7.8 Corridor 8: Aberdeen to North East Scotland

7.8.1 Setting the Context

Corridor 8 runs from Aberdeen to Peterhead and Fraserburgh in the northeast of Scotland, as shown in Figure 7.8.1. The corridor links settlements in the north east of Scotland to Aberdeen and to other destinations further south and west. The primary role of the corridor is to provide accessibility for a number of dispersed settlements in the northeast of Scotland and connection to Aberdeen. The corridor is approximately 79 kilometres in length.

The corridor provides links to Corridor 4 (Aberdeen to Inverness) and Corridor 5 (Aberdeen to Dundee). It is largely rural in nature with a widely dispersed population. Economic activities are primarily related to the oil and gas industry, fishing, farming, paper and textiles, food processing, tourism and cultural activities[497]. With the exclusion of Aberdeen, the corridor serves a total population of 84,000 people and supports 29,000 jobs[498]. The populations of the main towns are Peterhead, Fraserburgh, and Ellon.

Figure 7.8.2 shows the expected areas of change in population and employment. The overall population served by the corridor is forecast to decrease slightly (two per cent) by 2022[498]. Employment is forecast to increase by four per cent by 2022[498]. The number of households within the corridor is forecast to increase by 3,900 (10 per cent) between 2005 and 2022. This decrease in population density indicates further population dispersal.

The economic inactivity rate within Aberdeenshire was around 16 per cent in 2005. This is slightly below the Scottish average of 21 per cent.

With the exception of Aberdeen City, car ownership in the corridor, measured in percentage of households with access to a car, is greater than the Scottish national average of 67 per cent, reflecting a greater dependence on the car due to the rural and dispersed nature of the corridor.

- Aberdeen City: 66 per cent; and
- Aberdeenshire: 82 per cent.[499].

[497] http://www.scotland.org/about/innovation-and-creativity/features/culture/vibrant6-aberdeen.html
[498] TELMoS
[499] Scotland's Census 2001: www.scrol.gov.uk Table KS17

Figure 7.8.1: Setting the Context, Corridor 8 - Aberdeen to NE Scotland

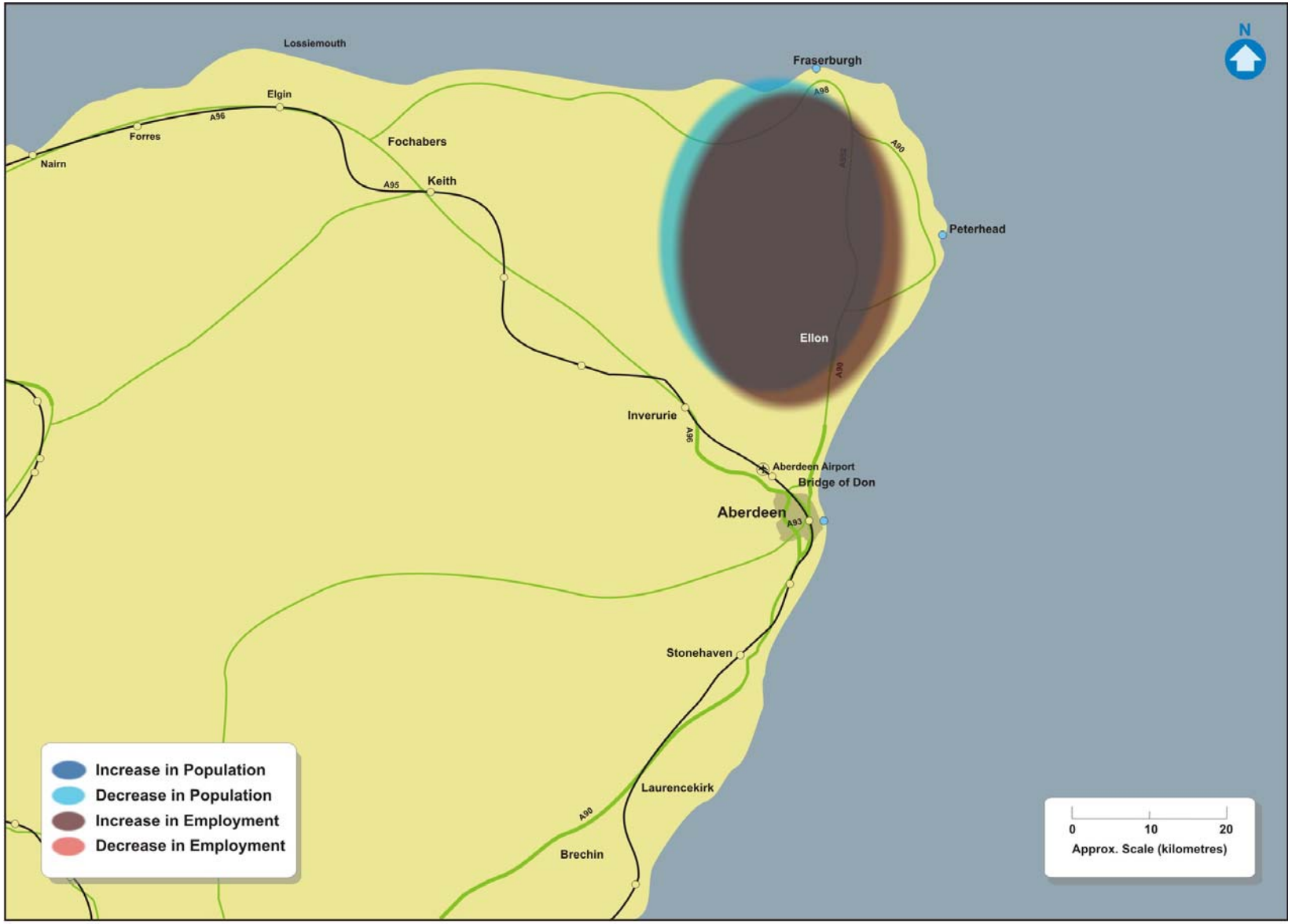

Figure 7.8.2: Changes in Population and Employment, 2005 & 2022, Corridor 8 - Aberdeen to NE Scotland

7.8.2 Transport Network and Operations

Infrastructure and Services

The principal elements of the transport network in the corridor are illustrated in Figure 7.8.1. The A90 forms the spine of the corridor running from Aberdeen in the south to Fraserburgh in the north, via Peterhead. The A952 provides a more direct route between Aberdeen and Fraserburgh, bypassing the Peterhead area. At Fraserburgh the A90 links with the A98 which provides connections to the west towards Inverness. Through Aberdeen, the A90 provides connections to Dundee via Corridor 5 and Inverness via Corridor 4.

There is no rail infrastructure within the corridor outside Aberdeen. Strategic bus services operate between Aberdeen and Peterhead (half hourly service) and between Aberdeen and Fraserburgh (hourly service). In addition, a half-hourly bus service operates between Peterhead and Fraserburgh.

Aberdeenshire Council supports a number of demand-responsive initiatives and bus Park-&-Ride sites at Ellon and Bridge of Don[500].

There is an airport at Aberdeen (Dyce) and ports in Aberdeen, Peterhead, and Fraserburgh.

Asset Management

In 2007, 14 per cent of the trunk road network pavement[501] 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[502]. The section with the poorest residual strength is on the A90 between Ellon and Fraserburgh. Under Transport Scotland's planned maintenance schedule, the net figure for the corridor is expected to fall to 11 per cent by 2012.

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

Demand Management

A bus lane is in place leading from the junction of the A90 and A956 into Aberdeen city centre along the A956.

There are two Park-&-Ride sites in the corridor at Bridge of Don and Ellon. Bridge of Don Park-&-Ride is situated three miles north of Aberdeen city centre at the junction of the A90 and A956. The site provides 650 spaces and is served by six buses per hour[503]. There are bus lanes from this site into the city centre.

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[500] Aberdeenshire Council: www.aberdeenshire.gov.uk
[501] Transport Scotland SERIS Database
[502] STS No. 25 (2006) Table 5.5
[503] http://www.abdn.ac.uk/estates/environment/transport/park_ride.php

Ellon Park-&-Ride is located 16 miles north of Aberdeen on the A920 and near the A90. The site provides 250 spaces and is served by four buses per hour. There are no bus priority measures in place between this site and the junction of the A90 and A956[503].

The demand for Park-&-Ride trips between the corridor and Aberdeen is expected to increase by about 50 per cent[504].

The relatively high costs of parking in Aberdeen city centre suggest that parking charges are being used to manage travel demand and to influence mode choice within the corridor[505].

Programmed Schemes

Figure 7.8.3 shows the location of the Aberdeen Western Peripheral Route which is scheduled for completion in 2013. Bypassing Aberdeen to the west it is expected to improve connections for trips from the corridor to the south of Aberdeen and links between the A90 and A96[504]. It will have a beneficial impact upon the performance of the corridor.

The other programmed road improvement scheme within the corridor is the A90 Balmedie to Tipperty dual carriageway upgrade which is expected to be completed late 2012 or early 2013.

[504] TMfS:05
[505] Aberdeen City Council: www.aberdeencity.gov.uk

Figure 7.8.3: Programmed Transport and Land Use Developments, Corridor 8 - Aberdeen to NE Scotland

7.8.3 Travel Patterns

In 2005 the corridor catered for some 41,700 trips per day. This is forecast to increase by 14 per cent to 47,500 trips per day by 2022[506].

Figure 7.8.4 displays the forecast travel demand within the Corridor in 2022. A breakdown of forecast travel demand is provided in Table 7.8.1.

Table 7.8.1: Summary of Demand (12 hour) and Public Transport Share [507]

		Within Corridor	Between Corridor and Aberdeen	Between Corridor and other destinations	Total Trips
2005	Total Trips	1,200	31,600	8,900	41,700
	% of Corridor	3%	76%	21%	100%
	PT Trips	0	1,300	100	1,400
	PT Share	0%	4%	1%	3%
2022	Total Trips	1,800	34,600	11,100	47,500
	% of Corridor	4%	73%	23%	100%
	PT Trips	<100	1,300	100	1,400
	PT Share	<1%	4%	1%	3%
Change	Total Trips	+50%	+9%	+25%	+14%
	PT Trips	+<1%	0%	0%	0%

Most trips are by private transport with only a very small proportion of trips by public transport. It should be noted however, that due to the strategic nature of TMfS it is likely that the model will underestimate the volume of local trips. Figure 7.8.4 highlights the breakdown of different types of travel demand on the corridor.

In 2005, approximately three-quarters of all trips (some 31,600 trips) were between the corridor and Aberdeen, highlighting the dominance of Aberdeen as a centre of employment and major trip generator within the region.

About 22 per cent of trips (8,900) were made between the corridor and other destinations in 2005. The majority of these trips represent through-trips to Corridor 4 (towards Inverness) and to Corridor 5 (towards Dundee and the Central Belt). These trips will also include freight movements from Peterhead port and passenger and freight movements from Aberdeen port.

[506] TMfS:05
[507] TMfS:05. This corridor is on the periphery of the modelled area and as such journeys west and trips within the corridor area are underestimated

The AADT on the route is between 5,300 (between Fraserburgh and Peterhead) and 23,200 (on the dual carriageway approach to Aberdeen) vehicles[508]. As such, the road operates well within its design capacity which is a maximum AADT of 13,000 vehicles for single carriageway sections and 39,000 vehicles for dual 2-lane carriageway sections[509].

ATC data from the SRTDb gives a figure of approximately nine per cent HGV traffic on the A92 at Bridge of Don[510].

[508] Transport Scotland: Scottish Roads Traffic Database
[509] Design Manual for Roads and Bridges: TA46/97
[510] SRTDb

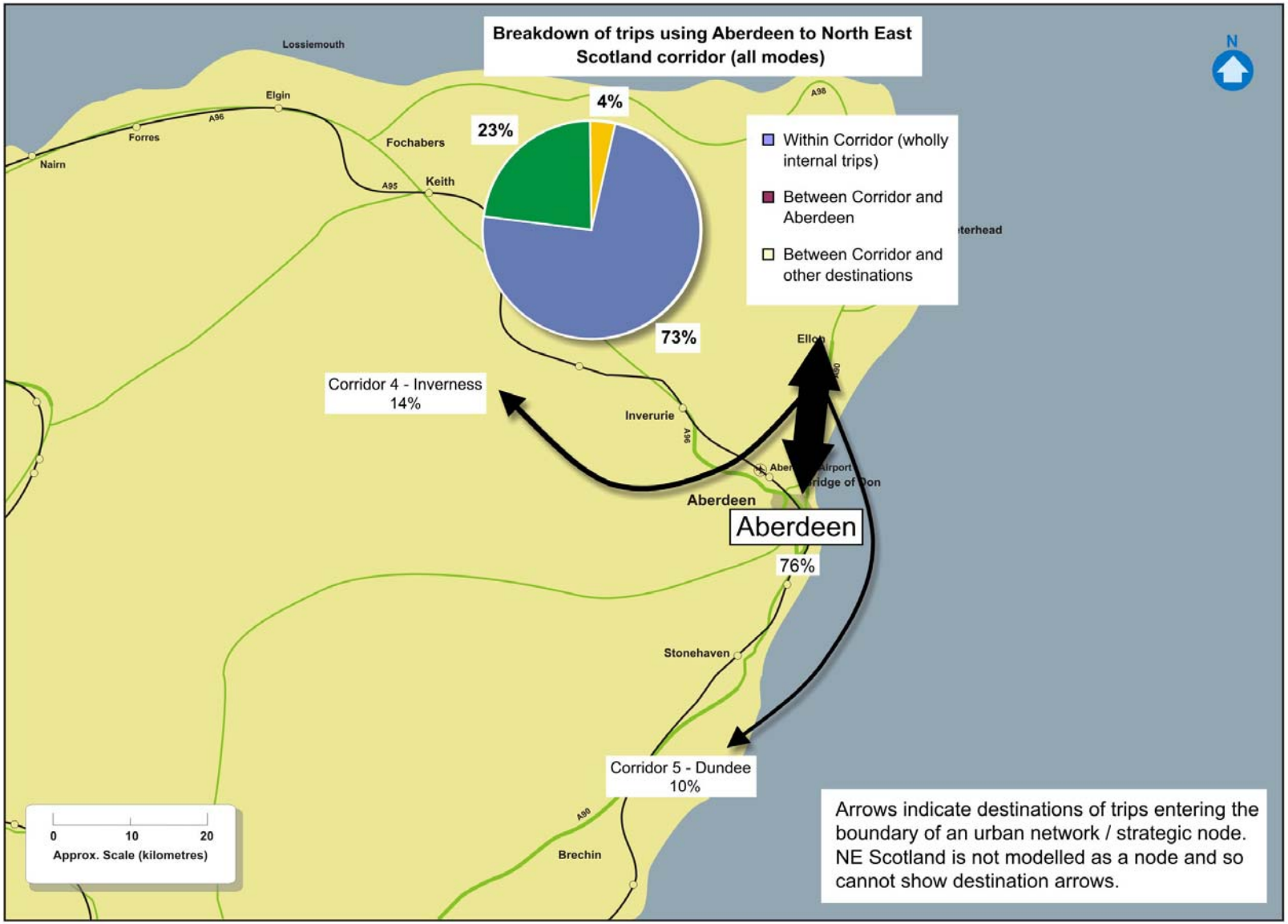

Figure 7.8.4 Travel Patterns 2022, Corridor 8 – Aberdeen to NE Scotland

In 2005 Aberdeen Airport had a throughput of around 2.9 million passengers[511] and therefore generates a significant number of trips, some of which will have origins or destinations within the corridor. However, links between the corridor and Aberdeen Airport are not good, requiring travellers to either use a B class road (the B977) or to pass through the outskirts of Aberdeen. The construction of the Aberdeen Western Peripheral Route will alleviate these problems. Public transport users have to travel to Aberdeen and interchange for services to the airport.

Aberdeen port has a throughput of 140,000 passengers per year (400 per day)[512] and around 5 million tonnes of freight per year (13,000 tonnes per day)[513]. As such, Aberdeen port generates a significant number of passenger and HGV movements which contribute to local access problems. Peterhead port has a throughput of 930,000 tonnes of freight per year (2,500 tonnes per day). This is a significant generator of HGV movements in the corridor. There are no rail links to ferry services within the corridor outside of Aberdeen and all freight is transported by road. Table 7.8.2 summarises the key passenger and freight movements for the corridor.

[511] STS No. 25 (2006), Table 9.6
[512] STS No. 25 (2006) Table 10.15
[513] STS No. 25 (2006) Table 10.3

Table 7.8.2: Passenger and Freight throughput for Airports and Seaports in Corridor 8 2005[514]

Port	Passengers (per year)	Passengers (per day)	Freight per year (tonnes)	Freight per day (tonnes)
Aberdeen Airport	2,900,000	7,950 per day	4100	11
Aberdeen Port	140,000	400	4,600,000	13,000
Peterhead Port	No service	No service	930,000	2,500
Fraserburgh Port	No service	No service	Unavailable	Unavailable

Details regarding freight throughput at Fraserburgh port are not available.

[514] STS No. 25 (2006) Tables 9.6, 9.13, 10.3, 10.15

7.8.4 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 7.8.5 illustrates the average morning, evening and inter-peak speeds along the A90 between Aberdeen and north east Scotland for 2005 and 2022.

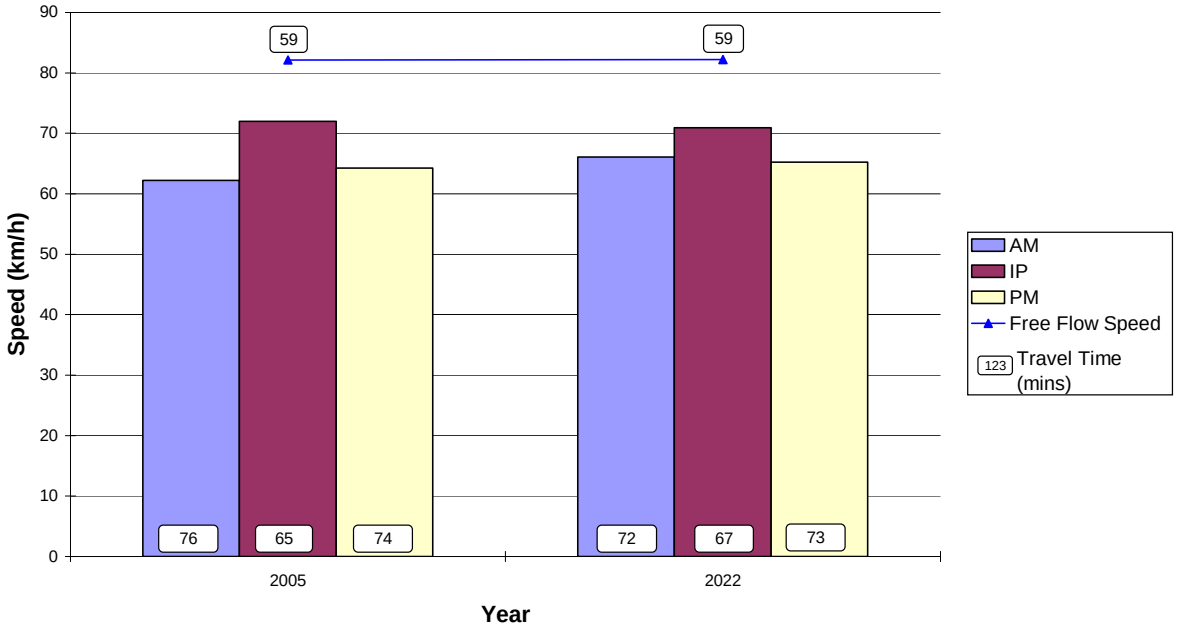

Figure 7.8.5: Average Road Speeds (Corridor 8)[515]

Travel time along the corridor is 1 hour 5 minutes, 1 hour 16 minutes and 1 hour 14 minutes for the off peak, morning peak and evening peak respectively. By 2022 the travel time along the corridor is 1 hour 7 minutes, 1 hour 12 minutes and 1 hour 13 minutes for the off peak, morning peak and evening peak respectively. The free flow travel time is constant between 2005 and 2022 at 59 minutes.

The average speed is 63kph (39mph) in the peak periods which is considered to be reasonable for a road which is predominantly single carriageway and it compares reasonably well with the free flow speed of 81kph (50mph). During the inter-peak period, the average speed is slightly higher at approximately 70kph (43mph).

[515] TMfS:05

Average peak road speeds are forecast to increase as a result of decreasing congestion on the northern approach to Aberdeen on the opening of the Aberdeen Western Peripheral Route. Over time, average speeds will start to decrease again due to increases in traffic, although average peak period speeds are expected to remain above current levels.

Travel time isochrones are shown in Figure 7.8.6[516] for trips to Aberdeen along the corridor in the 2005 morning peak.

Travelling the full length of the corridor by road has a journey time of around 80 minutes by car while bus takes 120 minutes. The road alignment north of Ellon, where there is a lack of overtaking opportunity, has an impact on journey times within the corridor.

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

Figure 7.8.6: Journey Time to Aberdeen City Centre by Road (2005 AM peak), Corridor 8 - Aberdeen to NE Scotland

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 120 tonnes / million person kilometres to 123 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[517].

The road based transport network produced 93,500 tonnes of CO_2 in Corridor 8 in 2005. This equates to approximately one 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 8 will rise to around 99,500 tonnes, remaining at around one per cent of Scotland's road based transport related CO_2 emissions in 2022.

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?

Bus services provide the only public transport in this corridor. Regular bus services operate between Aberdeen and the main populations on the A90 north of the city. However, road based public transport is not competitive when compared to travel by car along this corridor. This is likely to limit effective business interaction between the centres of the corridor.

Car and public transport accessibility are generally low across this corridor. This is largely due to a lack of major opportunities to access. There are no major concentrations of people without cars in areas with a greater dependency on public transport for access to key services. For those who are, and in common with other areas in the Aberdeenshire council area, access to key services is maintained through innovative land-use and travel schemes, often dependant on public sector support. These include demand responsive community transport, mobile services (e.g. libraries, food vans, and post-buses) and multi-purpose single site operations (e.g. post-offices with grocery services).

Table 7.8.3 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'.

[517] TMfS:05

Table 7.8.3: Assessment of Bus Service Quality[518]

Services	Service Provider	Annual Journeys	Reliability	Frequency	Simplicity	Value	Coverage	Vehicle Quality
260, 263, 267, 268	Stagecoach	32,400	4	4	4	3	4	4

The value of bus services within the corridor are considered to be 'average', whilst all other attributes are considered to be 'good'.

The accident rate (19.3 accidents per 100MVKm) and fatal accident rate (1.2 accidents per 100MVKm) on this route and are both slightly higher than the national averages of 15.5 and 0.76 respectively. The proportion of severe accidents (30 per cent) is also greater than the national proportion of (24 per cent)[519]. Initial analysis of severe accident clusters indicated safety issues on the A90 north of Ellon and at the bend on the A90 just south of Fraserburgh.

Bus users in the corridor generally feel safe using public transport[520].

Summary of Infrastructure and Operational Constraints

There is little congestion in the corridor except on the approach to Aberdeen. Following the construction of the Aberdeen Western Peripheral Route, congestion is forecast to reduce in general. The Balmedie to Tipperty dual carriageway scheme will address congestion on the single carriageway section of the A90 between Balmedie and Drums in the evening peaks.

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

7.8.5 Summary and Conclusions

Overall, how well does the transport network perform?

There is little congestion or journey time reliability issues in the corridor except on the approach to Aberdeen and in the evening peak on the single carriageway section of the A90 between Balmedie and Drums. Average speeds in the corridor are considered acceptable for the standard of road.

The accident rate on the route is slightly higher than the national average, and the severity of accidents on the route is also higher than the national average.

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

The corridor is not expected to experience any significant capacity problems over the period to 2022. Average peak road speeds are forecast to increase as a result of decreasing congestion on the northern approach to Aberdeen on the opening of the Aberdeen Western Peripheral Route and the Balmedie to Tipperty dual carriageway. Over time, average speeds will start to decrease again due to increases in traffic although average peak period speeds are expected to remain above current levels.

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

The corridor links settlements in the northeast of Scotland with Aberdeen. With employment forecast to increase and population to be stable, travel demand on the corridor is forecast to increase. The additional traffic volume is expected only to slightly increase journey times.

What are the key problems associated with delivering the KSOs?

Public transport usage in the corridor is low primarily because the corridor serves a widely dispersed population where residents have high employment levels and higher than average levels of car ownership. In addition, competitiveness against the car is forecast to decrease throughout the corridor between 2005 and 2022 particularly in the east and northeast. One of the challenges on this corridor is therefore to provide a competitive, affordable public transport option within the deregulated bus industry. The heavy reliance on the private car will also inevitably result in increased emissions over the period 2005 – 2022.

Journey times on the corridor, while considered to be acceptable, are restricted by the predominantly single carriageway alignment north of Ellon where there is a lack of overtaking opportunity and by the predominance of at-grade junctions on the route.

Bus journey times are longer than travelling by car, mainly due to the rural nature of the corridor and the dispersed population. Despite higher than average car ownership levels, there are high numbers of socially excluded people. Although the demand for Park-&-Ride is forecast to rise, this is still a very small proportion of the trips on the road.