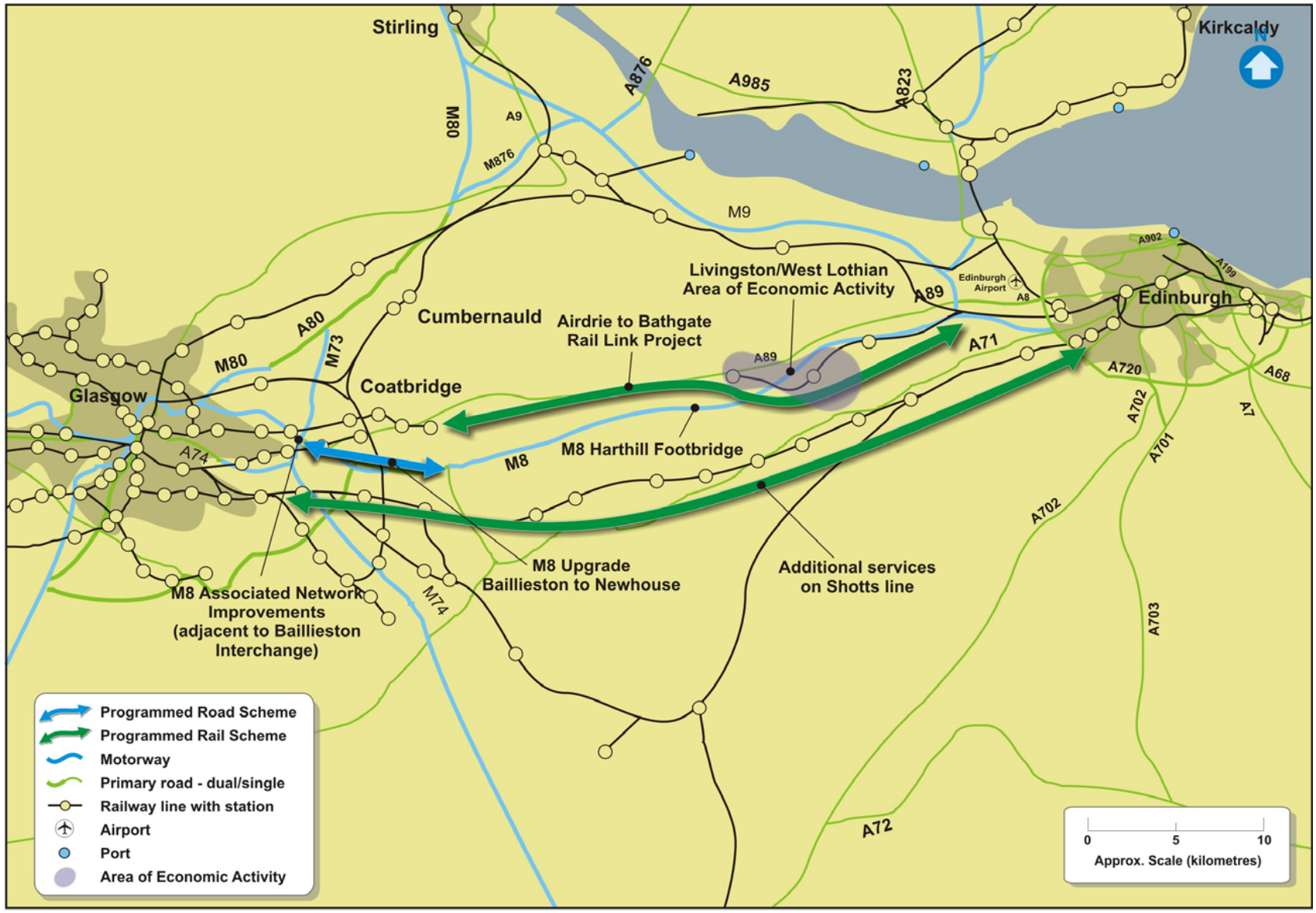

Figure 7.13.3: Programmed Transport and Land Use Developments, Corridor 13 - Glasgow to Edinburgh

7.13.3 Travel Patterns

Travel patterns for the corridor are presented in Figure 7.13.4. Table 7.13.1 provides a summary of the demand levels and mode share in the corridor. By 2022 the corridor is forecast to experience a total of 652,500 trips per day[630]. Compared to 2005 this is a 26 per cent increase in trips, with an overall 15 per cent increase in public transport trips. Within this increase in public transport trips the rail demand is forecast to grow significantly by over 30 per cent.

Table 7.13.1 Summary of Demand (12 Hour) and Public Transport Share[631]

		Between Glasgow and Edinburgh	Within Corridor	Between Corridor and Glasgow	Between Corridor and Edinburgh	Between Corridor and other destinations	Total Trips
2005	Total Trips	43,200	118,300	68,500	105,100	181,800	516,900
	% of Corridor	9%	23%	13%	20%	35%	100%
	PT Trips	10,800	15,200	8,400	12,500	7,600	54,500
	PT Share	25%	13%	12%	12%	4%	11%
2022	Total Trips	58,400	140,700	91,500	127,900	234,000	652,500
	% of Corridor	9%	22%	14%	20%	35%	100%
	PT Trips	16,400	13,100	8,700	17,900	6,500	62,600
	PT Share	28%	9%	10%	14%	3%	10%
Change	Total Trips	+35%	+19%	+34%	+22%	+29%	+26%
	PT Trips	+52%	-14%	+4%	+43%	-14%	+15%

Over one third of trips are between the corridor and other destinations. Of these, 29 per cent (some 68,000 trips) travel onwards to Corridor 18 (towards north west England) that serves the areas of North and South Lanarkshire, and a similar proportion travel onwards to Corridor 9 (towards Perth), containing the settlements of Cumbernauld and Stirling. A large proportion of these trips will use the M73 and M80 links that are congested where they join with the M8. About 19 per cent (some 43,000 trips) travel onwards to Corridor 10 (towards Falkirk / Grangemouth / Stirling). The relative proximity of these other predominately urban corridors result in their labour catchment areas covering significant parts of Corridor 13.

The next largest proportion of trips are those within the corridor (wholly internal trips) accessing and supporting the local economies. More trips are made from the corridor to Edinburgh than from the corridor to Glasgow. This is consistent with the differential between the proportion of jobs and proportion of population for the SEStran that are in Edinburgh, resulting in a significant need for commuting to employment in the city.

[630] Trips are based upon a 12 hour flow.
[631] TMfS:05

Only nine per cent of trips are between Edinburgh and Glasgow. These have a high share of public transport use with 25 per cent of trips being made by either bus or rail, compared with about 11 per cent of trips within the corridor as a whole. The public transport share for trips between Edinburgh and Glasgow is expected to rise by 2022 almost entirely due to the increase in rail demand. In contrast, the public transport mode share for trips wholly within the corridor and between the corridor and Glasgow is forecast to decline between 2005 and 2022. This is largely as a result of increased car ownership and thereby the increased attractiveness of the private car for relatively short journeys.

The 20 per cent of trips that are between the corridor and Edinburgh are heavily influenced by the demand for travel in the core West Lothian area of Livingston and Bathgate. Analysis carried out as part of the Edinburgh / Glasgow Rail Routes study within STPR showed that zones around Livingston and Bathgate summate to give the highest demand for trips to and from Edinburgh of any similar zone group. Within this area, the largest proportion of trips access West Edinburgh with large proportions also accessing the Western Approaches (Edinburgh Airport and Heriot Watt University area) and North Edinburgh. Around half of the proportion that access West Edinburgh travel to or from the following areas: City centre, Haymarket, South Edinburgh and South-West Edinburgh.

ATC data from the SRTDb gives a figure of approximately seventeen per cent HGV traffic on the M8 at Harthill[632]. This route experiences a high percentage of HGV traffic and as such is important for freight.

The railway stations in this corridor have a total throughput of some 15.7 million passengers per annum (2005), with Linlithgow and Falkirk Grahamston the busiest stations.[633]

Edinburgh Airport, handled over 8.4 million passengers in 2005[634], and is one of the fastest growing airports in Scotland. The airport is located adjacent to the A8 at Ingliston, towards the east end of the corridor and therefore has a particular impact on travel in its vicinity. Further details regarding Edinburgh Airport are provided within the specific text on the Edinburgh Urban Network.

[632] SRTDb
[633] Rail industry LENNON data (Station Usage 2004/2005) The total rail passenger trips do not include SPT zonecard trips
[634] STS No. 25 (2006) Table 9.7

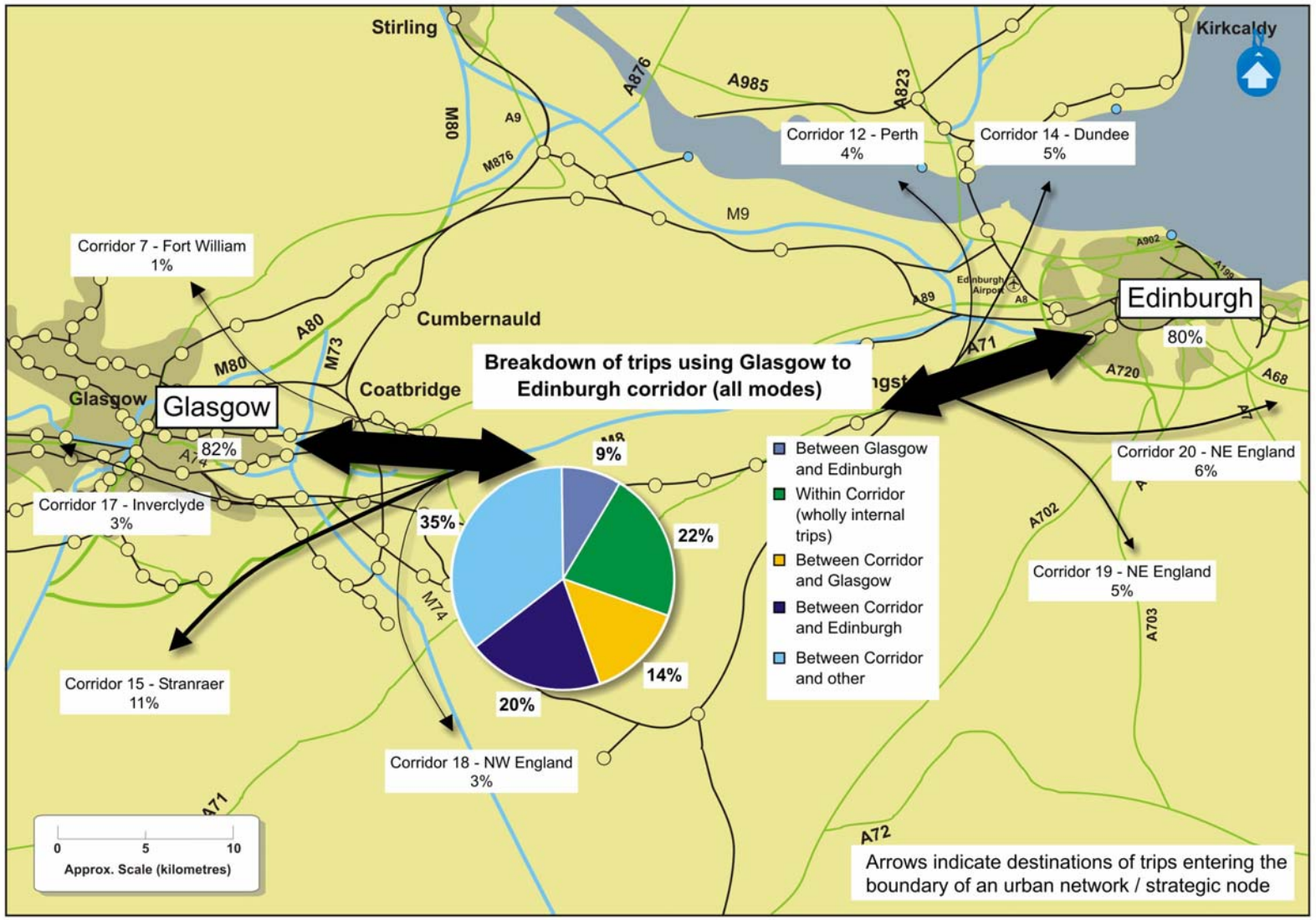

Figure 7.13.4 Travel Patterns 2022, Corridor 13 – Glasgow to Edinburgh

7.13.4 Performance Review

Improving 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 main road within the corridor is the M8/A8, which is a mix of dual carriageway and motorway. The comparison of average speeds across the morning and evening peaks and the inter-peak period between 2005 and 2022 on the M8/A8 between Edinburgh City Bypass and Glasgow are shown in Figure 7.13.5.

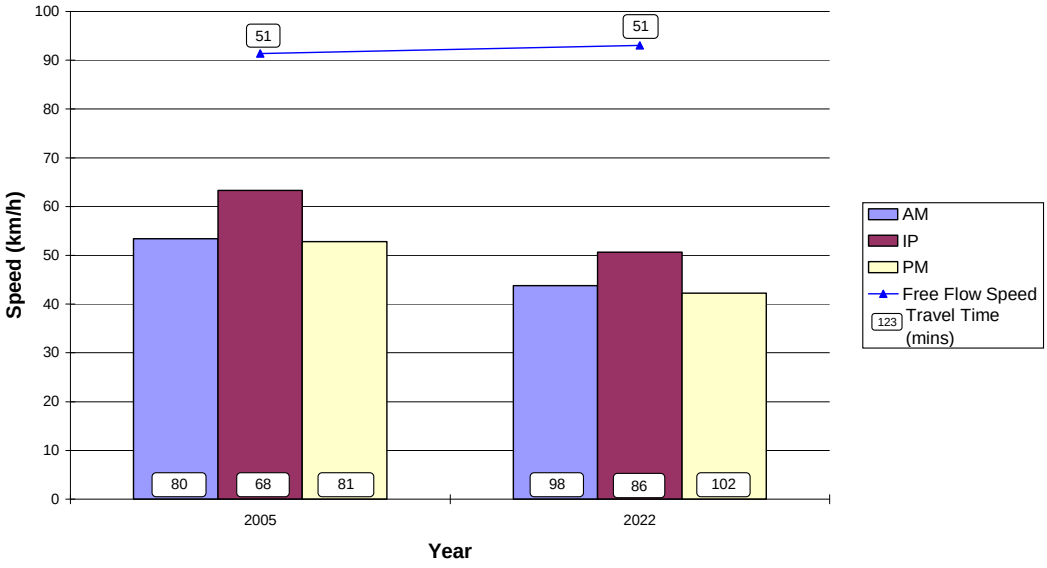

Figure 7.13.5: Average Road Speeds (Corridor 13)[635]

Travel time along the corridor in 2005 is the similar for both the morning and evening peaks at 1 hour 20 and 1 hour 21 minutes respectively. The off peak period is quicker at 1 hour 8 minutes, however this is still significantly slower than the free flow travel time of 51 minutes. In 2022 the travel times have increased to 1 hour 26, 1 hour 38 and 1 hour 42 minutes for the off peak, morning peak and evening peak respectively. The free flow travel time remains constant at 51 minutes between 2005 and 2022.

635 TMfS:05

As Figure 7.13.5 shows, the 2005 average peak speed is less than 60kph. This average speed is considered to be to be low for a road of this standard and, as shown in the figure, is considerably less than the free flow speed for the road in all periods indicating the levels of congestion on the corridor. Future speeds are expected to fall significantly between 2005 and 2022 resulting in increased journey times across the whole day. Based on the current forecasts the journey times from city centre to city centre will increase by approximately 20 minutes. This will result in future journey time and speeds, during the inter-peak, being similar to current peak period conditions.

The AADT on the M8 at around 55,000 vehicles does not vary a great deal over its length. However, the AADT increases to over 60,000 vehicles on the approaches to Edinburgh and Glasgow[636]. The majority of the road is dual lane motorway which has a theoretical design capacity of up to 41,000 vehicles[637]. The road is therefore operating over capacity a long the majority of its length and indicates that a poor level of service is being provided.

The comparison of traffic demand against capacity indicates that in 2005 the M8 at Junction 1 and Junction 2 is approaching capacity in the morning peak. In the evening peak, Junction 1 is over capacity and Junction 2 is approaching capacity. On the A8 stretch between Baillieston and Newhouse in 2005 – the morning peak is over capacity Glasgow bound and approaching capacity Edinburgh bound, in the evening peak the A8 is over capacity in both directions. Stop / start conditions are currently experienced on the approach to Glasgow. This will continue to occur in the future however this is discussed in the Glasgow Urban Network (Section 5.5).

For 2022 the M8 between Junction 1 and 2 is projected to be approaching capacity in both the morning and evening peak periods. Junctions 1 and 2 are projected to be over capacity in the both the morning and evening peaks and Junction 1 is over capacity in the inter-peak. The A8 is projected to be over capacity in the morning and evening peaks (this stretch shows some improvement – only approaching capacity in 2012 and 2017 after the completion of the motorway upgrade but over capacity by 2022).

The A8 between Newbridge and Gogar in Edinburgh is projected to be over capacity in the morning peak in 2022. Gogar junction is projected to be over capacity in 2022 for all time periods.

Due to increased levels of commuter traffic and interaction at junctions on the approaches to Glasgow and Edinburgh delays are experienced now and in the future years. However, with the exception of the upgrade section between Newhouse and Baillieston, congestion is likely on all other sections of the M8.

[636] Transport Scotland: Scottish Roads Traffic Database
[637] Design Manual for Roads & Bridge (TA46/97)

Approximately up to 7% of journeys in this corridor suffer from journey time reliability issues in both the morning and evening peaks[638]. This means that journey times are 50% or 30 minutes longer than the average daily journey time[639].

The main Edinburgh to Glasgow rail line offers a competitive alternative to car as shown in Figures 7.13.6a and 7.13.6b[640] for journeys to Glasgow and Edinburgh respectively. As a result, the share of public transport trips between Edinburgh and Glasgow is relatively high, in comparison to other corridors in Scotland. Rail trips on the line via Shotts are less competitive in journey time against the car due to the line speed restrictions (70 mph maximum), with lower speeds in restricted areas, and the frequent stopping pattern (19 intermediate stops on the line). Bus journey times are approximately 25 per cent longer than the equivalent car journey time.

In terms of rail capacity, services with over 70 per cent peak load factors in the three hour morning peak are deemed to be operating at capacity in the peak hour suggesting that some passengers are forced to stand for the entire 50 minute end-to-end journey. Results from the early delivery work relating to rail links between Edinburgh and Glasgow show that over the 12-hour period, around 80 per cent of those boarding trains on the main Edinburgh to Glasgow rail line do so at the cities with the remainder boarding at intermediate stops. The results also show a high proportion of the daily boardings at intermediate stops are undertaken in the morning peak. These results indicate that the rail line is catering for two distinct demand profiles by time of day; commuter flows into and out of Edinburgh and Glasgow during the peaks, and travel between Edinburgh and Glasgow during the inter-peak. This dual role is likely to be the case for much of the transport network. The lack of spare capacity identified on rail services and at station car parks within the corridor is likely to restrict potential for increasing the mode share of rail on the corridor.

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 this corridor is:

- First ScotRail Express 94.2 per cent (target 92 per cent);
- First ScotRail East 88.6 per cent (target 90 per cent);
- First ScotRail Central and 91.3 per cent (target 90 per cent);
- Strathclyde Passenger Transport Authority 94.1 per cent (target 94 per cent)[641].

Table 7.13.2 shows the projected morning peak load factors (ratio of demand to supply) on the rail services in the corridor for the various years, as reported in Network Rail's Route Utilisation Strategy.

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638 Congestion on Scottish Trunk Roads, 2003 and 2004, Transport Scotland
639 http://scottishexecutive.itisholdings.com/
640 Journey times for bus/rail include a 20 minute walk/wait time
641 http://www.firstgroup.com/scotrail/content/aboutus/ourperformance.php

Table 7.13.2 Projected Morning Peak Load Factors[642]

	Base	2011	2016	2026
Edinburgh - Glasgow (via Falkirk)	0.87	0.80	0.84	0.93
Glasgow – Edinburgh (via Falkirk)	0.88	0.88	0.93	0.99

[642] Network Rail: Scotland Route Utilisation Strategy: March 2007, Table 8

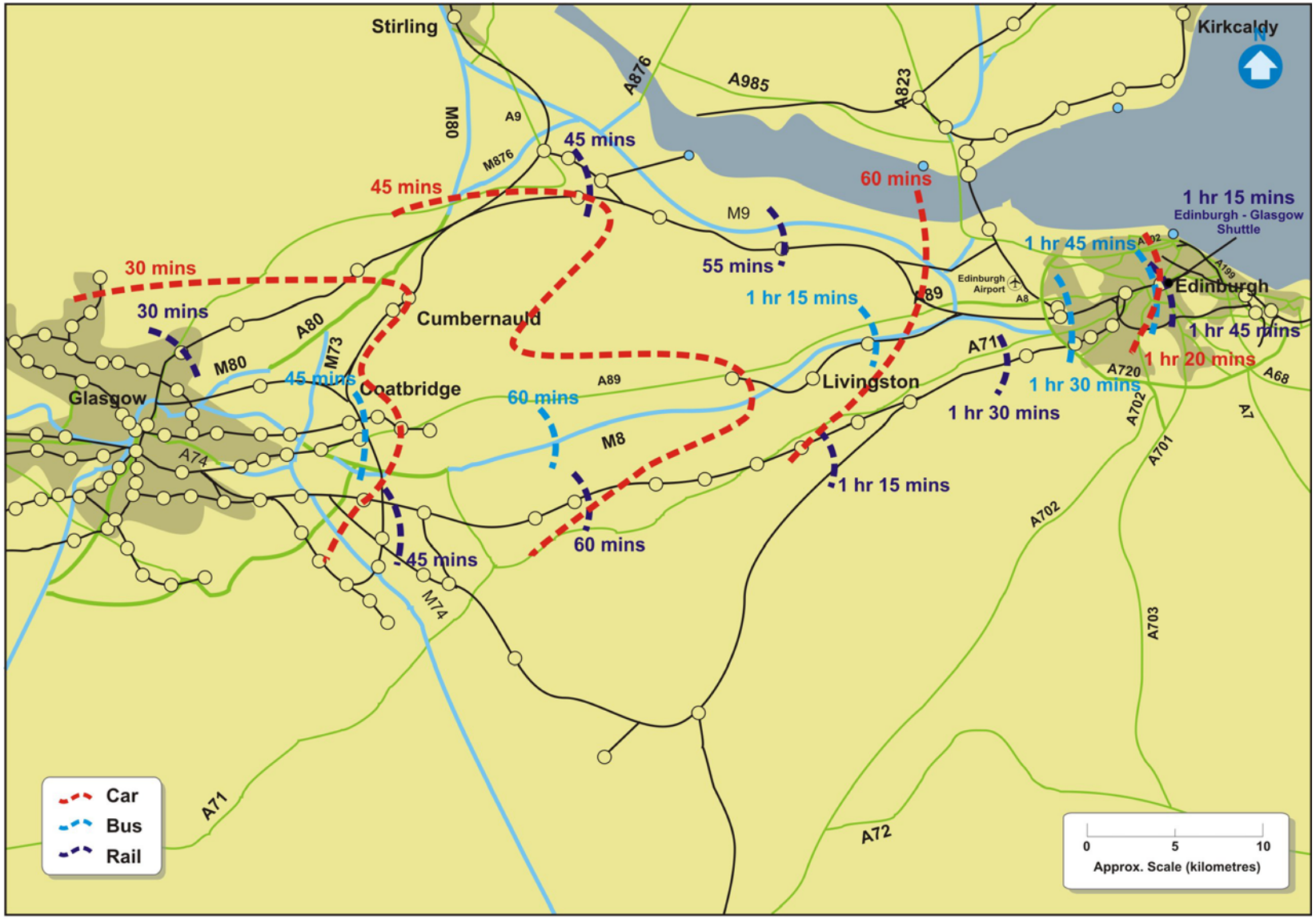

Figure 7.13.6a: Journey Time to Glasgow City Centre by Road/Rail (2005 AM peak)

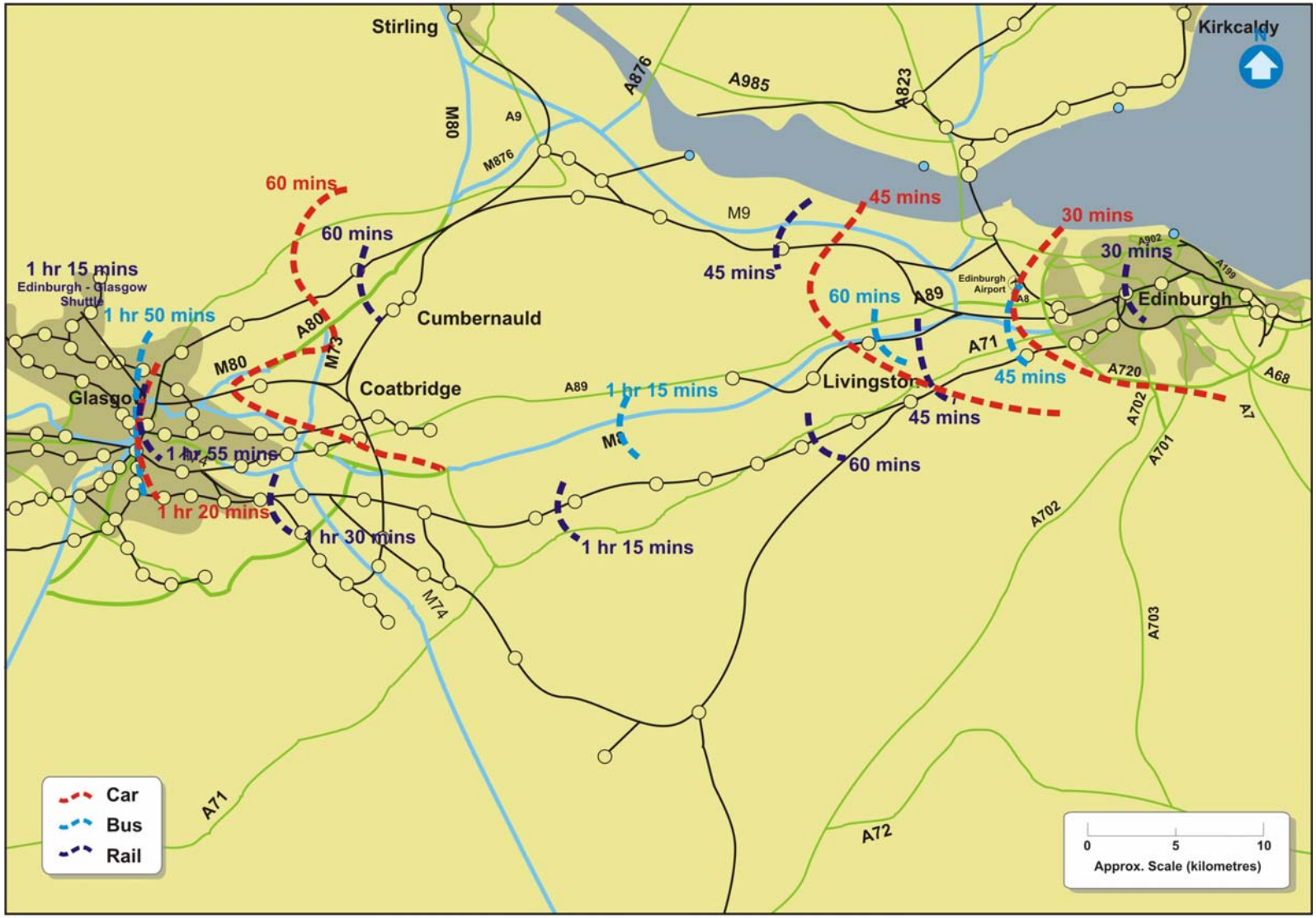

Figure 7.13.6b: Journey Time to Edinburgh City Centre by Road/Rail (2005 AM peak)

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 159 tonnes / million person kilometres to 180 tonnes / million person kilometres between 2005 and 2022 in this corridor. This is a result of CO_2 emissions rising at a greater rate than person kilometres between 2005 and 2022[643].

The road based transport network produced 512,000 tonnes of CO_2 in Corridor 13 in 2005. This equates to approximately eight 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 13 will rise by 45 per cent to around 739,500 tonnes, approximately nine per cent of Scotland's road based transport related CO_2 emissions in 2022. This level of growth is far in excess of the growth in demand, as a result of the increased levels of congestion.

The rail network produced 18,500 tonnes of CO_2 in Corridor 13 in 2007. This equates to approximately 22 per cent of the total rail based CO_2 emissions in Scotland[644].

Therefore, it is estimated that the road and rail based transport network collectively produced 530,500 tonnes of CO_2 in Corridor 13 in 2005. This equates to approximately eight per cent of the total road and rail based transport related CO_2 emissions in Scotland.

[643] TMfS:05
[644] AEA (2001) Rail Emission Model Final Report; www.nationalrail.co.uk; www.networkrail.co.uk

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 concentration of public transport services on this corridor serving the end to end journey as well as the intermediate communities would suggest that the provision of services does not match the demand. The fact that many of the services are operating at or close to capacity would suggest that further capacity is needed.

Public transport competitiveness is forecast to improve in eastern areas of the corridor due to the introduction of new public transport schemes and increasing congestion on the road network. To the west of the corridor there are areas in Lanarkshire where public transport competitiveness is forecast to worsen where despite improved public transport accessibility, car accessibility rises to an even greater extent because of planned road schemes.

The infrastructure and service provision provide for effective business interaction between the centres of this corridor, with commuting opportunities by public transport and private car allowing suitable return journeys to be made within a working day.

There are concentrations of people without cars in former Social Inclusion Partnership areas of North and South Lanarkshire with a greater dependency on public transport for access to key services. However, while public transport accessibility in these areas is not high, it is not as low as some former Social Inclusion Partnership areas in other corridors.

Table 7.13.3 provides an assessment of bus quality on the strategic long distance services which operate in the corridor on a scale of one to five, with one being 'poor' and five being 'excellent'. All factors have been identified as good. Journey times on the bus services will be impacted by the change in average speeds over time.

Table 7.13.3: Assessment of Bus Service Quality[645]

Service Numbers	Annual Journeys	Reliability	Frequency	Simplicity	Value	Coverage	Vehicle Quality
900, 904, X1, X12, X14, X15, X15A, X16, X27, X28	75,000	4	4	4	4	4	4

The accident and fatal accident rates for the section of M8 between the A82 Junction at Great Western Road to the A720 junction in Edinburgh are both lower than the national average for motorways. The proportion of fatal and serious accidents on the M8 (13 per cent) is also significantly lower than the national average (25 per cent)[646].

Perceptions of personal security vary widely along the corridor. Bus users felt safer than the national average in West Lothian and Edinburgh, but significantly less safe than the national average in North Lanarkshire and Glasgow[647]. This suggests that perceived security in the western stretch of the corridor could pose barriers to public transport use[647].

Summary of Infrastructure and Operational Constraints

Key constraints and congestion points are shown in Figure 7.13.7, including:

- Capacity issues on the M8/A8; Hermiston to Newhouse (Junction 1 to 6) and west of Baillieston Interchange on approach to Glasgow;
- Capacity constraints on the A8 between Viewpark and Birkenshaw;
- The closely spaced motorway junctions leads to flow breakdowns in peak periods; and
- Capacity constraints on the rail line via Shotts.

[645] Bus Users UK (Qualititative Assessment – 1: very poor; 5: excellent)
[646] Transport Scotland SERIS Database
[647] Scottish Household Survey 2003/2004: Perceptions of safety from crime during evening bus/rail travel

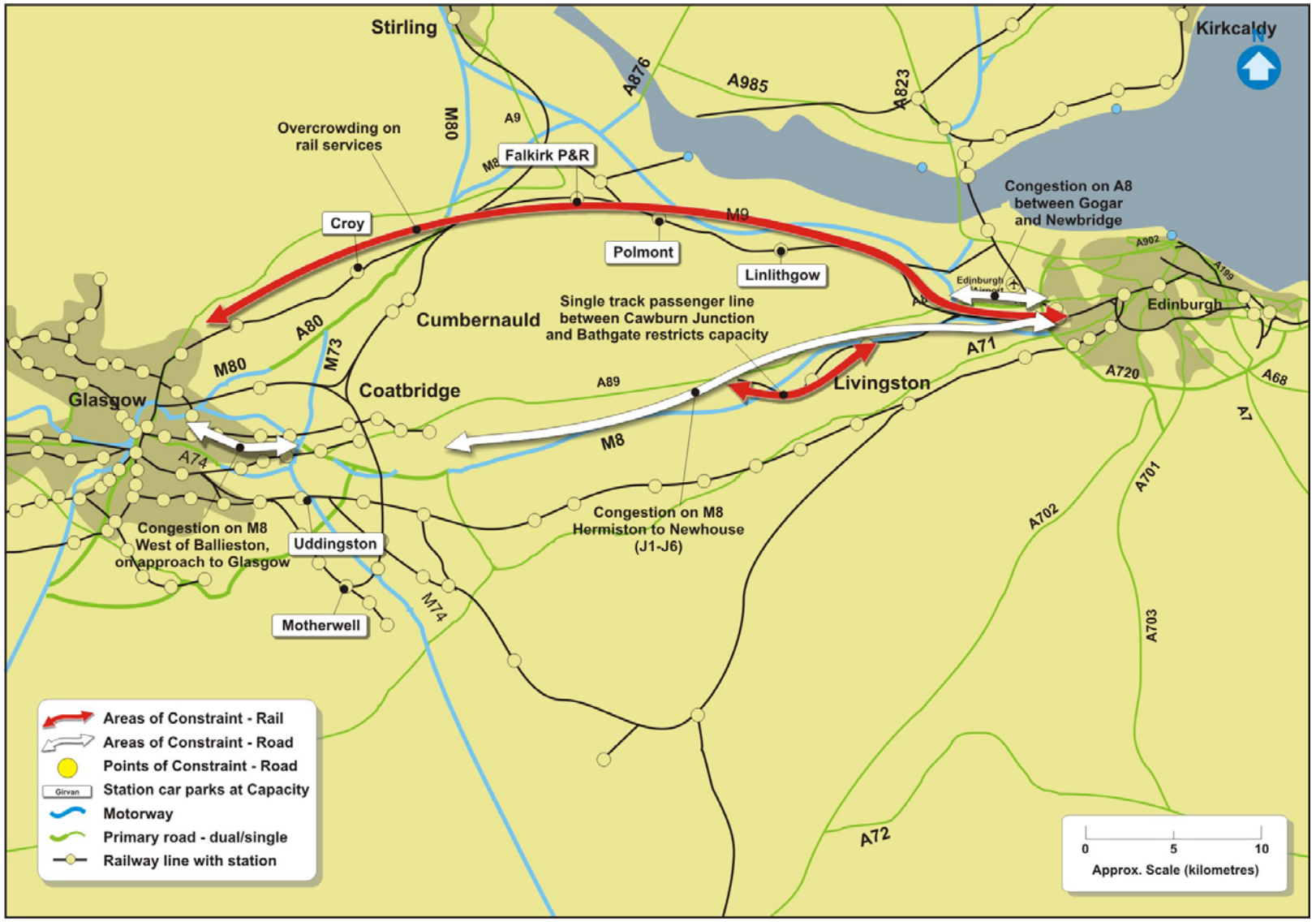

Figure 7.13.7: Areas of Constraint on the Network, Corridor 13 - Glasgow to Edinburgh

7.13.5 Summary and Conclusions

Overall, how well does the transport network perform?

Corridor 13 links Scotland's two largest economic centres, Glasgow and Edinburgh, and provides access to a number of smaller economic areas. Glasgow and Edinburgh are within one hour commute of the whole of the corridor.

There are key constraint points on the M8 approach to Glasgow and Edinburgh; this is primarily due to additional levels of commuter traffic and the interaction of vehicles either side of junctions. At these locations the M8 is currently operating at or over capacity and there are journey time reliability issues. In addition congestion is likely on all other sections of the M8, with the exception of the programmed upgrade, between Newhouse and Baillieston. The difference between the modelled journey time and the free flow journey time indicates that the M8 / A8 is not operating effectively for most of the day. In addition, future off-peak conditions are expected to deteriorate to a level similar to current peak levels. This will impact on all road based journeys in the corridor.

The principal road network in this corridor (the M8 / A8) has a lower than average accident rate.

The frequency and reliability of public transport is good, however the high level of peak demand can lead to services being over capacity. The lack of additional rail paths and platform space at terminus stations in Glasgow and Edinburgh is exacerbated during peak hours when additional services are operated on some routes. This can cause journey time reliability issues. Only the rail route via Falkirk High offers a competitive journey time with car for trips between Edinburgh and Glasgow.

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

The road network between Glasgow and Edinburgh is forecast to experience increased levels of traffic, reduced journey speeds and reduced levels of reliability between 2005 and 2022. The inter-peak speeds on the corridor are forecast to fall to a level similar to that of the 2005 peak by 2022 and current traffic volumes are greater than theoretical design capacity levels of a dual two lane motorway. The potential expansion of Edinburgh Airport will further exacerbate congestion in the corridor. The ratio of average morning peak hour speeds to free flow speeds is less than 60 per cent.

The most significant issue in terms of future network performance is the predicted increases in public transport trips between Edinburgh and Glasgow and the corridor and Edinburgh. It is unlikely that the current level of public transport provision will be able to accommodate this level of demand, and this would have the potential to result in higher levels of car based trips.

Rail overcrowding is a problem that is forecast to worsen in the future. This may constrain potential growth in patronage. Transport Scotland and Network Rail are working together to tackle this problem with the reopening of the Airdrie to Bathgate line. The introduction of the Airdrie to Bathgate rail link will provide additional public transport opportunities within the corridor and a reduction in social exclusion but some employment centres and major land releases, including Eurocentral and Polkemmet are expected to have limited public transport access. The Airdrie to Bathgate rail link will provide a fourth link between the two cities.

In summary, neither the rail or road network will cope with current growth projections and therefore both local and strategic journeys will be impacted. This in turn is likely to constrain growth, impacting local and national economic centres within and adjacent to the corridor.

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

This corridor is heavily affected by the way in which Edinburgh and Glasgow develop and how commuters are able to access employment opportunities in the two cities. The corridor is critical in supporting the economic viability of the two cities and the wider Central Belt.

Population, employment and housing are forecast to increase in the corridor, which is likely to result in increasing demand for travel.

Providing effective access to Scotland's external links will have a key part to play in shaping future transport performance in this corridor, given the projected expansion of Edinburgh Airport.

What are the key problems associated with delivering the KSOs?

The predicted increase in road journey times due to increasing congestion is likely to be a problem in addressing improvements, together with the potential for high levels of rail passenger loading to impact on both journey time and performance.

The lack of spare capacity on rail services and at station car parks within the corridor is likely to restrict potential for increasing the mode share of rail on the corridor, particularly in view of the significant projected increases in demand.

Public transport mode share between Glasgow and Edinburgh is high reflecting the competitive journey times and high frequency of the rail service. Growth in public transport demand is likely to be constrained by rail capacity or worsening road congestion affecting buses.

Significant increases in road based CO_2 emissions are also forecast, resulting from further congestion and increasing length of goods vehicle trips by 2022.

Forecast growth in employment within the Livingston area will lead to a significant increase in travel towards the eastern parts of the corridor, placing additional pressure on the road and rail network.