7.19 Corridor 19: Edinburgh to North West England and beyond

7.19.1 Setting the Context

Corridor 19 extends from the southern outskirts of Edinburgh to the border of Scotland with the North West of England as shown on Figure 7.19.1. The northern part of the corridor, Midlothian, is a significant commuting belt for Edinburgh. The rest of the corridor connects Edinburgh with a number of smaller settlements, including Galashiels, Selkirk and Hawick and encompasses the majority of the Borders geographical area reaching as far west as the A702 and M74. The corridor is approximately 148 kilometres in length and had a total population of the corridor was 125,000 in 2004[771].

Figure 7.19.2 shows the expected areas of changes in population and employment in this corridor. The population in this corridor is forecast to rise by approximately 8,900 (seven per cent) by 2022[771]. During the same period the number of households is forecast to rise by 8,800 (16 per cent). In addition, there will be an impact on population distribution from the 'South East Wedge', a significant development located on the south east periphery of Edinburgh and Midlothian areas which has been identified for 4,000 new homes and 30 hectares of business use over the next 15 years[772]. This development is due to take place over the next 15 years. Further information on this development is reported within the Edinburgh Urban Network.

The economy of the Scottish Borders was historically based on traditional industries such as agriculture, sea-fishing, coal mining and textiles. Employment in these sectors has declined significantly and the economy has diversified into other areas including the service sector, tourism, plastics, electronics, engineering and biotechnology. Approximately half of the active workforce in the Midlothian area of the corridor work in Edinburgh[773].

By 2022 employment in the corridor is forecast to rise by eight per cent, an increase of 3,000 jobs. Inactivity rates are also set to rise by six per cent over the same period[771].

Income levels for the corridor range are £366 per week in Midlothian and £385 per week in the Scottish Borders, ranging from 89 per cent to 94 per cent of the average for Scotland (£412)[774].

Car ownership in the corridor, measured by the percentage of households with access to a car, is above the Scottish national average of 67 per cent, reflecting the rural nature of much of the corridor:

- Midlothian: 72 per cent; and
- Scottish Borders: 76 per cent[775].

[771] TELMoS
[772] Edinburgh and the Lothians Structure Plan 2015
[773] Midlothian Council: www.midlothian.gov.uk
[774] Scottish Economic Statistics 2006, table 4.20
[775] Scotland's Census 2001: www.scrol.gov.uk Table KS17

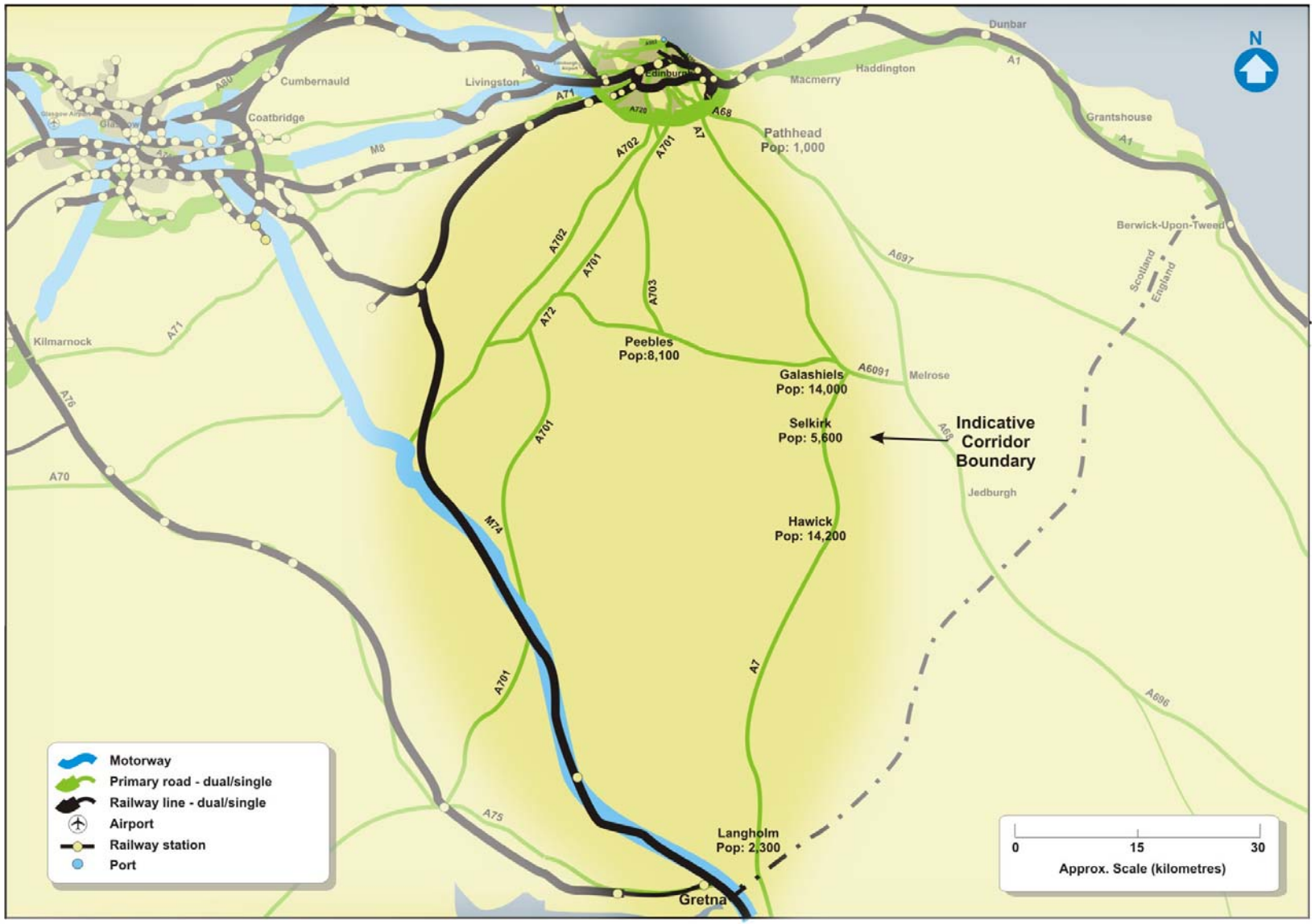

Figure 7.19.1: Setting the Context, Corridor 19 - Edinburgh to NW England and Beyond

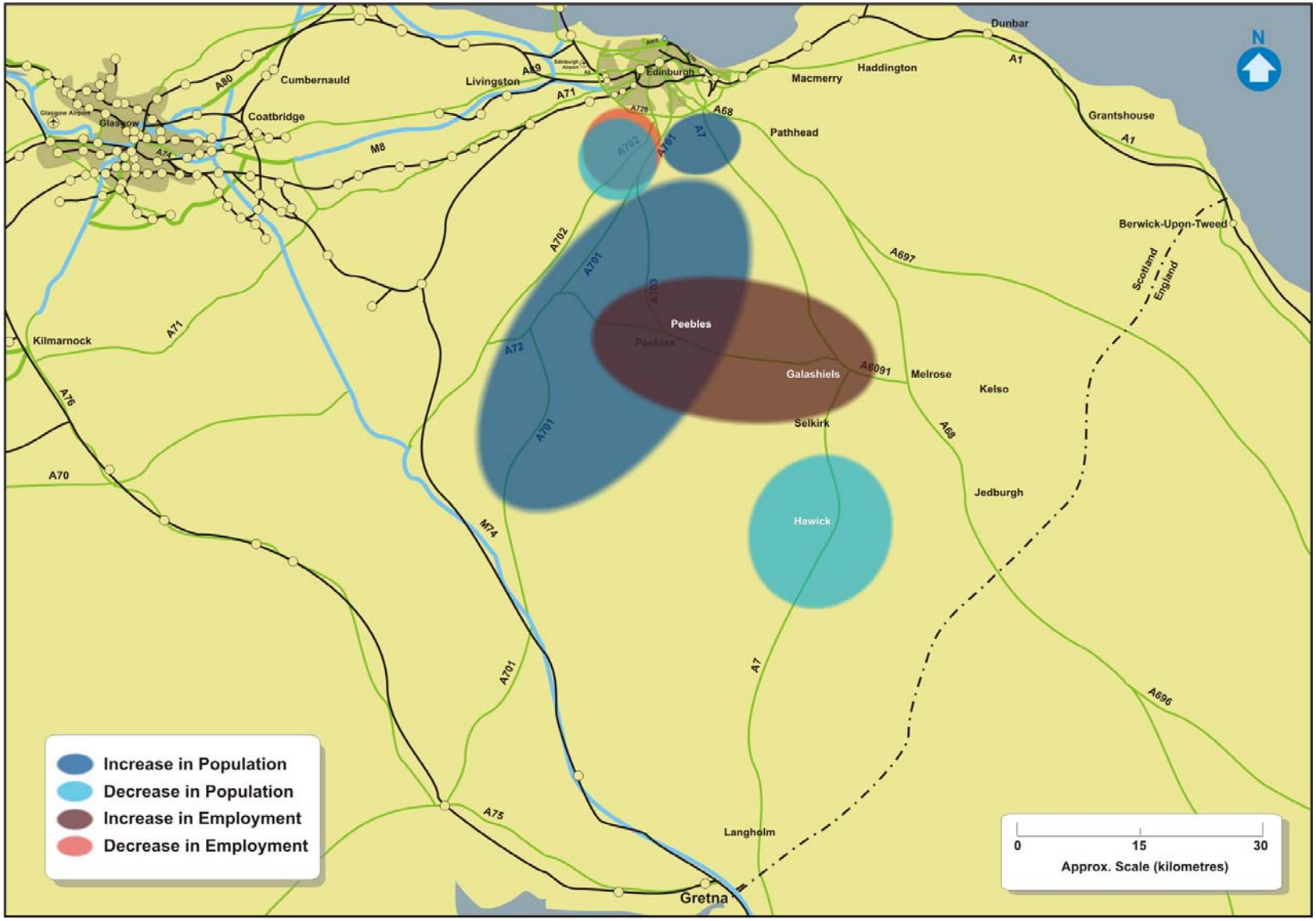

Figure 7.19.2: Changes in Population and Employment, 2005 & 2022, Corridor 19 - Edinburgh to NW England and Beyond

7.19.2 Transport Network and Operations

Infrastructure and Services

The principal elements of the transport network within the corridor are shown in Figure 7.19.1.

The corridor is served by two main trunk roads, both of which are single carriageway:

- A7 links Edinburgh and Carlisle (trunk road between Galashiels and Carlisle); and
- A702 Trunk Road links Edinburgh and the M74.

The A701 (non-trunk) and A702 provide a strategic link through the corridor from Edinburgh to the Scottish Border and on to the M74. The A7 forms the main link from Edinburgh into the Borders connecting the many towns such as Galashiels, Selkirk, Hawick and Langholm to Edinburgh. The A68 runs from Sheriffhall on the A720 Edinburgh City Bypass to the A6091 into Melrose, and is a key link from the city to the Borders. As the A68 lies within both this corridor and Corridor 20, reference is made in both sections of the report. This particular section focuses on the northern part of the A68, whereas Corridor 20 tends to focus on its role as a link to the English border.

The rail line between Edinburgh and the West Coast Main Line via Carstairs passes through the northwest edge of the corridor but there are no direct rail links or railway stations within the corridor boundary. Lockerbie and Carstairs stations fall within Corridor 18 (Glasgow to North West England).

A significant local bus network operates within Midlothian and the Scottish Borders. There are a number of local operators, but most services are provided by First Bus. A number of express services are provided that link to Edinburgh. Services patterns are generally:

- Two buses per hour between Edinburgh and Galashiels / Hawick (alternate services continue to Carlisle); and
- Additional two buses per hour between Edinburgh and Galashiels.

Integrated tickets in the corridor are available in the form of the *PLUSBUS* ticket and the 'One-Ticket'. *PLUSBUS* covers rail journeys into Edinburgh and provides the addition of unlimited bus travel within the urban network. 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.

Asset Management

In 2007, 11 per cent of the trunk road network pavement[776] 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[777]. Under Transport Scotland's planned maintenance schedule, the net figure for the corridor is expected to fall to seven 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 provided on the Quality Bus Corridor from Straiton on the A701 and bus lanes on the A702 Morningside Road and Lothian Road[778]. There are no bus priority measures at present in the rest of the corridor. Bus-based Park-&-Ride car parks are due to open in late 2007 at Straiton and Sheriffhall for access to Edinburgh city centre[779]. The Borders Rail Link proposals include the provision of car parks at several stations on the route[780].

Programmed Schemes

The following programmed schemes and developments in the Corridor (highlighted in Figure 7.19.3) include:

- A68 Pathead to Tynehead Project;
- A68 South Soutra to Oxton Project;
- A68 Northern Dalkeith Bypass
- A7 Auchenrivock Improvement Project;
- A702 Candymill Bend and Edmonstone Brae;
- A702 Hartside Corner Improvement (due 2009 / 2010);
- Borders Rail Link from Edinburgh to Tweedbank, near Galashiels;
- South East Wedge / Shawfair; and
- New Park-&-Ride sites at Straiton and Sheriffhall.

776 Transport Scotland SERIS Database
777 STS No. 25 (2006) Table 5.5
778 The City of Edinburgh Council: Greenways and Bus lanes: www.edinburgh.gov.uk
779 The City of Edinburgh Council: "Easy Park & Ride": www.edinburgh.gov.uk
780 Waverley Railway Project: www.waverleyrailwayproject.co.uk

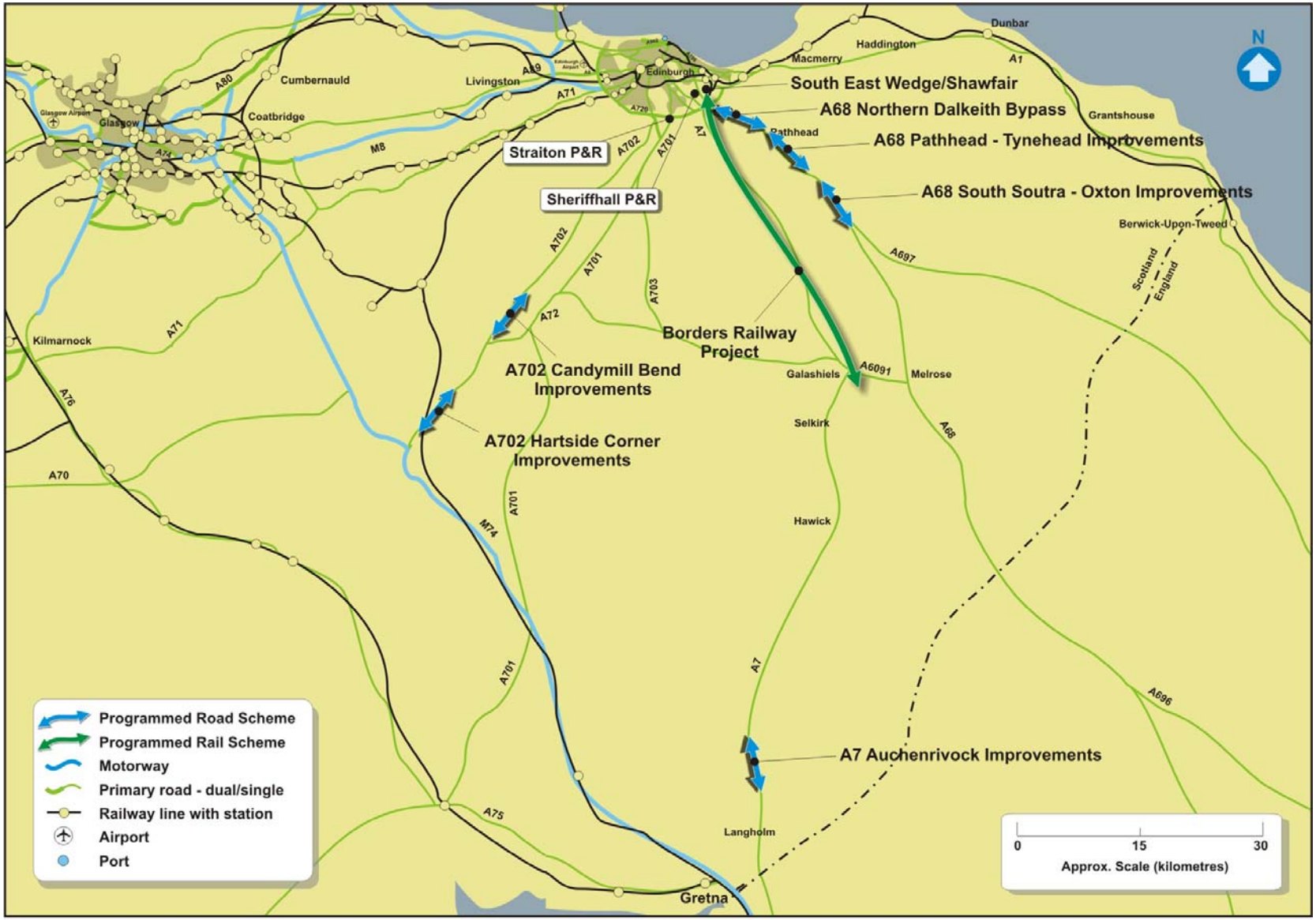

Figure 7.19.3: Programmed Transport and Land Use Developments, Corridor 19 - Edinburgh to NW England and Beyond

7.19.3 Travel Patterns

Travel patterns for the corridor are graphically presented in Figure 7.19.4. A summary of demand and mode share in the corridor is shown in Table 7.19.1.

Due to the rural nature of the majority of the corridor, the TMfS zones are large and therefore local trips within the corridor will be underestimated. Similarly, as TMfS does not model England to any great detail, care must be taken when considering the level of cross border demand and modal share.

Table 7.19.1: Summary of Demand (12 Hour) and Public Transport Share [781]

		Between Edinburgh and England	Within Corridor	Between Corridor and Edinburgh	Between Corridor and England	Between Corridor and other destinations	Total Trips
2005	Total Trips	6,900	14,800	48,600	7,800	26,600	104,700
	% of Corridor	7%	14%	46%	8%	25%	100%
	PT Trips	1,600	<100	7,200	<100	300	8,300
	PT Share	23%	<1%	15%	<1%	1%	8%
2022	Total Trips	7,700	16,900	56,700	7,400	31,600	120,300
	% of Corridor	6%	14%	48%	6%	26%	100%
	PT Trips	2,000	100	7,100	<100	400	9,700
	PT Share	26%	1%	13%	<1%	1%	8%
Change	Total Trips	+12%	+14%	+17%	-5%	+19%	+15%
	PT Trips	+25%	+<1%	-1%	0%	+33%	+17%

Total trips in the corridor are expected to increase from 104,700 in 2005 to 120,300 in 2022, a 15 per cent rise. Public transport trips are forecast to increase from 8,300 in 2005 to 9,700 in 2022, a 17 per cent rise, mainly due to the introduction of the Borders Railway. Edinburgh is the main destination for trips from the corridor and is expected to continue to be so in the future.

The average AADT levels in 2006 on the A702 range from about 5,000 vehicles per day on the more rural sections to about 20,000 vehicles per day on the approaches to Edinburgh[782].

[781] TMfS:05
[782] Transport Scotland: Scottish Roads Traffic Database

AADT levels on the A7 between Galashiels and the border with England are about 2,000 vehicles per day rising to 9,000 per day on the approaches to Galashiels. The town of Hawick, where several routes converge, has a recorded AADT of over 13,000 vehicles per day[783].

ATC data from the SRTDb gives a figure of approximately thirteen per cent HGV traffic on the A7 at Langholm, and of six per cent on the A702 at Fulford[784]. A large proportion of the freight traffic on the corridor originates in Edinburgh and is destined for England. Due to the current lack of rail provision, all freight in the corridor is transported by road, placing increased demands on the network.

As there are currently no local rail services within the corridor, the local and strategic bus networks provide the only public transport option for travel between the corridor and Edinburgh. For public transport travel to and from other corridors in Scotland, interchange at Edinburgh is generally required, reducing the attractiveness of public transport for these journeys.

The Borders Rail Link between Tweedbank and Edinburgh is forecast to carry up to 5,000 passengers per day in the first year of operation[785]. This will increase the number of public transport trips in the corridor, with some of the demand coming from existing private car users, and is forecast to reduce the number of car trips in the corridor.

[783] Transport Scotland : Scottish Road Traffic Database
[784] SRTDb
[785] Waverley Railway Project: www.waverleyrailwayproject.co.uk

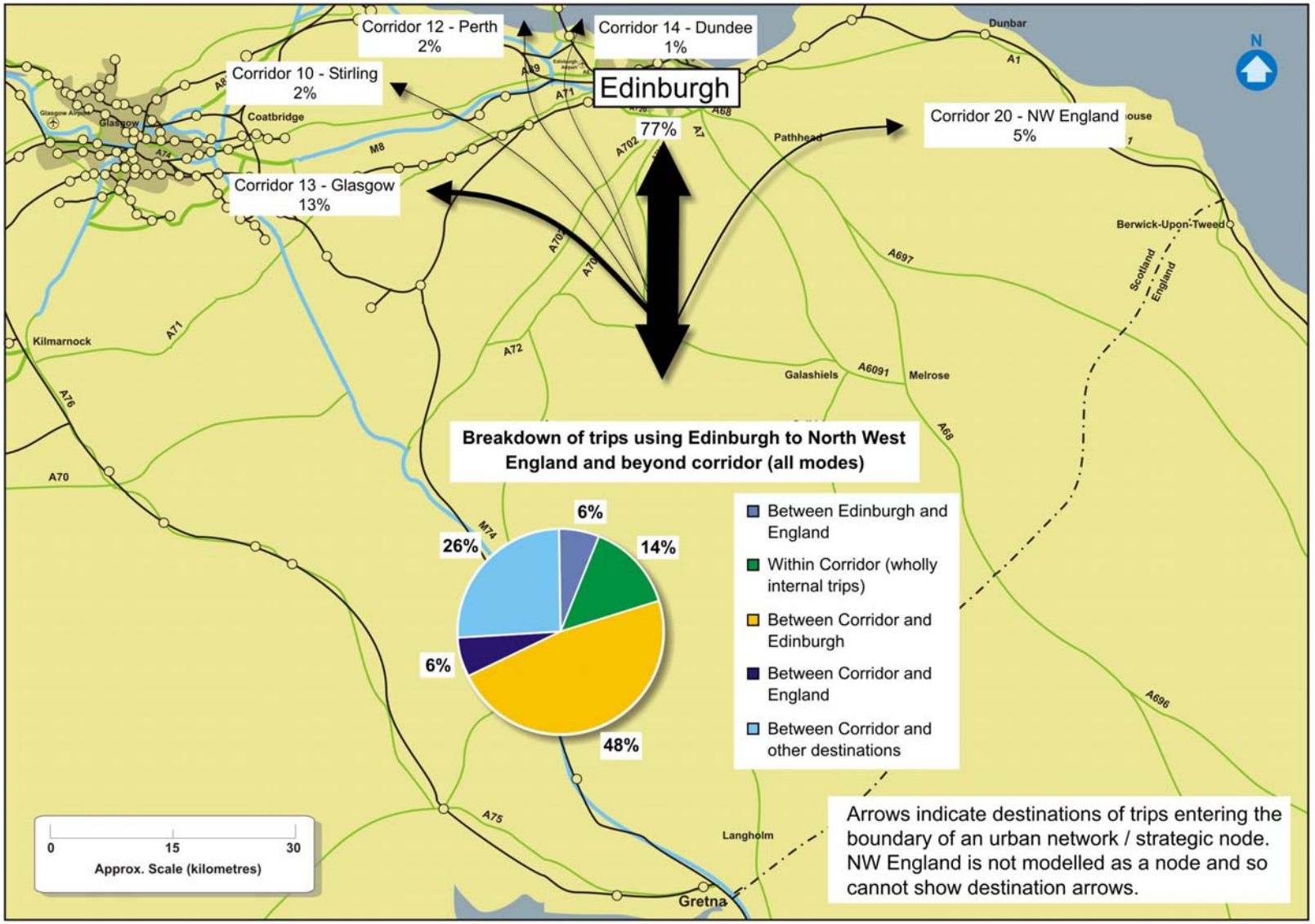

Figure 7.19.4 Travel Patterns 2022, Corridor 19 Edinburgh to NW England and Beyond

7.19.4 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?
- Where are the delays and when do they occur?

Figure 7.19.5 shows the current and forecast average speed on the road network.

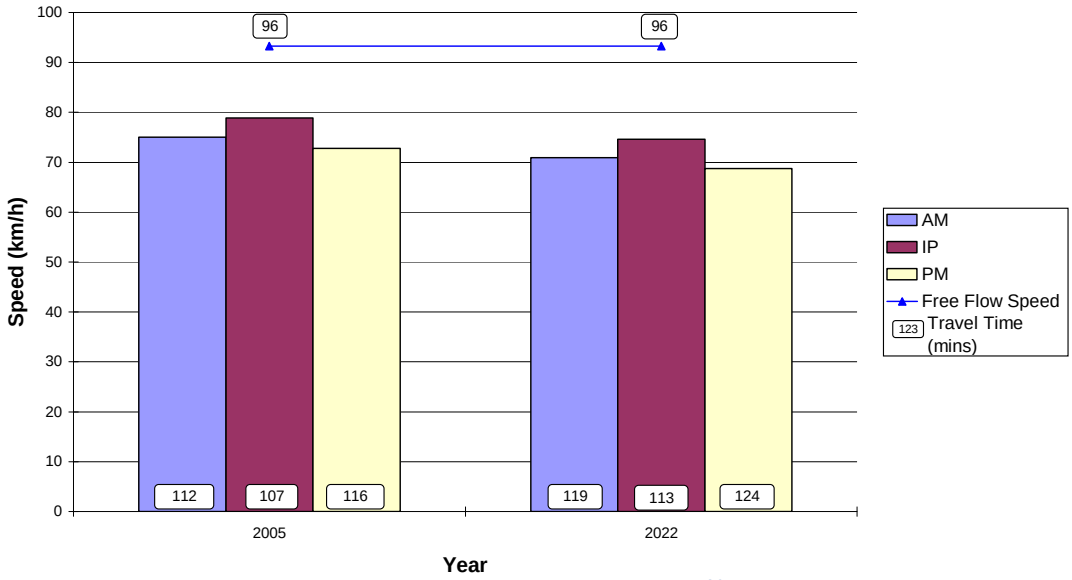

Figure 7.19.5: Average Road Speeds (Corridor 19)[786]

Travel time along the corridor in 2005 is broadly similar across all time periods at 1 hour 47, 1 hour 52 and 1 hour 56 minutes for off peak, morning peak and evening peaks respectively. The free flow travel time is quicker at 1 hour 36 minutes. In 2022, the travel times remain spread at 1 hour 53, 1 hour 19 and 2 hours 4 minutes for off peak, morning peak and evening peak respectively. The free flow travel time in 2022 does not change from 1 hour 36 minutes.

The average speeds in the morning, inter-peak and evening periods are expected to decline slightly between the years 2005 and 2022. While the road links are generally performing adequately and there are no journey time reliability issues, there is significant congestion on the approaches to the A720 Edinburgh City Bypass[787]. Average speeds in the inter-peak are similar to speeds in the peaks indicating fairly free flowing traffic throughout the day.

[786] TMfS:05
[787] TMfS:05

A comparison of road, bus and rail travel times is shown in Figure 7.19.6[788] for trips to Edinburgh along the corridor in the morning peak. The figure indicates that for the strategic trips from Edinburgh to Gretna, rail travel is not a competitive alternative to car with a journey time of 2 hour 15 minutes compared to 2 hours by car. Direct train services operate approximately every hour during the day. These generally form part of longer distance services between Scotland, Birmingham, the south coast and London.

[788] Journey times for bus/rail include a 20 minute walk/wait time

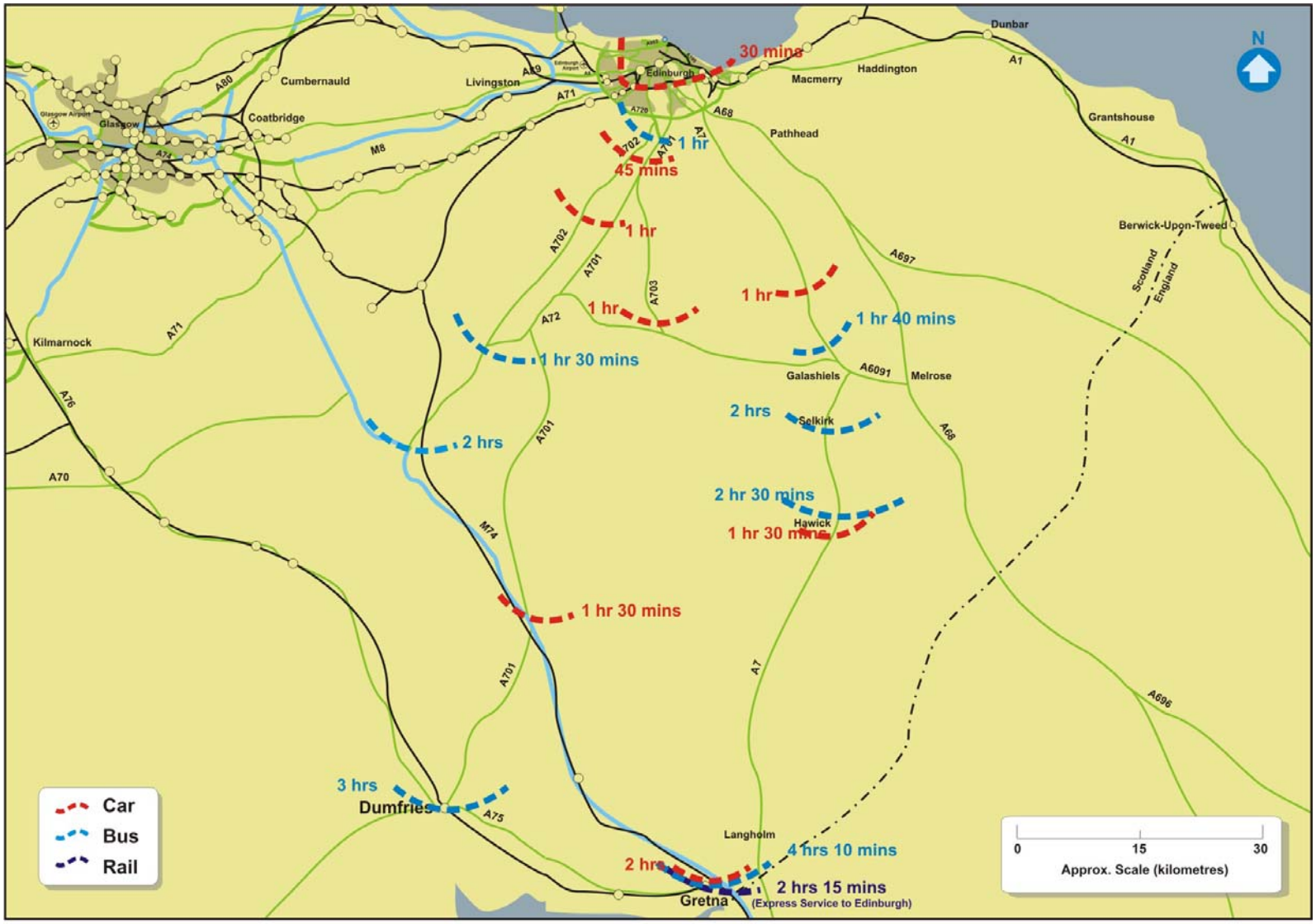

Figure 7.19.6: Journey Time to Edinburgh City Centre by Road/Rail (2005 AM peak), Corridor 19 - Edinburgh to NW England and Beyond

The A7 and A702 are generally single carriageway roads with short stretches of two plus one overtaking sections. The A7 is of poor quality compared with similar roads, with very poor alignment between Galashiels and Gorebridge, where it is then subject to speed restrictions, and is urban in nature until the A720 City Bypass. Overtaking opportunities are generally poor, leading to bunching of vehicles behind HGVs.

The A68 is entirely single carriageway. In addition, there are capacity issues at the northern end of the corridor and junction delays are experienced on the approaches to the A720 Edinburgh City Bypass.

Due to the absence of local rail services serving communities in the corridor, bus services provide the remainder of public transport on the corridor. This includes commuter services to Edinburgh from the Midlothian towns, longer distance services from Edinburgh into the Borders and to England and local services between the settlements in the corridor. The operation of the rail line between Haymarket and Carstairs for longer distance trips is constrained by the long block sections at Mid Calder.

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 expected to rise from 142 tonnes / million person kilometres to 158 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[789].

The road based transport network produced 205,000 tonnes of CO_2 in Corridor 19 in 2005. This equates to approximately three per cent of the total road based CO_2 emissions in Scotland.

By 2022, it is forecast that CO_2 emissions in Corridor 19 will rise to around 234,500 tonnes, approximately three per cent of Scotland's transport related CO_2 emissions in 2022.

There is no rail network within Corridor 19.

[789] TMfS:05

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?

Public transport is not as competitive as the car compared with other routes serving Edinburgh in this corridor with the exception of some areas of the southern edge of Edinburgh (e.g. Gorebridge). In the future, however, it will be more competitive as a result of the opening of the Borders Railway.

The infrastructure and service provision provide for effective business interaction between the centres of this corridor, although the geography of the corridor makes longer distance commuting relatively unattractive.

Table 7.19.2 provides an assessment of bus service quality on the strategic long distance services which operates every 30 minutes between Edinburgh and Hawick with every second journey extended to Carlisle. Frequency, coverage and vehicle quality have been identified as good, with all other factors average. Journey times on the bus services will be impacted by the change in average speeds over time highlighted in Figure 7.19.5.

Table 7.19.2, provides an assessment of the quality of strategic bus services within the corridor on a scale of one to five, with one being 'poor' and five being 'excellent'.

Table 7.19.2: Assessment of Bus Service Quality[790]

Service Numbers	Service Provider	Annual Journeys	Reliability	Frequency	Simplicity	Value	Coverage	Vehicle Quality
X95/95, 383	First, National Express	23,900	3	4	3	3	4	4

[790] Bus Users UK (Qualititative Assessment – 1: very poor; 5: excellent)

As previously mentioned, integrated tickets in the corridor are available in the form of the *PLUSBUS* ticket and the 'One-Ticket'.

The trunk road section of the A7 is a rural single carriageway road between Galashiels and Gretna linking to the North of England. The section within this corridor has an accident rate and fatal accident rate which are both slightly higher than the national rates for this type of road. Initial analysis of severe accident clusters indicated safety issues on the A702 near Abington Services[791].

As might be expected in a largely rural community, there are no exaggerated fears of using public transport in the evening. 90 per cent of males and 88 per cent of females surveys stated that they felt 'very safe' or 'fairly safe' on public transport at night, which is in excess of the national average of 53 and 28 per cent respectively. No one surveyed expressed that they felt 'not particularly safe' or unsafe[792].

Summary of Infrastructure and Operational Constraints

Key infrastructure and operational constraints and congestion points are shown in Figure 7.19.7 including:

- A720 / A68 Junction: Sheriffhall Roundabout;
- A720 Edinburgh City Bypass and approach roads;
- 15 mph speed restriction on the railway at Carstairs East Junction;
- Railway line capacity between Edinburgh Waverley and Haymarket stations;
- Lack of overtaking opportunities; and
- Steep gradients restricting rail capacity.

[791] Transport Scotland SERIS Database
[792] Scottish Household Survey 2003/2004: Perceptions of Safety from crime during evening bus/rail travel

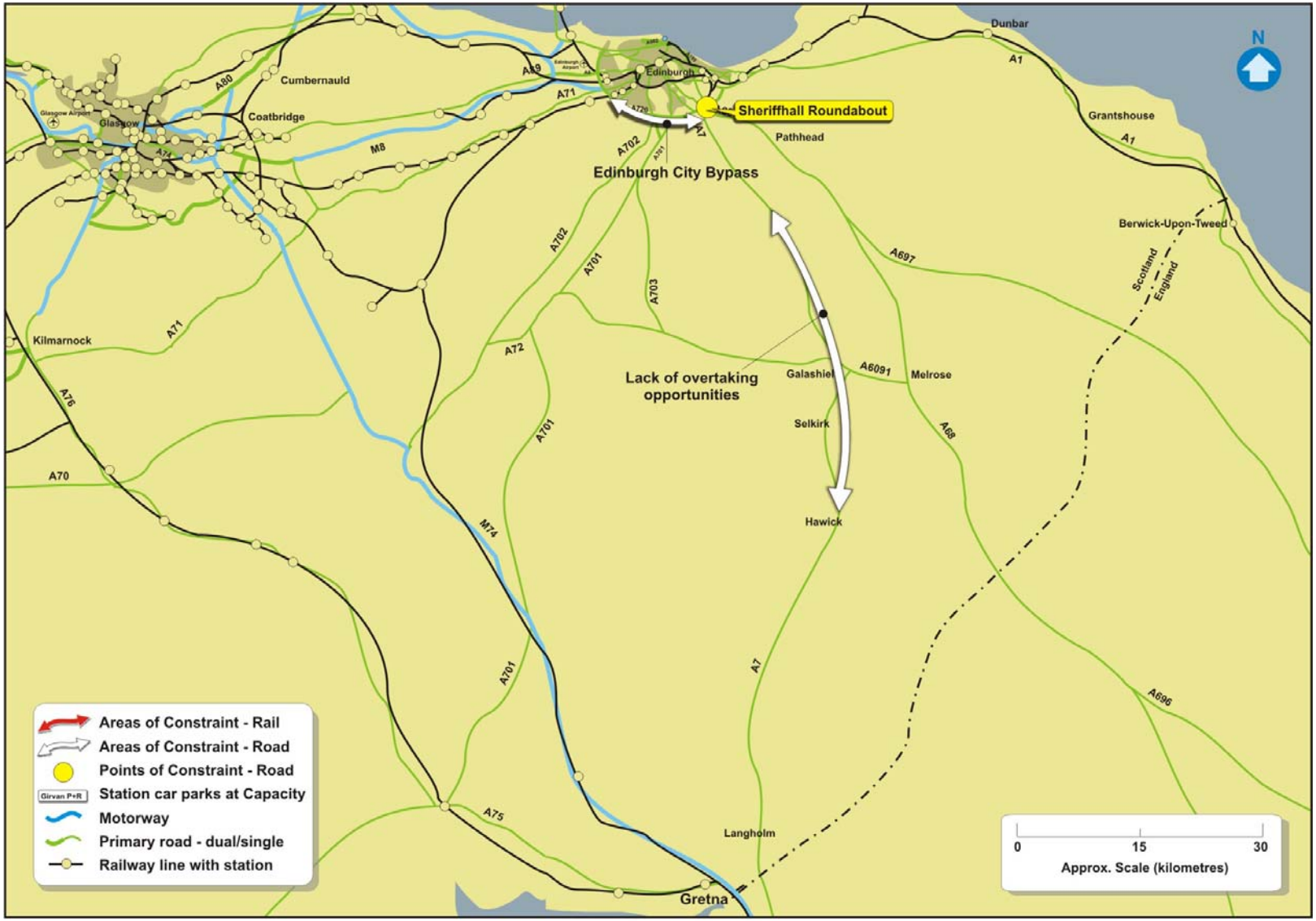

Figure 7.19.7: Areas of Constraint on the Network, Corridor 19 - Edinburgh to NW England and Beyond

7.19.5 Summary and Conclusions

Overall, how well does the transport network perform?

At the northern end of the corridor, the road network is affected by congestion on the A720 Edinburgh City Bypass and on routes into the city centre. The rest of the road network in this corridor is operating efficiently and there are no journey time reliability issues. This congestion is forecast to worsen in the future and this is liable to have a knock on effect on traffic operation on the corridor.

At present there are no local rail services in the corridor. The rail route from Edinburgh to North West England is served by long distance trains via Carstairs.

Bus services into Edinburgh benefit from bus priority measures, however outside the Edinburgh city boundaries, the bus services are affected by the same congestion as car journeys. Access by public transport to peripheral employment locations is poor. The equivalent car journey can be completed readily using the A720 City Bypass.

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

Roads on the corridor should be able to cope with the growth in journeys expected between 2005 and 2022 without significant increases in average journey times. The areas of greatest constraint remain the approaches to Edinburgh from the south and the A720 Edinburgh Bypass.

Planned improvements on the A7, A68 and A702 will improve journey time reliability on key routes serving the communities of Midlothian and the Scottish Borders.

The introduction of the Borders Rail Link will provide additional public transport opportunities for Tweedbank, Galashiels and intermediate settlements. The services will also serve the South East Wedge development, located partly in Edinburgh and partly in Midlothian where a station is proposed in the centre of the development.

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

Growth in housing within this corridor will lead to increased demand to travel to Edinburgh and the surrounding area. On the northern edge of the corridor, the significant development at Shawfair will provide job opportunities for the local population.

What are the key problems associated with delivering the KSOs?

The opening of the Borders Rail Link will make a significant contribution to the achievement of KSOs, since it will serve key areas of population, provide accessibility to the wider rail network, and encourage modal shift in the area from road to rail. Addressing potential problems of journey time reliability on the road network undermines the competitiveness of rail based public transport.