HITRANS and Highlands & Islands Enterprise (HIE)

A96 Bypasses Study

Economic Appraisal Report

Final Report, May 2008

HITRANS AND
HIGHLANDS & ISLANDS ENTERPRISE

ECONOMIC APPRAISAL OF PROPOSED A96 BYPASSES

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EXECUTIVE SUMMARY

E.1 Background

E.1.1 The A96 between Inverness and Keith is part of the Inverness to Aberdeen transport corridor and is a key route linking the sub-regional economy. Concern has been growing at the performance of the route and which has led to the development of a number of policies aimed at reducing journey times and improving journey time reliability. Foremost among these is the construction between 2012 and 2022 of bypasses at Nairn, Elgin and Keith, three towns where the problems are viewed as the most acute.

E.1.2 This study is therefore an evaluation of the potential benefits resulting from journey time reductions and improvements to journey time reliability on both through and local traffic and the potential benefits to businesses and on communities that have been bypassed. The bypasses would be expected to produce business efficiencies in terms of improved access to customers, suppliers and on training opportunities. The appraisal also examines the benefits resulting from the opening up of land for development, the resultant employment impacts and the influence of new land use opportunities on traffic growth and transport patterns.

E.2 Key Issues of the A96

E.2.1 A major symptom of growing traffic flows on the A96 has been increasing congestion, on a road poorly designed with insufficient capacity. Average speeds drop precipitously on the A96 when passing through Nairn, Elgin and Keith, and longer journey times are causing poorer air quality, platooning and with few or no overtaking opportunities, frustration.

E.2.2 The A96, because it bisects Nairn, Elgin and Keith in two, is also causing severance effects, particularly on pedestrians attempting to reach their place of work, shops or other amenities. The bypasses offer, in principle, a solution to this by taking cars off the trunk route in the centre of the towns. It is also reasonable to assume that for the same reason the bypasses should assist in reducing the number of vehicle accidents in the towns as well providing a safer environment for all road users within the respective urban centres.

E.2.3 There is major proposed development for Nairn and Elgin, and more modest development for Keith. Commercial, retail and residential development would all be expected to generate additional traffic flows, which, in the absence of the bypasses, would add significantly to the existing levels of congestion, and contribute to existing traffic conflict.

E2.4 Traffic passing through all three towns has to negotiate a series of busy junctions, through traffic sharing road space with local journeys, and this is especially acute in Elgin. In addition, this traffic pattern constrains the performance of local public transport, and reduces the incentive for modal shift away from car use and to introduce faster express services to and through each of the towns.

E2.5 The problems of the A96 through the towns have a braking effect on the growth of the local economies, and they become less attractive to businesses wishing to set up in the area. Better road connections would encourage diversification of the economy by linking up with the main regional service centres, and facilitate access to the major regional air and sea ports.

E.3 Perceived Business and Social Impacts of the Bypasses

E3.1 The local businesses interviewed for the study use the A96 relatively frequently, with two-thirds or more using the A96 on a daily basis. The businesses report a number of findings, the most important of which are:

- Businesses use the A96 mostly to deliver goods and pick up supplies;
- The A96 is also heavily used by local commuters, who travel to and from work almost entirely by car;
- The main problem businesses report with using the A96 is traffic congestion and delays;

- Although the problems are not enough to force businesses to review their location, they may well impact on future plans for expansion;
- Businesses suggest that the main impact of the bypasses will be to offer substantial journey time savings, with 75% of businesses reporting a possible saving of between 6 and 30 minutes; and
- Businesses most strongly agreed that proposed bypasses would present opportunities in expanding sales in existing markets.

E3.2 With the significant reduction in congestion, the local communities living within Nairn, Elgin and Keith will be able to access facilities in the respective town centres more easily by foot and by bus. The easing of traffic should also encourage cycling for both work and leisure purposes.

E3.3 In addition reduced congestion on the A96 in the three towns might signal an opportunity to introduce an improved strategic bus service network serving the wider catchment areas along the Aberdeen to Inverness corridor, and to introduce circular routes in the vicinity of the respective town centres, thereby improving accessibility to these areas.

E.4 Transport Impacts of the Bypasses

E4.1 The results of applying diversion curve algorithms suggest the following traffic flows diverted to the bypasses for each respective town:

- Nairn 10,700 vehicles per day;
- Elgin 12,200 vehicles per day; and
- Keith 5,200 vehicles per day.

E4.2 These levels of diversion onto the bypasses give an estimated journey time savings for the three towns of:

- Nairn: 47,300 hours per year;
- Elgin: 163,200 hours per year;
- Keith: 35,100 hours per year; and
- Combined towns saving of 245,600 hours per year.

E4.3 Transforming these estimated journey time savings into annualised total (first year) monetised benefits in 2002 prices for the three towns, gives values calculated to be:

- Nairn: £5.2m per annum;
- Elgin £14.6m per annum
- Keith £1.7m per annum; and

E4.4 The bypasses therefore confer major journey time benefits, with a combined value for first year monetised benefits of £21.5 million in 2002 prices.

E4.5 It is generally accepted that severance is not a problem for pedestrians where the PV^2 value (used to measure severance) is below 1. However, average current values for the three towns range from 4.1 for Nairn, 17.7 for Elgin and 2.2 for Keith, indicating a high degree of pedestrian severance in the three towns, especially so for Elgin. With the bypasses in place, these values dropped significantly. The PV^2 value of 1 was met comfortably by nearly all the major pedestrian crossing points, with only the pedestrian crossing in Elgin accessing the bus station and adjacent shopping area just meeting this criterion.

E.5 Impacts of New Development

E5.1 As noted earlier in paragraph E2.3 there will be major new development in the three towns and this is expected to generate substantial new traffic. The anticipated total increase in traffic in the three towns including that from the predicted developments is as follows:

- Nairn: by 2012, traffic volumes on the A96 estimated to be transferred to the bypass will be 998 vehicles for each of the AM and PM peak hours both directions, and this number is expected to rise to 1,880 by 2025, well within the capacity of the bypass;
- Elgin: by 2012, traffic volumes on the A96 estimated to be transferred to the bypass will be 1,216 vehicles for each of the AM and PM peak hours both directions, and this number is expected to rise to 2,340 by 2025, at a loading of 73%, well within the capacity of the bypass; and
- Keith: by 2012, traffic volumes on the A96 estimated to be transferred to the bypass will be 403 vehicles for each of the AM and PM peak hours both directions, and this number is expected to rise to 489 by 2025, well within the capacity of the bypass.

E5.2 The construction of the bypasses will release additional land for development within the respective alignments over and above the development identified above. This releases resources in terms of developers' contributions, available to the local authority, for example, to offset any adverse environmental impact occurring during the construction of the bypasses. Discussions with developers suggest these could be of the order of £3,500 per residential unit and £30 per square metre of commercial development. This gives the following value of developer contributions as:

- Nairn: £13.1 million;
- Elgin: £21.9 million; and
- Keith: £4.0 million.

E5.3 In addition to these resources, there are significant additional benefits resulting from the additional employment and local GVA. The total direct employment impacts if all the three bypasses were built is estimated to be 8,345 FTEs (including construction employment), and total local GVA impacts in the order of £134.5 million per annum in 2007 prices. Breaking these down by town gives the following results:

- Nairn: net direct employment (FTEs): 1,725;
- Elgin: net direct employment (FTEs): 5,906; and
- Keith: net direct employment (FTEs): 715.

E5.4 In terms of GVA:

- Nairn: GVA = £9.4 million for construction and £16.4 for wider impacts (total GVA = £25.8m);
- Elgin: GVA = £15.9 million for construction and £83.0 for wider impacts (total GVA = £98.9m); and
- Keith: GVA = £2.4 million for construction and £7.4 for wider impacts (total GVA = £9.8m).

E.6 Concluding Remarks

E.6.1 The overall conclusion from this research is that there are likely to be significant economic and social benefits to the implementation of the three bypasses at Nairn, Elgin and Keith, which would be welcomed and supported by key stakeholders and businesses in the study area.

1. INTRODUCTION

1.1 Background

1.1.1 HITRANS and Highlands and Islands Enterprise (HIE) appointed Scott Wilson to undertake a study to identify the economic benefits that could be obtained by providing the A96 with bypasses at Nairn, Elgin and Keith.

1.1.2 This was the result of a number of core strategic policies that had been defined in HITRANS' Regional Transport Strategy (RTS), submitted to the Minister in March 2007. These key policies included the reduction of journey time and the improvement of journey reliability on the A96, the main road on the Eastern Strategic Corridor linking Inverness, Moray and Aberdeen.

1.1.3 The sites for the bypasses were identified in the Aberdeen to Inverness Transport Corridor jointly commissioned by HITRANS, NESTRANS and Transport Scotland in 2006. This study identified four bypasses on the A96 and included in the Proposed Delivery Plan accompanying the RTS, and which was submitted for priority consideration in the Strategic Transport Projects Review (STPR), currently underway by Transport Scotland. These bypasses that were identified are at Elgin, Fochabers/Mosstodloch, Keith and Nairn. The A96 transport options to be considered within the STPR are shown in Table 1.1 below.

Table 1.1: A96 Transport Options to be considered within the STPR

Option	Description of Improvement Option	Group	S1	S2	JTR	MS	TC	FM
1	Nairn By-pass	Road		√	√√		√√√	√√
2	Elgin By-pass	Road		√	√√√		√√√	√√
3	Keith By-pass	Road		√	√√√		√√	√√
4	A82/A9/A96 Link Road	Road		√		√√	√√√	√√
5	Provision of Grade-separated junctions on dual carriageway	Road		√√	√√		√	√
6	Removal of shuttleworking section (at Inveramsay A96/rail crossing)	Road		√√√	√√			√
7	Increasing train frequency (hourly schedule)	Rail			√	√√	√	√
8	Addition of bus lanes at Inverness and Aberdeen	Bus		√		√√√	√	√
9	2 hour journey time from Aberdeen to Inverness	Rail			√	√√	√	√
10	Climbing lanes/WS2+1 – (Strategic dual carriageways)	Road		√√	√√			√√
11	Travel planning and demand management	Bus & Rail	√	√√	√	√√√	√√	
12	Quality bus partnerships/schemes	Bus	√	√√	√√	√√√	√√	
13	Investment in cycling and walking infrastructure	Pedestrian & Cycle	√	√		√√√	√	
14	Interchange facilities at railway stations and key junctions for all modes	Rail	√√	√√	√	√√√	√	
15	Facilities for HGVs & tractors lay-byes for platoons to disperse	Road	√√	√√	√√			√√
16	Keith – a carbon neutral town (a test case)	Env				√√√	√√√	
17	Short term AIP schemes	Safety	√√√	√√√				
18	Fochabers and Mosstodloch by-pass	Road	√		√√√		√√√	√
19	Park & Ride Sites	Bus & Rail		√		√√	√√	√
20	Education/behavioural change – travel planning, travel awareness e.g. car sharing, video conferencing	Bus & Rail	√	√	√	√√	√	√
21	Relative cost of modes – pricing & fares/subsidy	Bus & Rail	√	√	√	√√√	√	√
22	Priority lanes & HOV Lanes	Freight	√	√		√√	√	√√
23	Pedestrian crossings at local points	Pedestrian & Cycle	√√	√√			√√	
24	Enforcement e.g. cameras/signs/policing	Safety	√√	√√√	√√			
25	Short term measures & dualling to Inverness Airport	Road	√	√	√√		√	√
26	Provision of WS2+1 from Inverness to Fochabers/Mosstodloch	Road		√	√√		√√	√√
27	Increased frequency of train services with provision of passing loops	Rail			√	√√	√	√
28	Local commuter rail services s such as Aberdeen Crossrail and Invernet, with new rail stations, e.g. Inverness Airport and Kintore	Rail		√		√√√	√√	

1.1.4 Transport Scotland completed its preparation for the Fochabers/Mosstodloch bypass and, according to its programme, it is estimated that this new section of the A96 will be constructed by 2010/11. To complement this plan, HITRANS and HIE anticipate completing the research and scheme preparation for the bypasses at Elgin, Keith and Nairn during the period 2008 to 12, and these bypasses to be constructed between 2012 and 2022.

1.2 Research Issues

1.2.1 This study therefore forms the research into the benefits of these bypasses, and as a result of this research, will assist HITRANS in feeding information into the Strategic Transport Projects Review process on the economic benefits derived from providing A96 bypasses at Elgin, Keith, and Nairn, both to the communities themselves by the relief from through traffic, but equally from the provision of quicker and more reliable journeys for the arterial traffic.

1.2.2 Key elements of the study will be the evaluation of potential journey time reductions and improved journey time reliability for through traffic as a result of the bypasses, but also of great importance will be the evaluation of the impact of traffic demand and congestion on the communities that have been bypassed, and the implications of these for public transport and active travel.

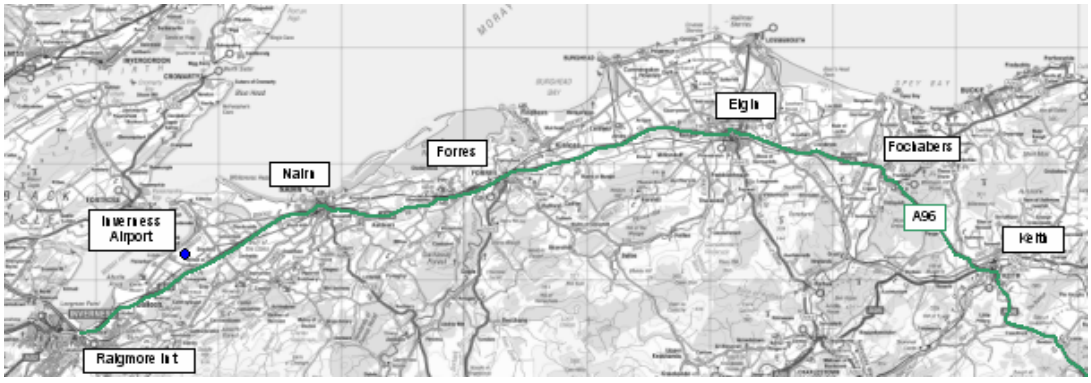
1.2.3 There has been considerable growth in planned commercial, retail and housing development between Inverness and Keith within the Aberdeen to Inverness Transport Corridor, captured within the local and strategic planning framework for all three towns of Nairn, Elgin and Keith. This opening up of land for development will impact heavily on traffic growth and traffic patterns resulting from additional economic activity and from related employment patterns, which in turn, will impact on housing development and social inclusion.

1.2.4 The bypasses would also be expected to produce business efficiencies such as improved access to customers, suppliers and training. The purpose of this study is to address these issues in addition to those identified above, in effect to estimate to what extent the bypasses would improve the existing business environment by facilitating quicker and more reliable journeys.

1.3 Overview of the Study Area

1.3.1 The A96 is a major road which represents the Aberdeen to Inverness transport corridor and is of national strategic importance linking both these major cities, passing in turn through, in an easterly direction, Nairn, Elgin and Keith. Nairn, Elgin and Keith are all situated on the A96, lying approximately 23km, 40km and 85km from Inverness respectively. The location of the three towns is clearly shown in Figure 1.2.

Figure 1.2: The Study Area Showing the Location of Nairn, Elgin and Keith within the A96 Corridor



1.3.2 The significant major investment within the Inverness to Aberdeen Transport Corridor, both recent and planned, has already and will continue to dramatically change the transport characteristics of the whole corridor between Keith and Inverness, in particular placing greater pressure on the transport network and commensurate services. It is to meet this challenge that HITRANS and its partner HIE are pursuing the construction of these new bypasses to serve both the needs of the local communities and the local and regional business environment.

1.4 Structure of this Report

1.4.1 The overall structure of this report follows the chapters set out below.

Chapter 2 Traffic Analysis.

Chapter 3 Key Stakeholder Workshop Analysis.

Chapter 4 Business Surveys Analysis.

Chapter 5 Bypass Options Assumptions.

Chapter 6 Analysis of Transport Benefits.

Chapter 7 Impacts of New Land Use Development.

Chapter 8 Social Inclusion Appraisal.

Chapter 9 Wider Socio-Economic Impacts.

Chapter 10 Conclusions.

2. TRAFFIC ANALYSIS

2.1 Introduction

2.1.1 This chapter provides an overview of the current transport conditions along the A96 within the three towns, and discusses the following:

- Traffic Flows and Speeds;
- Public and Active Transport;
- Accidents and Safety;
- Environmental Considerations;
- Transport Policy and Strategy Context;
- A96 Transport Corridor Study Issues; and
- Summary of the Issues as they Relate to this Study.

2.1.2 Each of the above items are discussed separately below.

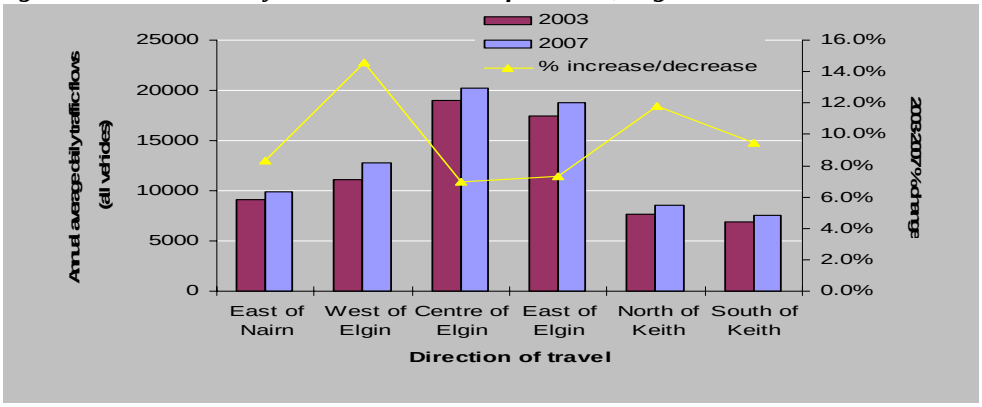
2.2 Traffic Flows and Speeds

Traffic Flows

2.2.1 Traffic flows, both through and between Nairn, Elgin and Keith, are relatively heavy. The A96 bisects each town and therefore is used as an access route to each town as well as a through route to access areas further afield, in particular Inverness and Aberdeen. The large, relatively new and expanding, Inverness Retail Park and airport at Dalcross to the east of Inverness generate large flows of traffic westbound from the three towns, and Aberdeen airport (at Dyce) as well as Aberdeen city itself would be expected to attract significant traffic eastbound.

2.2.2 Figure 2.1 indicates the two-way annual traffic flows (in annual average daily traffic, AADT) on the A96 for a number of sites between Nairn and Keith for a Thursday in the neutral month of May, for the years 2003 to 2007. The Figure illustrates the growth in traffic volumes, and clearly shows that the traffic has grown between about 6% and 15% between those years.

Figure 2.1: Two-way AADTs on the A96 for Nairn, Elgin and Keith



2.2.3 Table 2.1 shows these traffic flows (AADTs), both within and just outside the conurbations for the years 2003 through to 2007, including the intervening years, both westbound and eastbound (and for Keith northbound and southbound).

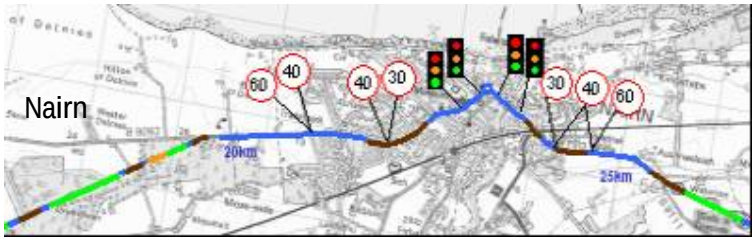
Table 2.1: Traffic Flows AADTs for sites in or close to Nairn, Elgin & Keith

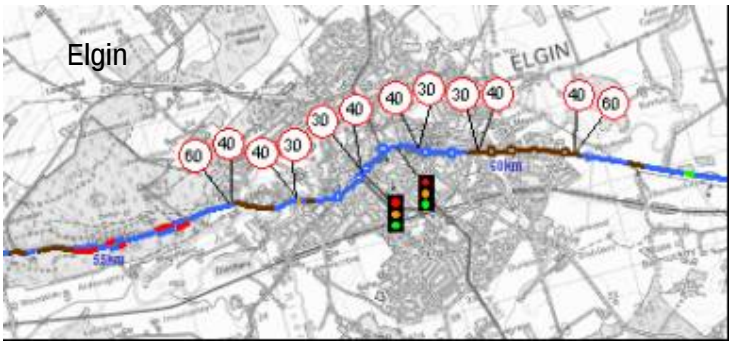
Town	Location	2003	2004	2005	2006	2007
Nairn	East of Nairn (westbound)	4,532	4,671	4,786	5,070	5,027
	East of Nairn (eastbound)	4,623	4,762	4,771	4,846	4,892
	Centre of Nairn (westbound)	n/a	n/a	n/a	6,828	6,854
	Centre of Nairn (eastbound)	n/a	n/a	n/a	6,634	6,673
Elgin	Centre (westbound)	9,956	10,078	10,159	10,246	10,656
	Centre (eastbound)	9,002	9,271	9,487	9,608	9,621
	East of Elgin (westbound)	8,754	9,075	9,157	9,206	9,419
	East of Elgin (eastbound)	8,746	9,032	9,067	9,193	9,366
	West of Elgin (westbound)	5,367	5,917	6,255	6,327	6,439
	West of Elgin (eastbound)	5,761	5,921	6,171	6,255	6,313
North of Keith	A96 (northbound)	3,504	3,932	4,116	4,189	4,379
	A96 (southbound)	3,521	3,962	4,033	4,098	4,139
South of Keith	A96 (northbound)	3,458	3,594	3,627	3,756	3,795
	A96 (southbound)	3,412	3,448	3,620	3,717	3,726

2.2.4 The Table shows that although traffic volumes have been increasing year on year between 2003 and 2007, there may be significant variation according to direction of travel. Further information for the year 2005 extracted from Transport Scotland's traffic database shows that for that year there were approximately 10,200 to 11,600 vehicles per day (vpd) on the A96 between Nairn and Elgin, and between 14,200 and 17,000 vpd between Elgin and Keith.

Traffic Speeds

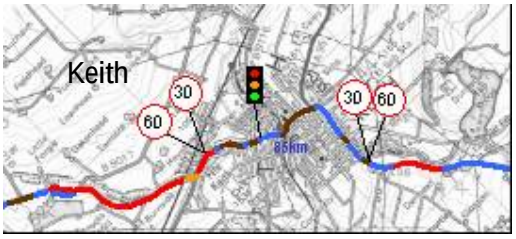
2.2.5 As a trunk road, the A96 is a trunk road which is normally subject to a 96kph (60mph) speed limit for cars and 64kph (40mph) for HGVs. However, for much of the length of the route between Inverness and Keith, and in particular on the outskirts of Nairn, Elgin and Keith, these speeds are not normally possible. For significant stretches on the outskirts of Nairn, for example, the road centre line allows only for cautionary overtaking, shown in blue in the Figure (inset), with shorter sections of the road displaying chevrons or ladder markings. The sections of road allowing overtaking, shown in green in the Figure are further away from the town, as might be expected, where fewer junctions connect to the trunk road.





2.2.6 Speed restrictions outside Elgin are more severe than for Nairn. There are a number of short sections to the west of the city where no overtaking is permitted, as demonstrated in the Figure (on the right). In the east of Elgin large sections of the A96 have chevrons or ladder markings, and further out on the eastern boundary the road is entirely governed by a long dash allowing only cautionary overtaking.

2.2.7 On the approach to Keith from the west overtaking is more heavily restricted than for Nairn or Elgin, where the A96 displays a solid white line (no overtaking) for well over two kilometres, mostly continuously as shown in red in the Figure to the right. As the Figure indicates, the approach to Keith from the east also displays a significant mix of solid white line and cautionary overtaking.

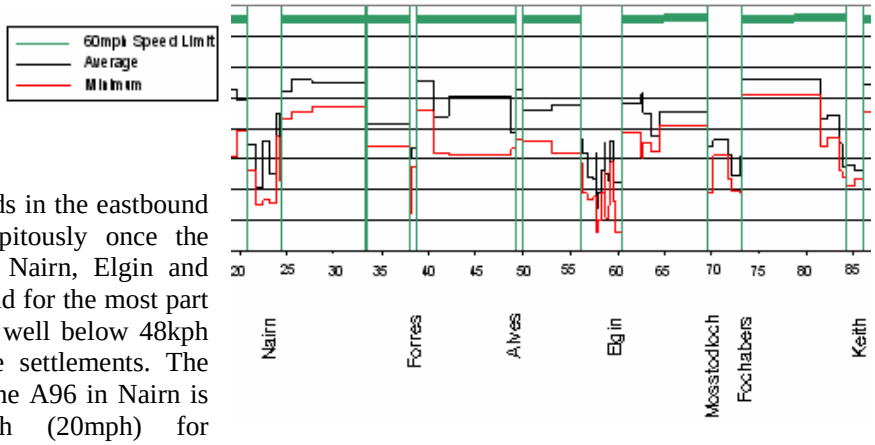


2.2.8 All three towns have a series of comprehensive speed limits on the A96 through their urban areas and the trunk road is, not surprisingly heavily signal controlled at the numerous junctions along the route. In addition, Elgin also has a series of roundabouts, nine in total governing the road through the city centre.

Local Impact of Traffic Growth

2.2.9 A major symptom of growing traffic flows has been increasing congestion, and nowhere has this been felt more keenly than in the conurbations of Nairn, Elgin and Keith. As traffic volumes grow several problems emerge consistent with too much traffic for the standard of the road.

2.2.10 Longer journey times are experienced, poor air quality, platooning and the lack of overtaking opportunities causes frustration and leads to accidents. The drop in traffic speeds through Nairn, Elgin and Keith are thrown into sharp relief by the Figure (inset right).



2.2.11 Clearly average speeds in the eastbound direction drop precipitously once the A96 passes through Nairn, Elgin and Keith respectively, and for the most part the average speed is well below 48kph (30mph) in all three settlements. The minimum speed on the A96 in Nairn is well below 32kph (20mph) for significant stretches of the town, and in Elgin the position is particularly severe. Here the minimum speed falls well below 16kph (10mph) in some areas. Speeds in the westbound direction show a very similar pattern, with minimum speeds for Elgin possibly even slower than seen in the eastbound direction above.

2.3 Public and Active Transport

Bus and Rail Services

2.3.1 There are a number of bus companies providing services along the A96 corridor, and within the major towns along the route, including Nairn, Elgin and Keith. These companies consist of Stagecoach, Rapson's, Deveron Coaches and smaller

companies. The major services and their origins/destinations are shown in Table 2.2.

Table 2.2: Bus Services to and from Nairn, Elgin and Keith

Bus Company	Service	Route	Frequency (buses/day)
Stagecoach	10	Inverness to Aberdeen *via* **Nairn, Elgin** and **Keith**	22
	305 & 325	Inverness to Aberdeen *via* **Nairn, Elgin** & Macduff	17
	315	Inverness to Buckie *via* **Elgin** & **Nairn**	13
	323	**Elgin** to Kingston *via* Lhanbryde	9
Rapson's	20, 20A, 20B	**Nairn**	9
	29X	**Nairn to** Inverness Airport	12
Deveron Coaches	309	Cullen to **Keith** *via* Buckie	5
	328-329	**Elgin Circular** *via* Lossiemouth	37
	331	**Elgin Circular** *via* Burghead	23
	336	Forres to Duftown *via* **Elgin**	18
	337	**Elgin** to Aberlour	3
	344	Buckie to **Keith** *via* Fochabers	2
	401	**Keith** to Inverness *via* Inverness Retail Park	3
	402	**Elgin** to Aberdeen *via* Rothes	2
	410	Forres to **Elgin** *via* Dyke	5
	443	**Elgin** to Buckie via Lhanbryde	3
Roberts	353	Dufftown to **Keith** via Mulben	3
WW Smith	360	**Keith** to Aberlour	2

2.3.2 Many of the services may be subject to alterations to their routes throughout the day and may be limited to certain days of the week. Timetables may also exhibit some flexibility, especially during the school holiday periods. However, bus services are, on the whole, frequent, as shown in the Table with up to 37 services per day for Elgin for example (for the number 328/329) and up to 22 daily (for the number 10) for Nairn.. The frequency between Inverness and Nairn will be the combined services on the routes 10 and the 305/315/325, totalling up to 50 services per day. All these services connect Forres with Elgin.

2.3.3 The Inverness to Aberdeen railway is approximately 174 km long between Inverness and Aberdeen stations and serves all three settlements of Nairn, Elgin and Keith. The railway is almost all completely single track and generally follows the same corridor as the trunk road over the western section of the route from Inverness and Lhanbryde.

2.3.4 There are 10 services from Inverness to Aberdeen on Mondays to Saturdays, departing from 0500hrs to 2122hrs, and 6 services on Sundays departing between 0955hurs and 2052hrs. The average journey time along the whole route is 2 hours and 14 minutes. In the reverse direction between Aberdeen and Inverness there are also 10 services a day departing between 0625 and 2155, and 5 services on Sundays departing between 1000hrs and 2100hrs. The average journey time is 2 hours and 15 minutes. All the services call a halt at Nairn, Elgin and Keith in both

directions. Table 2.3 shows rail patronage for Nairn, Elgin and Keith for the years 2002/03 and for 2003/04, and the annual growth between the two periods.

Table 2.3: Rail Passenger Trips and Growth at Nairn, Elgin and Keith Stations

	Nairn Station			Elgin Station			Keith Station		
Year	2002/03	2003/04	2005/06	2002/03	2003/04	2005/06	2002/03	2003/04	2005/06
Trips ('000s)	70	80	85	190	230	246	60	70	71
Growth	21%			29%			18%		

2.3.5 The Table clearly illustrates that there has been considerable growth in passenger rail traffic between 2002/03 and 2003/04, possibly partly as a result of increasing congestion on the A96 over the same period.

Walking and Cycling

2.3.6 Growth in car ownership and the mobility it conveys mirrors the general rise in personal wealth and disposable incomes. At the same time, concerns over safety have accelerated this loss of interest, together with the general perception that little has been done to promote cycling for commuting and for leisure.

2.3.7 The 9,000 mile (14,500km) National Cycle Network is being developed by SUSTRANS, working with over 400 local authorities, other Government organisations and with support from the Millennium Fund of the National Lottery. The Network, which is designed to be half on traffic free routes and paths and half on quieter minor roads and traffic calmed streets, will encourage people to attempt cycling for some journeys, and by doing so assist in reducing congestion and traffic pollution.

2.3.8 At present the National Cycle Network follows a number of C-Class and unclassified roads mainly to the north of the A96 trunk road between Keith and Elgin. From Elgin the route runs in parallel with the A96 before crossing the trunk road in Nairn, from which point the cycle route runs to the south of the A96 before reaching Inverness. There is no doubt that with the introduction of the bypasses and the urban traffic relief that results in Nairn, Elgin and Keith, the safer environment should promote more cycle trips for local commuting purposes, for minor shopping trips and for leisure purposes.

2.3.9 One of the problems that urban traffic generates in towns and cities is the severance effect that heavily used roads impose on pedestrians who find it difficult to cross busy roads to reach their places of work, shops or other amenities. This problem is particularly acute in Nairn, Elgin and Keith where the busy road in question is the A96, a major trunk road. In effect the A96 bisects these towns in two, in extreme cases isolating one side of a settlement from the other, contributing to an unacceptably high degree of severance, a problem which the proposed bypasses should help to resolve.

2.3.10 Bypassing urban areas, and in particular the town-centres should also enhance the personal safety of pedestrians by reducing the potential for conflict between pedestrians and vehicles.

2.4 Road Safety

2.4.1 The police using the standard STATS 19 form records road traffic accidents which involve personal injury. These accidents are classified into one of three categories; fatal, serious or slight according to the most severely injured casualty. Table 2.4 shows the number of accidents and severity of casualties for Nairn, Elgin and Keith and their peripheries, on the A96 up to approximately 5 km from each settlement between 2001 and 2005, and comparing these with the whole route of the A96 between Inverness and Aberdeen.

Table 2.4: Road Traffic Accident Data on A96 for Nairn, Elgin & Keith 2001-2005 and Proportion of Accidents by Severity

PIA	Nairn	Elgin	Keith	Total of A96
Fatal	1 (2%)	1 (2%)	3 (9%)	24 (5%)
Serious injury	8 (17%)	12 (28%)	9 (28%)	94 (19%)
Slight injury	38 (81%)	30 (70%)	20 (63%)	369 (76%)
Total	47	43	32	487

2.4.2 Generally road traffic accidents tend to be less severe within urban areas than in rural areas, which would explain the lower rates of fatal accidents recorded in Nairn and Elgin than recorded along the whole length of the A96 between Inverness and Aberdeen. The exception with Keith can be explained by the presence of a number of accident "black spots" between 2km and 5km west of the town.

2.4.3 The traffic accident rate for the Northern Region (as defined by Police Force coverage) as a whole is higher than for most regions in Scotland and the national average for trunk A roads. The relatively high rate of accident rate on the A96 undoubtedly contributes to this. The table to the right shows the accident rate for trunk A roads for a number of regions of Scotland and for Scotland as a whole, and illustrates this trend in terms of fatal and serious accidents per 100 million vehicle-kms, for the years 2001 through to 2005.

Region	Fatal & Severe Accidents (per 100 million.veh-kms) Trunk A Roads, 2001-2005
Northern	6.4
Grampian	3.9
Tayside	4.1
Fife	3.5
Lothian & Borders	2.5
Scotland	4.6

2.4.4 The accident rates are even higher for Nairn, Elgin and Keith than for Northern Region as a whole. By taking the traffic flows from Table 2.1 and road accident data shown in Table 2.4, it is possible to compare the accident rates for Nairn, Elgin and Keith with those for both the Northern Region and for Scotland. The Table (inset, above) clearly shows that the accident rates for all three towns is much worse than for Scotland as a whole, and for Keith, nearly three times worse. Both Nairn and Keith post worse accident rates than for the Northern Region as a whole, only Elgin fares better.

	Nairn	Elgin	Keith
Northern Region	119%	84%	202%
Scotland	166%	117%	282%

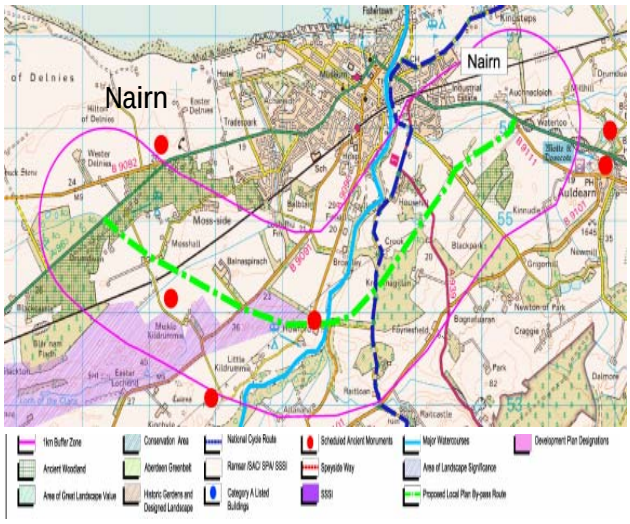
2.4.5 It is reasonable to assume that bypassing major settlements on the A96 such as Nairn, Elgin and Keith will assist in reducing the number of fatal and serious injury accidents in these towns as well as providing for a safer environment within the urban areas concerned.

2.5 Environmental Considerations

2.5.1 In terms of potential environmental constraints in the corridor of the A96, the bypasses at Nairn, Elgin and Keith are key strategic points which would be expected to have a major impact on sensitive receptors such as residential areas, community facilities, habitats and possible protected species.

Nairn

2.5.2 There are a number of major receptors in the community of Nairn, including the Moray Firth Special Area of Conservation (SAC) which is located 1.2 km from the A96 at its nearest point. There are also a number of Special Protection Areas (SPA) at the Moray Basin Firths and Bays, Highland & Grampian, Moray and Nairn Coast and the Inner Moray Firth.

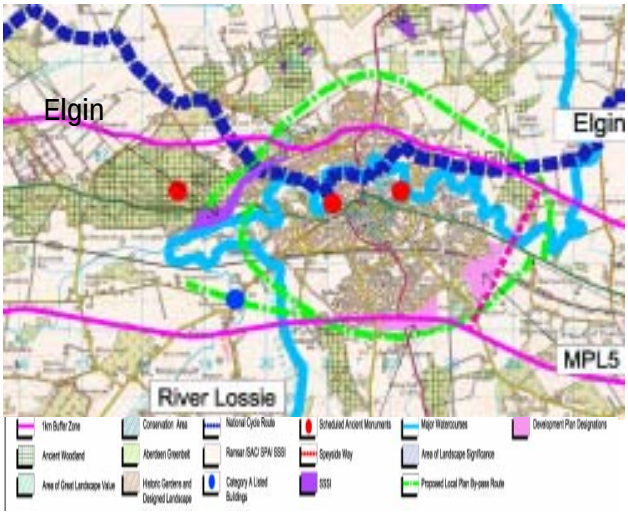


2.5.3 There are several important Sites of Special Scientific Interest (SSSIs) in the vicinity of Nairn. The Longman & Castle Stuart Bays SSSI is designated for its biological value. Kildrummie Kames SSSI is designated for its biological interest for its wetland and scrub features, including the best stand of mature juniper in the Moray Firth Area.

2.5.4 The Figure (inset above right) shows the major receptors in the vicinity of Nairn and the proposed line of the bypass. There are three Scheduled Ancient Monuments (SAMs) within the general route corridor. The bypass would also pass through Kildrummie Kames SSSI. There are areas of Ancient Woodland in the route corridor and the proposed alignment would also cross a number of watercourses including the River Nairn.

Elgin

2.5.5 There are no geological designations or national, regional or local landscape designations in or close to Elgin. There are pockets of Ancient Woodland at Quarry Wood and Alves Wood to the west of Elgin (see Figure inset right). Quarry Wood is an important SSSI due to its flora and is one of the few remaining semi-natural woodlands in the lowland of Moray. This SSSI is bisected by the A96.



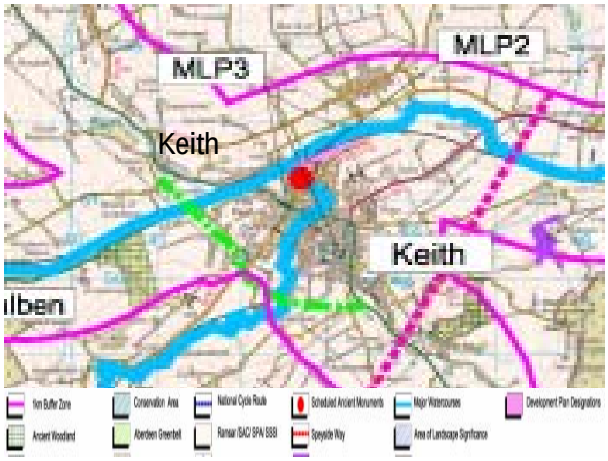
2.5.6 The Southern alignment of the bypass would pass through areas of Ancient Woodland and the River Lossie at two locations. The River Lossie, which passes through Elgin itself, has

the potential to flood the A96 and the railway line at Elgin. The proposed route would also cross the Inverness to Aberdeen railway line and there is a golf course to the south of Elgin, which is considered a sensitive receptor. The proposed alignment of the bypass would have to cross a number of other watercourses.

2.5.7 There are a number of listed buildings located to the west of Elgin, between Forres and Elgin, where there are also two Category A Listed Buildings in addition to a few Scheduled Ancient Monuments. Two of these are situated in Elgin itself, seen in the Figure (inset above, previous page).

Keith

2.5.8 There are a number of important SSSIs in the area, namely Spynie Loch, Loch Oire and the River Spey, which are all designated for their importance to the local area. Geologically, the area surrounding Keith is also important (Figure inset right). There are a number of geological SSSIs in the area, namely Teindland Quarry, Spynie Quarry, Findrassie SSSI and Dipple Brae, which are all designated for their importance to the local area.



2.5.9 There are two Conservation Areas in Keith and an Area of Great Landscape Value within the Spey Valley, and the long distance footpath 'The Speyside Way' crosses both the A96 and the railway line.

2.5.10 The general route corridor would have to cross both the River Isla and the Burn of Mulben, the Inverness to Aberdeen railway line and the Keith to Dufftown railway. There are areas of Ancient Woodland within this area and a golf course to the south, both of these land uses are considered sensitive.

2.6 Land Use Issues

2.6.1 There is a great deal of proposed development in Nairn and Elgin, and more modest development in Keith. Industrial, retail, business and residential development will all be expected to generate additional traffic flows in the future, which would, in the absence of bypasses, add severely to congestion in each of the town centres.

Nairn

2.6.2 Nairn, as Figure 2.2 (overleaf) shows, has significant additional residential growth planned to the west of the city (the orange areas). This is based on a forecast doubling of the city's existing residential population.

Figure 2.2: Proposed Land Use Development for Nairn

2.6.3 Additional traffic from these residential areas would be expected to use the bypass for trips out of Nairn and to access some other parts of the town, particularly those areas in the east and south of Nairn, where there will be points of access at a number of large roundabout junctions. However the bypass would not be expected to draw off trips generated by these areas to the centre of the city.

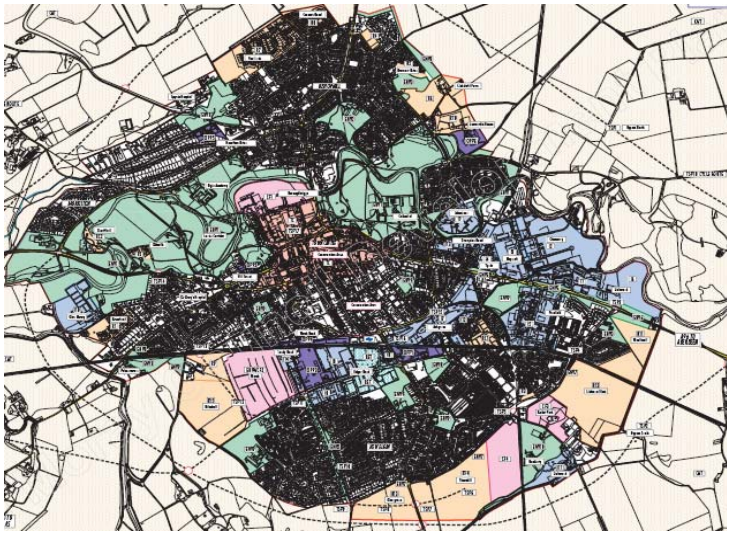
2.6.4 Other projected land uses for Nairn that may have an important impact on road traffic are the areas of commercial development in the east of the city (mauve), and the golf course in the west (light blue). Traffic accessing the main area of proposed commercial development from the west would be expected to use the bypass. Similarly, golfers wishing to play at the new golf course would, most likely, also use the bypass. The green areas are areas of green space, and are neutral in terms of influencing traffic growth and flows.

Elgin

2.6.5 The projected land use developments for Elgin show the predominance of proposed residential areas lining the southern bypass route, shown in orange in Figure 2.3. As is the case with Nairn, these developments would be expected to use the bypass for trips out of Elgin, but one would not expect residents in these areas to use the bypass to access the city centre.

2.6.6 There is projected to be considerable new industrial development in the east of the city (coloured blue). Commercial traffic accessing this area, and leaving this area, will for the most part use the bypass as most of this traffic would possibly be bound for other towns and cities in the region, or further afield. Commuter traffic from the west of Elgin would also be likely to use the proposed bypass, as would new commuters to the industrial area from the proposed new residential areas. As with Nairn, traffic originating in Elgin, including additional traffic from the proposed new residential areas, will be unlikely to use the bypass for accessing the city centre.

Figure 2.3: Proposed Land Use Development for Elgin

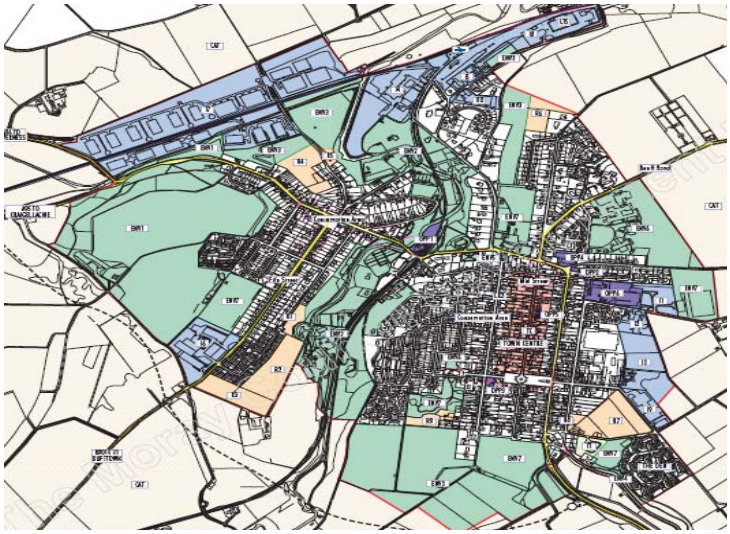


2.6.7 The pink areas on the map of Elgin in the Figure represent new community facilities. Those on the periphery of Elgin would be expected to generate additional traffic that would use the proposed bypass, except of course traffic whose origin was in the centre of the urban area. However, this is unlikely to be the case for the proposed community facilities in the centre of Elgin. Little of the traffic generated by these facilities would be likely to use the bypass.

Keith

2.6.8 The proposed bypass lies to the south and west of Keith, but the vast majority of new development, which is classed as industrial and coloured blue in Figure 2.4 is projected to be in the north and east of the conurbation. As a consequence the bypass will be expected to have relatively little influence on traffic flow patterns to and from the proposed new industrial locations, save for the relatively small area of proposed development on the south east corner of the town.

Figure 2.4: Proposed Land Use Development for Keith



2.6.9 The upshot therefore is that the majority of additional traffic generated by new developments in Keith will pass through the centre of the town rather than be siphoned off onto the periphery. However, the bypass is likely to remove significant volumes of strategic (through) traffic which will free up capacity in the town centre to accommodate new development trips.

2.7 Current and Future Problems & Opportunities

2.7.1 Scott Wilson carried out a Scottish Transport Appraisal Guidance (STAG) Pre-Appraisal of the Inverness to Aberdeen Transport Corridor focussing on the A96 trunk road. As part of the study, Scott Wilson undertook a comprehensive stakeholder consultation exercise in order to identify problems and opportunities on the existing transport corridor. The identification of problems is an important process in the development of appropriate transport proposals for the future.

2.7.2 A number of issues were identified as the perceived current and future transport problems, specifically those that relate to urban areas along the corridor including towns and cities such as Nairn, Elgin and Keith. Future problems are defined in the short, medium and long term. The problems are detailed in Table 2.5 (overleaf) and are in no particular order.

2.7.3 A persistent theme repeated through the short, medium and long-term issues relating to perceived future problems was the concern that increasing traffic will provide a break on the economic performance of the towns between Inverness and Aberdeen. Although this was not explicitly referred to as a current problem reference was made to journey time reliability, public transport reliability and queuing, all of which impedes a town or city's economic performance. Another problem that was an obvious concern was that of environmental degradation, mainly deteriorating air quality. This was explicitly identified as a current problem, and again as medium and long-term future problems.

Table 2.5: Current and Future Perceived Problems

Current problems	Future problems	
Volume of house building has exceeded investment in infrastructure	*Short term*	Increasing housing developments
Too much traffic for standard of road		Likely increase in traffic
Congestion through built-up areas		Increase in queues and delays
Poor air quality		Increasing congestion in built-up areas
Poor journey time reliability		Increased cost for businesses and decreased competitiveness
Road safety including no safe or practical route for commuting by bicycle		Increased journey times
Conflict between strategic and local road traffic		Increased number of accidents (reduced safety)
Queuing		Increased need for investment in infrastructure
Public transport reliability	*Medium term*	Increased cost of businesses – reduced competitiveness
		Severe congestion
		Damage to economic sustainability of towns along corridor
		Deteriorating air quality
		Increased safety problems
	Long term	Reduced air quality
		Economic and social well-being of area

2.7.4 This information clearly sets out the problems, as above, and was used in order to assist the development of local transport objectives, for the 2006 Corridor Study.

3. KEY STAKEHOLDER WORKSHOP ANALYSIS

3.1 Introduction

3.1.1 A major aspect of the appraisal was to fully involve key relevant public authorities as stakeholders in the discussion on the three bypasses for the areas of Nairn, Elgin and Keith on the A96. The workshop followed feedback from an issues questionnaire sent out prior to the workshop and subsequently returned by the invited attendees.

3.1.2 A presentation was given at the workshop summarising the feedback from the returned questionnaires, which was then used as the basis for further discussion at the workshop. This chapter provides an overview of the consultation carried out and the comments obtained. Supporting information is contained in the appendices.

3.2 STAG Workshop

3.2.1 A ½ day STAG Workshop was held on Friday 25 January 2008 at HITRANS' offices in Forres. The workshop was held with a number of stakeholders to review the key issues regarding the current transport infrastructure and services on the A96, to further discuss current user needs of the strategic road, and the problems associated with these needs in the short, medium and long term.

3.2.2 The workshop was facilitated by Scott Wilson and representatives from the following organisations attended:

- Scott Wilson;
- HITRANS;
- Highlands & Islands Enterprise;
- Highlands & Islands Enterprise – Inverness and East;
- Highlands & Islands Enterprise – Moray;
- Moray Council – Transportation Services;
- Moray Council – Planning Department;
- Moray Council – Roads Services Department;
- Highland Council – Transportation Services; and
- Reference Consultants.

3.2.3 Minutes of the STAG Workshop are contained in Appendix A of this report.

Current Transport Infrastructure and Services on the A96

3.2.4 The discussion at the workshop based on feedback from the questionnaires raised the following key issues:

- general transport conditions in the area were poor, particularly for road transport. Elgin & Nairn are particularly bad with "delays up to 20 minutes at peak times";
- bus services are reasonable, but rail services timings do not match up with each other. In general public transport services are not well articulated;
- A96 passing through the towns means urban speed limits apply, and at busy times traffic speeds can be well below 30mph;
- traffic passing through Elgin has to negotiate a series of very busy junctions, sharing road space with local journeys, leading to congestion problems, especially at the am/pm peaks. The problems in Nairn & Keith are less severe, but also hinder long-distance traffic;

- currently no express Inverness-Elgin-Aberdeen bus service exists, possibly because this would offer very little journey time benefit without bypasses for the towns;
- busy urban environment, with A96 providing some of the main cycling, pedestrian links through towns making this poor for locals wishing to access town centres on foot/bike. This is also unattractive to visitors;
- travel can be difficult, or at least stressful, due to a lack of overtaking opportunities;
- congestion in Nairn and Elgin during the working day makes it difficult for buses to enter the traffic stream. There is no provision for bus only lanes. Poor environment for cyclists and pedestrians with no cycle lanes; and
- the A96 has particularly poor trunk road design, with insufficient capacity.

3.2.5 Although the above were agreed as being key issues, the following were also noted and agreed as also being important issues regarding transport infrastructure and services on the A96:

- a high proportion of through trips on the A96 within Elgin conflict with local trips;
- Saturday is one of the busiest days for Elgin due to shopping leading to additional problems of congestion on that day;
- based on previous discussions with stakeholders, the bus timetable is tight. A good bus service between Aberdeen to Inverness would be welcomed and it is believed there would be sufficient demand;
- freight traffic experiences similar issues as private cars and other road users;
- there is a braking effect on the growth of the economies (e.g. the firm Gordon & MacPhail have stated they need a better trunk road to compete due to access hindrance);
- due to the current situation, Elgin is becoming less attractive for businesses setting up in the area; and
- some local businesses view the A96 as unsafe, and have advised their staff not to use it.

3.2.6 In addition to the above, the A96 suffers from flooding, and particularly severe occurrences were noted in 2002 and 2004. Elgin in particular has a challenging environment within which to set the new bypass with the region suffering frequent and severe flooding (photo, right).

Current User needs for the A96

3.2.7 Further feedback from the questionnaires was discussed on the key issues regarding the current user needs for the A96. These are detailed below:

- a market view from another study

suggested that there is a hindrance to inward investment due to the lack of proper transport infrastructure linking Inverness and Aberdeen;

- there is a need to alleviate conflicts between different road users with different journey needs but competing for the same road space – this inhibits the free and effective flow of different modes;
- community discussions in Nairn in relation to the A96 Corridor Masterplan raised the need for a bypass for the town;
- issues seem to be the same for private/passenger trips as well as freight and business trips;
- improving the overall efficiency of the A96 would benefit those businesses who use this route for freight or make regular business trips;
- longer distance road travellers (freight and cars) are subject to significant delay passing through the towns. Cyclists are poorly provided for and dedicated lanes are required to avoid conflict with traffic; and
- it is not possible to make integrated rail and bus journeys and better physical integration/timetabling and ticketing is required.

3.2.8 Although it was agreed that the issues outlined above were the key points, there were a number of other issues raised which were considered important enough to note, and these are detailed below:

- in terms of better integration with the town centres and the train stations, after any bypasses were introduced it may be possible to introduce a shuttle bus linking the stations with the respective town centres;
- both Highland and Moray Councils would, in principle, be willing to adopt the old sections of the A96 following any bypassing, subject to the appropriate condition assessments. These road sections could then be developed to accommodate a more balanced provision for sustainable transport;
- in Elgin, there is a bypass action group who have been lobbying for a bypass for some time Scottish Parliament Petitions Committee received a petition with circa 8,000 signatures for a bypass for Elgin. In terms of Keith, the proposed bypass alignment was favourably received and thought of highly by the local community. This reinforces the case made for a bypass for Nairn by the local community there;
- there is up to 1 million tonnes of timber transported through Moray per annum;
- the emerging Local Plans have lines for the bypasses and land has been safeguarded through the LPs;
- the importance of reliability of journey times including to the airports was also raised; and
- the hindrance to growth of existing businesses rather than just the encouragement of new businesses highlighted as being important and should not be overlooked.

3.2.9 The problems identified with the A96 trunk road were an important element of the questionnaire and prompted considerable discussion at the workshop. These were distinguished into existing, short-term and long-term problems.

Summary of Existing Major Problems

3.2.10 One of the principal existing problems were associated with congestion at peak hours within the three towns which resulted in slow journey times, including those commuting by bus, and this was exacerbated by poor overtaking opportunities offered over the whole route. The provision of bypasses was viewed as an opportunity to permit faster, less stressful travel, which would reduce congestion as a perceived barrier to business investment and growth.

3.2.11 Congestion in the towns, in particular Elgin, would have a detrimental impact on reliability and customer satisfaction for an express bus service, of the "Megabus" service type between Inverness and Aberdeen with intermediate stops at a few stops at locations en-route. Bypasses would provide a significant benefit of such a service, and provide the potential for significant modal shift away from the private car for many journeys, particularly those to the regional airports and major towns.

3.2.12 The economy itself, particularly in Moray, is regarded as being relatively weak and geared towards the low value end of the economic spectrum. It is heavily dependent on two sectors; the RAF and distilling, which makes it particularly vulnerable to rapid contraction should either of these sectors shrink, or worse. Good road connections would encourage a diversification of the economy by linking up with the main regional services centres, and facilitate access to the major regional air and seaports.

3.2.13 The A96 has the unfortunate characteristic of bisecting each of the towns. This presents a significant barrier, both to traffic crossing the town on a perpendicular axis to the trunk road, and to pedestrians. As examples of the latter, there are school catchment areas on both sides of the A96 in Elgin, with two school-crossing patrols operating for primary schoolchildren. This is equally true for Keith, where one of the town's major primary school fronts onto the A96, and the regional secondary school is nearby. Nairn too has a large primary school, Rosebank, adjacent to the A96, which makes crossing of the A96 potentially perilous for schoolchildren, especially at peak times.

3.2.14 Nairn is considered by some to have particularly acute social and economic problems because the congested A96 splits the community in two and provides a barrier to movement through and across the town, both for pedestrian and vehicular traffic. There is only one bridge over the River Nairn, and this funnels local, commercial and trunk traffic through one point in the network.

Summary of Short-term Future Problems

3.2.15 Traffic levels on the A96 between Inverness and Keith are forecast to increase due to a rapidly rising population, associated economic activity and greater general prosperity, which in turn means greater regional car ownership. This will exacerbate the existing problems identified above.

3.2.16 In addition to forecast increasing traffic levels, there are important existing Highland and Moray Councils' Local Plan land allocations for new development, and this will generate considerable additional traffic onto the existing road network. Without the provision of bypasses for the three towns, it is anticipated that even before these developments are fully completed, there will be fundamental difficulties with the existing road capacity to absorb this additional traffic.

3.2.17 The lack of certainty as to the commitment to road improvements, foremost among these the A96, is seen as inhibiting both investment by local businesses and inward investment from elsewhere. However, it was noted that there was no potential for

infrastructure improvements at existing road junctions on the A96 within the urban sectors, as these are effectively constrained by other land use.

3.2.18 In addition to this commitment to provide extra road capacity, improvements to the public transport, cycling and walking facilities may reduce the high levels of car dependence, especially for local journey, and so potentially mitigate these short term problems.

Summary of Long-term Future Problems

3.2.19 The future problems in the long-term differed little in nature to those already identified for the short-term, but differed in intensity. The long-term outcomes of a lack of investment in new road infrastructure and consequent further congestion will be a restriction in urban growth, slowing local development such as new edge-of-town developments for housing and new economic activities, with an overall blunting of regional economic competitiveness.

3.2.20 It was also observed at the workshop that the three proposed bypasses would only relieve the impacts on congestion only where national policies align with local requirements. In particular the National Planning Policy encouraging the relocation of large retail developments to town centres, can and does, as significant traffic generators, cause an increase in local traffic, and cause local and strategic traffic to mix. An example of this has been the Aldi store in Elgin.

4. BUSINESS SURVEYS ANALYSIS

4.1 Introduction

4.1.1 The purpose of the business surveys was to collect information on the extent that the A96 currently presents constraints on business performance and aspirations, and the views businesses take on the impacts that the bypasses would have on these issues.

4.1.2 The business surveys were conducted by telephone, which used a computer automated telephone interview (CATI) process. Only a relatively small sample of between 30 and 35 businesses was sought, so businesses were selected partly on a stratified random sample and partly a targeted sample, thereby ensuring that businesses were represented both geographically across the area, and represented across the key sectors.

4.1.3 The questionnaire was developed in consultation with HITRANS and HIE and agreed at the outset. Appendix B includes a copy of the final questionnaire used. The telephone interviews took approximately 20 to 25 minutes each, and a total of 32 businesses were interviewed from a sample of 75 contacted, a completion rate of some 43%.

4.1.4 In order to obtain the information required, data was sought and collected in the following areas:

- characteristics of the businesses interviewed, including sector, spatial distribution, and size by employment & turnover;
- business location issues & haulage arrangements;
- business intensity of use of the A96 & use by purpose;
- commuting issues;
- perceived impact of proposed bypasses on business performance;
- perceived impact of proposed bypasses by purpose of use;
- perceived business opportunities opened up by proposed bypasses; and
- other perceived impacts of the proposed bypasses.

4.1.5 The rest of this Chapter sets out the results of the business surveys based on these issues.

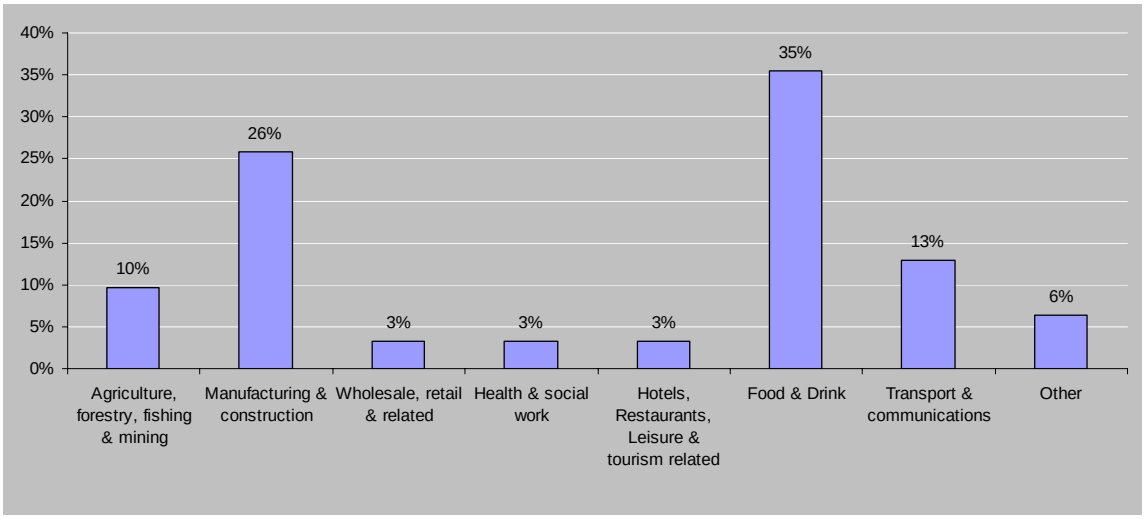
4.2 Business Characteristics

Sector Characteristics of Business Sample

4.2.1 Figure 4.1 (overleaf) shows the spread of businesses interviewed by sector, which is based on the Government's Standard Industrial Classification (SIC) index. As the Figure indicates, 9 sectors were interviewed, including a category "other", which was mainly composed of public service organisations.

4.2.2 The two largest groups, the food and drink sector (35% of businesses) and the manufacturing sector (26% of businesses), are among the sectors that would be expected to use the A96 for freight movements the most intensely. Other sectors of importance in terms of freight movements, the primary sector including agriculture, forestry and mining, and the transport and communications sector between them comprised another 23% of the sample. In summary, of the sample interviewed, over 70% of businesses would be expected to use the A96 heavily or relatively heavily for freight related movements.

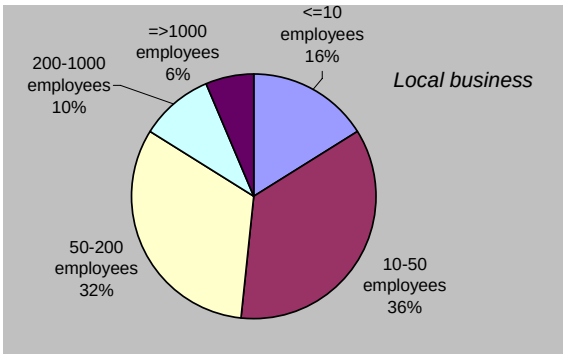
Figure 4.1: Businesses Interviewed by Sector

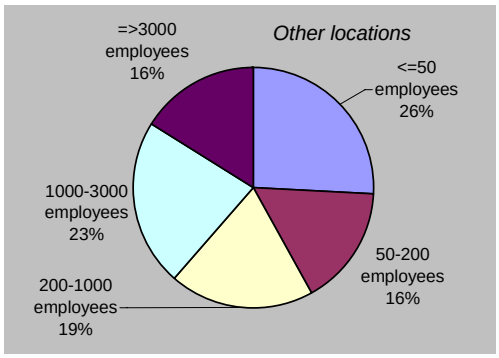


Size of businesses

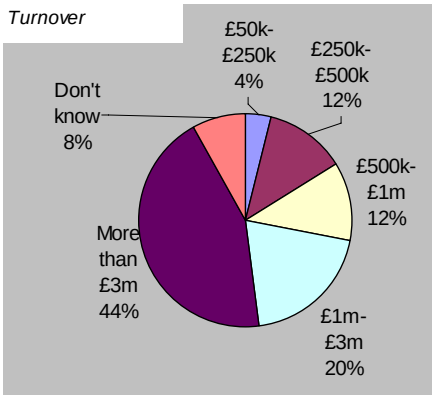
4.2.3 The businesses interviewed were relatively well spread out in size in terms of numbers of employees. Figure 4.2 indicates that the 46% of businesses had 50 employees or less, but one in seven or 16% were large with over 200 employees.

Figure 4.2: Businesses Size by Employment: Local & Other Locations





4.2.4 As the Figure shows, 70% of the businesses interviewed were part of larger organisations with locations elsewhere. Perhaps unsurprisingly these parent companies tended to be much larger, with 58% of them having over 200 employees, and nearly 40% having over 1000 employees.



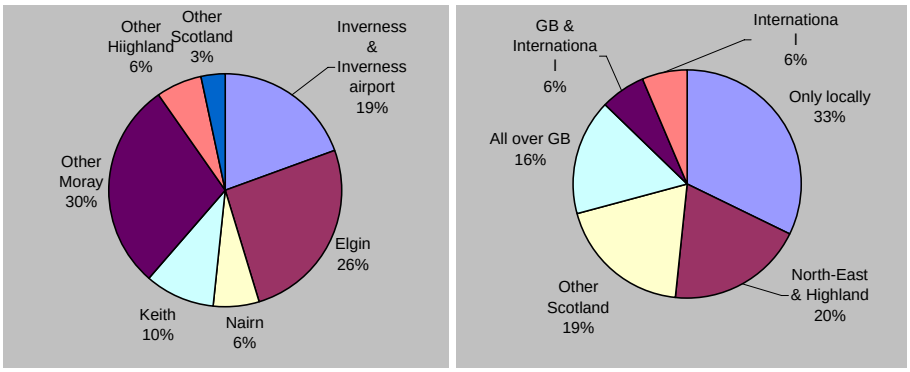
4.2.5 The large proportion of businesses in the sample that are part of bigger organisations with a greater geographical spread is reflected in the relatively large turnover that was reported by businesses that were prepared to give the information. 40% of businesses (Figure right) had a turnover of more than £3 million and nearly two-thirds of businesses reported a turnover of more than £1 million.

4.2.6 56% of the businesses interviewed quoted heavy goods as being the most important mode of transport which would be expected with the relatively high number of businesses interviewed in both the food and drinks and in manufacturing sectors.

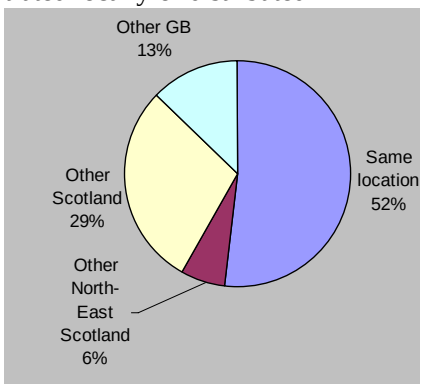
Business location and haulage arrangements

4.2.7 The businesses interviewed were concentrated in the Moray to Inverness corridor, with 42% actually based in Nairn, Keith and Elgin, and as Figure 4.3 illustrates, another 30% in other areas of Moray, and a further 19% either in Inverness or Inverness airport.

Figure 4.3: Business location



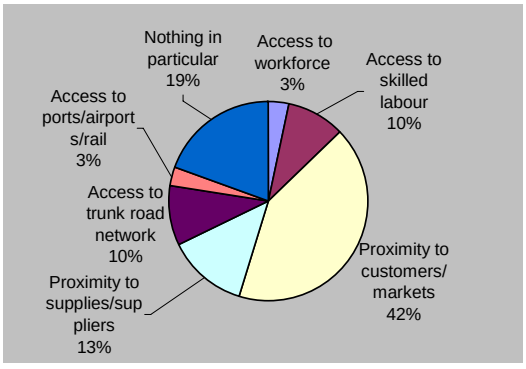
4.2.8 The geographical spread of a surprisingly large proportion, 53% of the parent organisations of businesses interviewed, were concentrated locally or distributed in the North East or Highland areas of Scotland. The sense that the businesses interviewed were essentially local in nature is re-enforced (Figure right) when considering that the business headquarters was the same as the site of interview for 52% of businesses, and this proportion rises to nearly 60% when headquarters for businesses were reported to be in other areas of the North East.



Advantages of particular business location

4.2.9 Businesses were asked what advantage their particular location offered. They were offered a number of alternative parameters, and the figure (below right) indicates the responses.

4.2.10 The most important advantage that their location offered was, by some considerable margin, proximity to customers and markets. This may well be expected given the importance of freight movements to the majority of businesses interviewed.

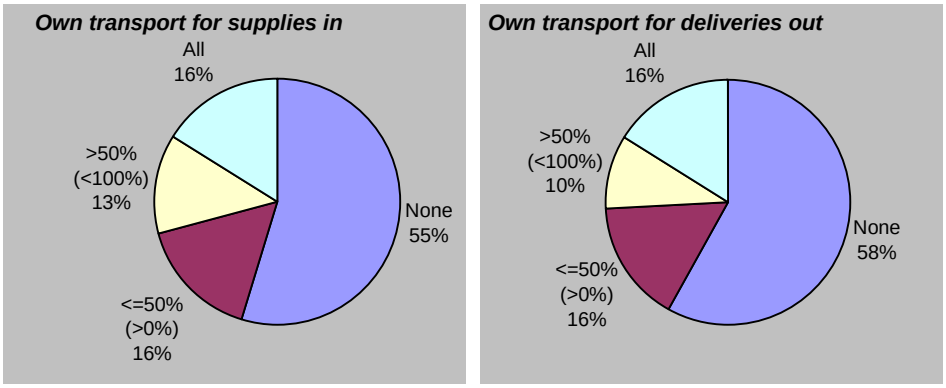


4.2.11 Proximity to supplies and suppliers was of importance to a minority of businesses interviewed, as was access to the trunk road network and labour, both skilled and unskilled.

Haulage arrangements

4.2.12 Haulage arrangements vary widely between businesses, and many of these businesses employ different measures both to bring supplies into the business and in delivering goods and produce to customers and markets.

Figure 4.3: Business haulage arrangements

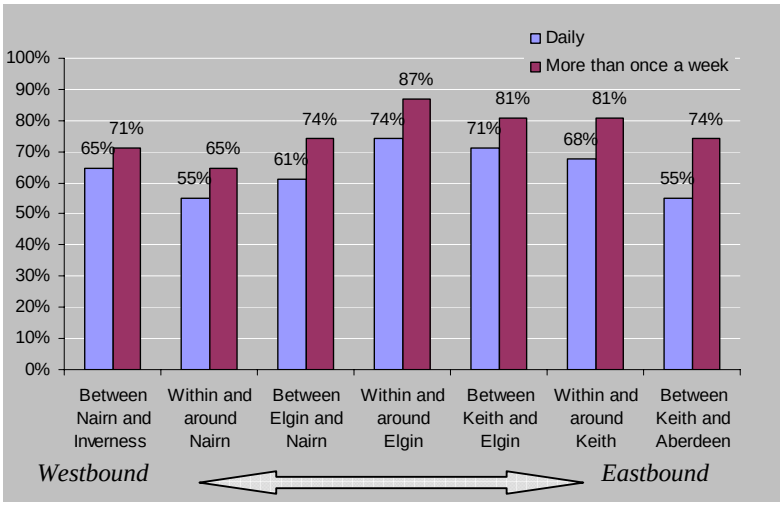


4.2.13 Figure 4.3 indicates the extent to which the businesses interviewed used their own transport to bring supplies to and take out goods from the company premises. In both cases, only 16% of businesses relied totally on the own fleets to bring in all their supplies to the premises and deliver all their output to customers. Rather more than half of businesses relied on hauliers or others, customers and suppliers both to deliver all supplies (55%) or deliver all their goods and products to customers (58%).

4.2.14 The analysis behind the Figure indicates that the businesses used hauliers rather than customers and suppliers to move products to and from the business when not using their own transport. Therefore contracting arrangements to hauliers represent an important means of moving goods and supplies to and from those businesses that were interviewed.

Intensity of the use of the A96 and intensity by purpose

4.2.15 The intensity of use of the A96 by the businesses interviewed varied between and within/around the three towns (Figure, right).

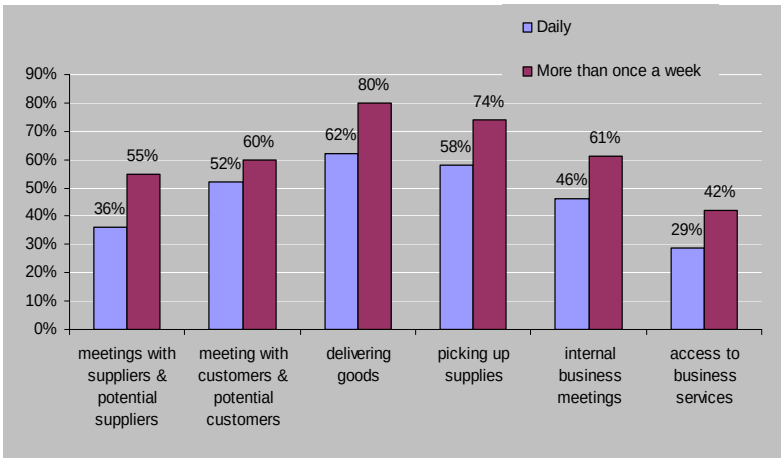


4.2.16 It is clear that the A96 was most intensively used within and around Elgin, both on a daily and weekly basis. Nearly ¾ of businesses said that they used the A96 daily, and this proportion rose to 87% who claim to use it more than once a week. On a daily basis the most lightly used sections were within and around Nairn and between Keith and Aberdeen.

4.2.17 The profile of intensity of use by the businesses, as shown in the Figure, suggests that, moving eastbound, intensity of use is rather less between Nairn and Inverness,

falls around Nairn, and transport activity picks up towards Elgin to a maximum around Elgin, before falling gradually towards east of Elgin, towards Keith and Aberdeen.

4.2.18 The Figure (right) shows the frequency of use of the A96 by purpose. The most common reason for using the A96 for the businesses interviewed was for delivering goods. The A96 was used daily by 62% of businesses interviewed, and more than once a week by 80% of businesses for this purpose.



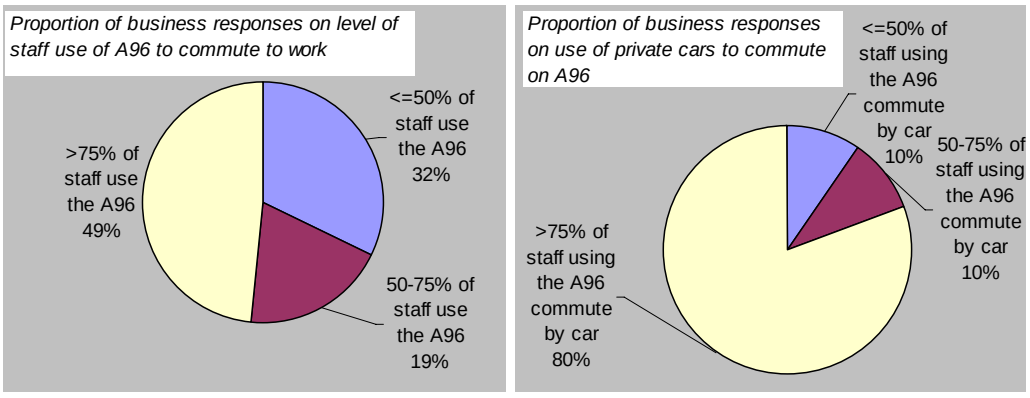
4.2.19 Use of the A96 for picking up supplies was also important for the businesses surveyed, but was relatively less important when considering access to business services such as legal and financial activities. The same was true of meetings with suppliers and potential suppliers.

4.2.20 Whilst delivering and receiving freight are the most important trip purposes, the route is also used at least weekly by over half of businesses for meetings (internal or with suppliers/customers).

Commuting issues

4.2.21 The A96 is an important conduit for commuting to and from work for the businesses interviewed, as can bee seen in Figure 4.4. Over two thirds of businesses (68%) mentioned that more than half their staff use the A96 to commute. Of the total, nearly half (49%) of businesses report that more than three-quarters of their staff use the A96 for this purpose.

Figure 4.3: Use of A96 for Commuting



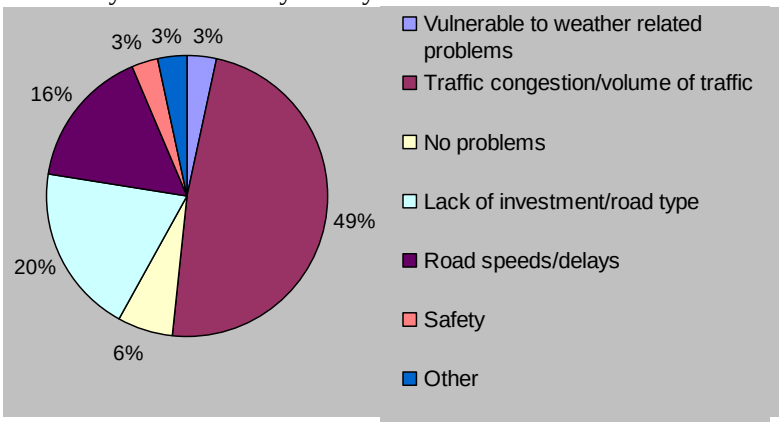
4.2.22 Most of those who use the A96 drive rather than use local public transport. Given the concerns on public transport reflected in Chapter 3 of this study, perhaps this is unsurprising. The Figure shows that 80% of businesses informed us that more than 75% of their staff who use the A96 drive or are vehicle-passengers rather than use the local bus network.

4.2.23 The proportion of business employees that do use bus services along the A96 to get to and from work is very small indeed. 77% of businesses reported that none of their staff use bus services that run along the A96 for commuting purposes, and 90% of businesses told us that 10% or less of their staff do so.

4.3 Perceived Impacts of Proposed Bypasses on Business Performance

Impacts on Business Performance – problems faced

4.3.1 Businesses were asked what were the problems facing them in their use of the A96. The overwhelming response (Figure Right) was the volume of traffic and attendant traffic congestion, which was directly mentioned by nearly half of businesses. However a closely related issue, that of road speed and delays, was stated by a further 16% of businesses interviewed.



4.3.2 Yet a further 20% of businesses identified the lack of investment in the A96 and the prevailing road type as the underlying cause of the problems they face using the A96.

4.3.3 There is no doubt that traffic congestion, the associated problems and alleged cause (which together were mentioned by 85% of businesses) is the foremost issue using the A96. When asked what the businesses considered were the underlying issues of the problems they face using the A96, more businesses identified both the road type and the lack of investment as critical.

4.3.4 Others problems mentioned relate to the vulnerability of the route to prevailing weather conditions and safety. However 6% of the business sample found no problems with using the A96.

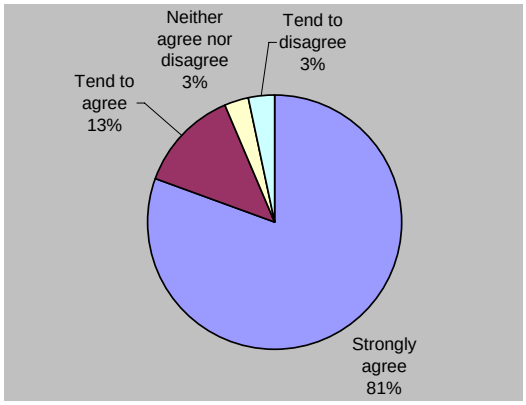
4.3.5 When asked what the businesses perceived the problems to be five years in the future, the same problems quoted above were returned. The lack of investment was a particular concern, as was increasingly dense traffic volumes, congestion and delays. This holds true for the perception of problems between five and 15 years time, but the longer time horizon meant that more businesses (15% - 20% of the sample) felt unable to identify any particular problem.

4.3.6 Businesses were asked what plans they had in place, both in the relatively short term, up to five years, and in the longer term, from five to 15 years, and how might the development of these plans be affected by the condition of the A96 as it is currently. Rather less than half of the businesses plan to grow (35%), in the next five years, the remainder having no plans to expand or in the case of two businesses, plans to reduce in size by a small extent. Nevertheless, of those that have specific plans to grow, half regard the A96 as important in realising these plans, and envisage using the A96 more heavily in future.

4.3.7 Over the longer time horizon fewer businesses (only 13% of the sample) were able to positively identify plans to expand, and none specifically identified the A96 as having an impact on these. However, one business did envisage a bigger role for teleworking in the business in the longer term.

Impacts on Business Performance – journey time savings

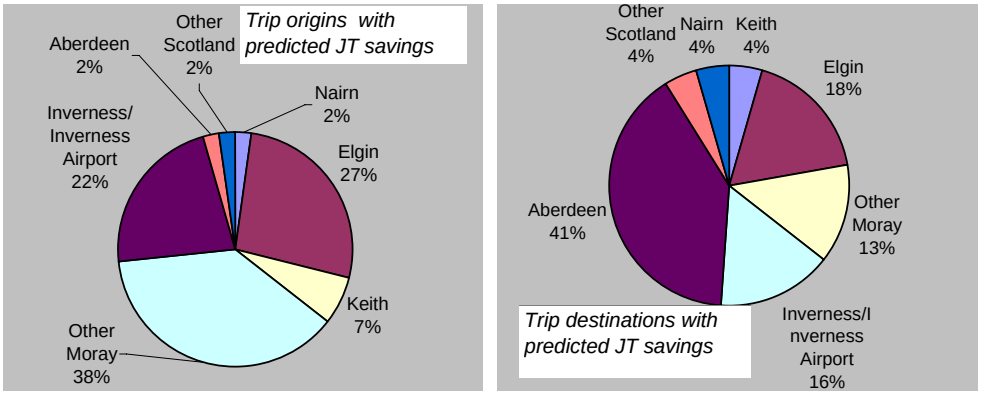
4.3.8 Businesses were asked to agree whether they thought the bypasses would have a significant impact on their business performance in terms of journey time savings. Perhaps unsurprisingly given the importance of the A96 to the businesses interviewed, the overwhelming majority of businesses, 81% (see Figure right), agreed with this view.



4.3.9 A further 13% of businesses registered a milder agreement, and only 6% neither agreed nor disagreed or tended to disagree. None strongly disagreed.

4.3.10 The businesses were then asked to identify the business trip ends in terms of origins and destinations of those trips where they thought journey time savings would occur. Figure 4.4. shows these origins and destinations where journey times savings were predicted.

Figure 4.4: Origins and destinations of business trips where journey time savings are predicted to occur.

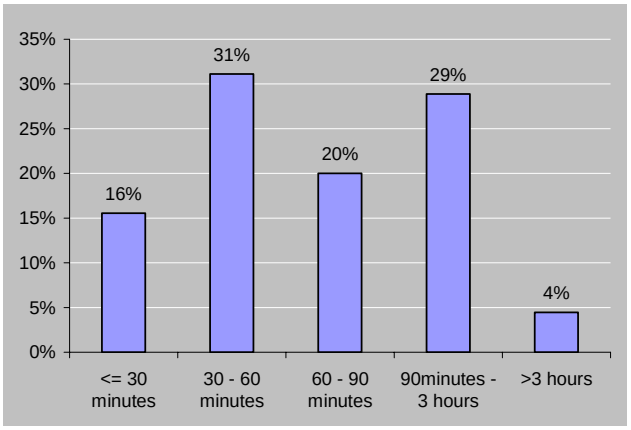


4.3.11 Most of the trips with predicted journey time savings begin in Moray (74%). However, only a minority of these actually start in Nairn, Elgin and Keith (31%), of which Elgin contributes the most journey trip origins, 27% of the total. A significant share of trip origins is the Inverness/Inverness Airport region (22%).

4.3.12 Aberdeen is by far the most important single destination with 41% of trips with predicted journey time savings terminating there. 39% of trips end in Moray, of which Nairn, Elgin and Keith represent 26% of the total. Elgin again is the most important of the three towns, representing the end point of 18% of all trips for which journey time savings are predicted.

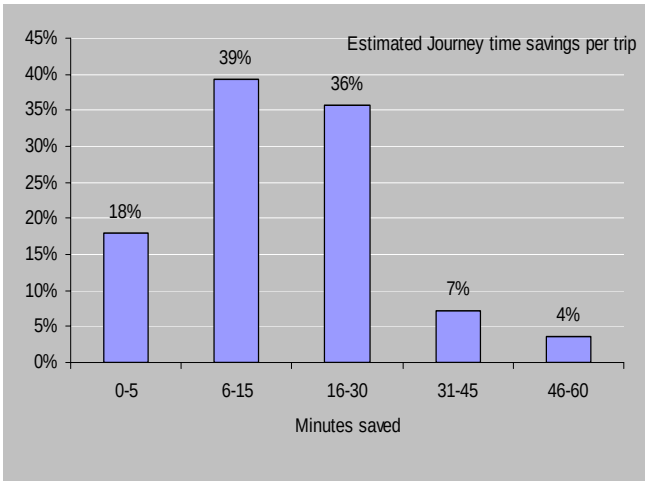
4.3.13 Figure 4.4 suggests that the most important origin and destination for trips that are projected to enjoy journey time savings with the bypasses in place are from Moray generally to Aberdeen, specifically towns in parts of Moray other than Nairn, Elgin and Keith, although Elgin remains significant as a source of these trips. Elgin also remains relatively important as a destination of these trips. However neither Nairn nor Keith are particularly important from an origin nor destination perspective for these journeys.

4.3.14 The Figure (below right) shows the proportion of business journeys undertaken for which journey time savings were predicted, by length of trip by journey time. The Figure clearly shows that most trips of this type undertaken by the businesses interviewed are of a medium or long haul duration.



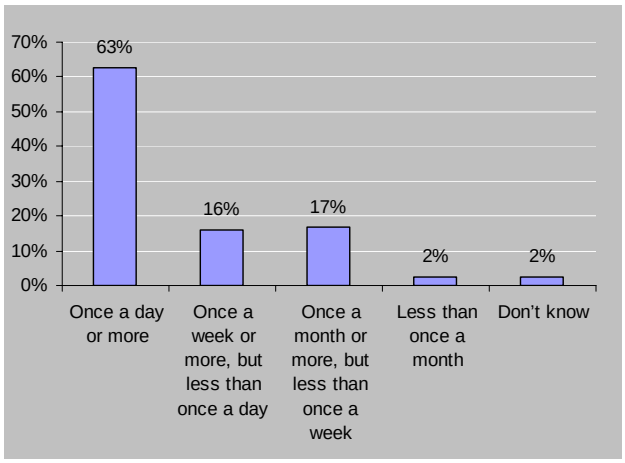
4.3.15 Over half (53%) of all journeys undertaken last an hour or more, and a third last 90 minutes or more. This would imply that the journeys undertaken which are predicted to see journey time savings, which as noted in Figure 4.4 are most likely to be from various parts of Moray to Aberdeen, including Elgin and points further west, would be expected to see real journey time savings because of the length of trip.

4.3.16 Businesses were asked what the journey time savings were expected to be for every trip made that was predicted to have them. The estimated time savings that the businesses quoted are significant (Figure right).



4.3.17 Nearly half (47%) of the businesses surveyed said that they expected journey time savings of more than a quarter of an hour. The vast majority of businesses (82%) indicated that they predicted journey time savings of more than five minutes.

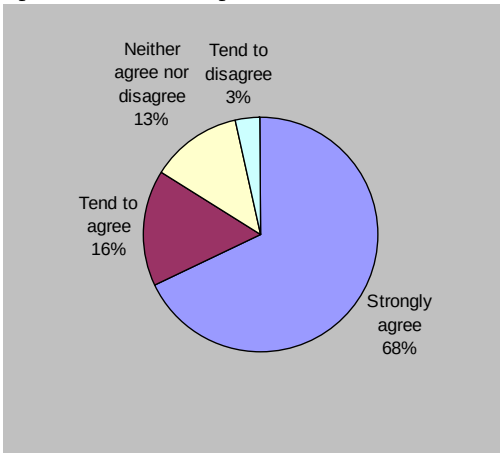
4.3.18 If the journeys undertaken by the businesses were infrequent, then despite the origin and destination, the length of journey undertaken in terms of time and the predicted savings in journey time, the benefits of the latter may well be minimal. However, businesses were asked how frequently they undertook those journeys for which the journey times savings were predicted and estimated.



4.3.19 The majority of businesses (63%) see Figure right) reported that they would be undertaking trips that were predicted to see journey time savings at least once a day, and in some cases, several times a day as a result of the installation of the proposed bypasses. This means that the accumulated journey time savings resulting from the proposed bypasses is, if the sample is indicative of the wider business environment, very significant indeed.

Impacts on Business Performance – journey time reliability

4.3.20 As part of the unpicking of the envisaged broader impacts on business performance resulting from the proposed bypasses, businesses were also asked whether they agreed that the proposed bypasses will impact on journey time reliability.



4.3.21 Two thirds of businesses strongly agreed with this (Figure right), and a further 16% tended to agree. A larger proportion neither agreed nor disagreed, more than for journey time savings, but only 3% tended to disagree.

4.3.22 These results suggest that the benefits of the proposed bypasses in terms of journey time reliability, although clearly identifiable, are not as pronounced as the expected benefits in terms of journey times *per se*.

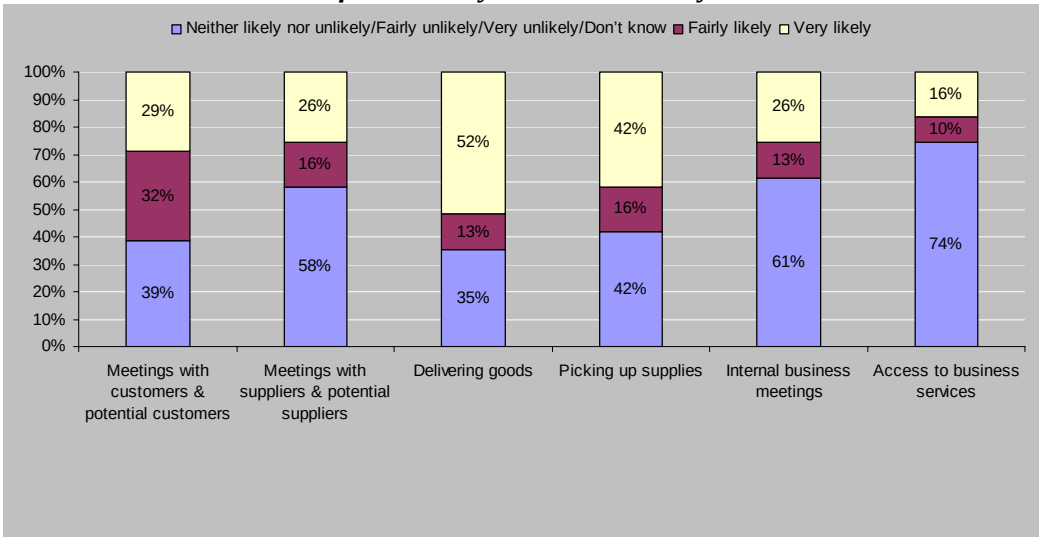
4.4 Perceived Impacts of Proposed Bypasses on Business Expectations

Perceived Impacts by Business Activity

4.4.1 Business were asked how likely the predicted impacts of the proposed bypasses were on the business activities. Figure 4.5 clearly shows which activities the proposed bypasses are expected to have the most impact. These are anticipated to be on delivery of goods to customers and markets and on picking up supplies.

4.4.2 The activity that the proposed bypasses are least likely to impact on is access to business services and, to a lesser extent on meetings – with suppliers and potential suppliers and with other members of the same business.

Figure 4.5: Likelihood of Perceived Impacts of Proposed Bypasses on Business Performance by Business Activity

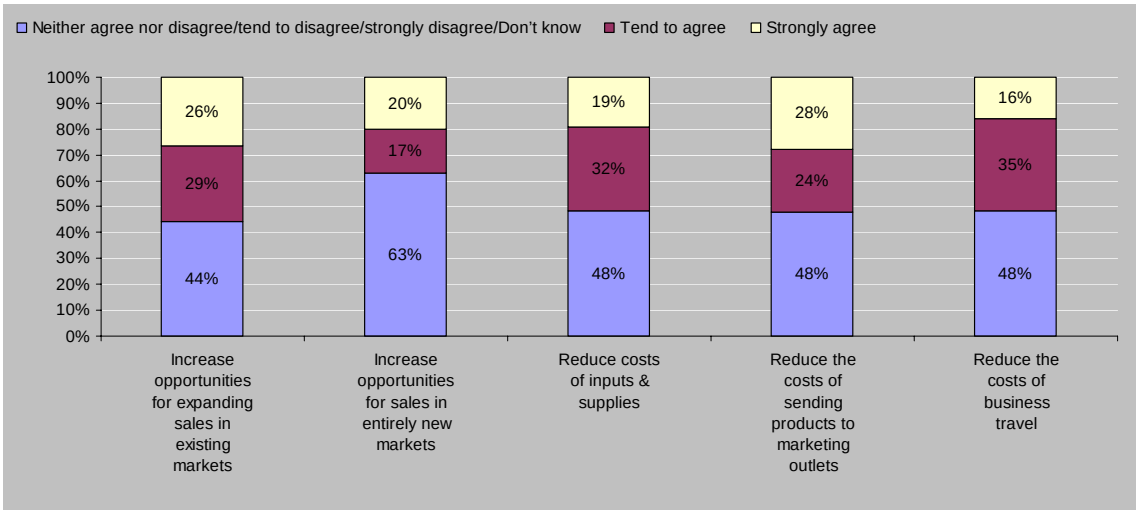


4.4.3 These results are very much as expected, given that the profile of the intensity of the use of the A96 by activity matches these perceived expectations.

Perceived Opportunities by Business & Travel Activity

4.4.4 Figure 4.5 shows whether the businesses interviewed agreed with the perceived opportunities that the proposed bypasses presented in terms of a selection of key business activities. The largest proportion of businesses strongly agreed that the opportunities would arise in reducing the costs of sending the businesses' output to customers and market, and for expanding sales in existing markets, 28% and 26% respectively.

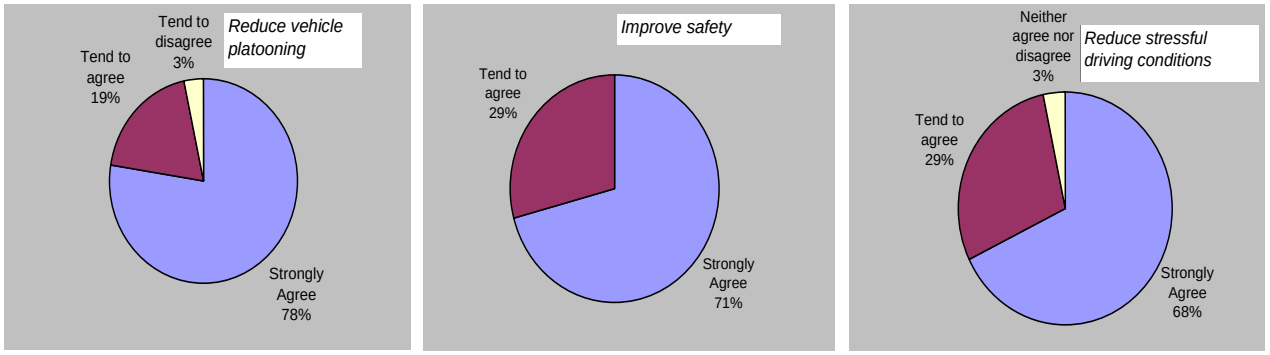
Figure 4.5: Perceived Opportunities of the Proposed Bypasses by Key Business Activity



4.4.5 However, businesses saw opportunities, although with views less strongly held, that the proposed bypasses offered possibilities for reducing the costs of inputs and supplies, and for reducing the costs of business travel.

4.4.6 Businesses also agreed strongly that the bypasses would improve the driving experience in terms of reducing vehicle platooning, improve safety and reducing stressful driving conditions. The strength of feeling on these issues can be seen in Figure 4.6, which clearly shows that very few neither agreed nor disagreed outright with these sentiments.

Figure 4.6: Perceived Opportunities of the Proposed Bypasses on Key Travel Conditions



4.5 Summary of Perceived Impacts on Business Performance and Expectations

4.5.1 Businesses reported that the most important advantage by a wide margin that their location offered was their proximity to customers and markets. Access to these customers and markets was organised by both the businesses' own transport arrangements, and just as importantly, by contracting out these to haulier firms.

4.5.2 The businesses surveyed used the A96 relatively frequently, with two thirds or more of businesses using the A96 on a daily basis between Elgin and Nairn, within and around Elgin, between Elgin and Keith and within and around Keith. The main purpose of their use of the A96, at least on a daily basis is to deliver goods and secondly to pick up supplies for the business. However, the A96 is also used intensively for commuting, where over 75% of staff to commute to and from work for half the businesses interviewed, almost entirely by car.

4.5.3 The high intensity of use of the A96 for delivering goods and picking up supplies means that for the majority the major problem they face is traffic congestion and resulting impeded road speeds and delays encountered. Without significant investment in the region's road infrastructure, these problems are seen to persist and deteriorate over the next five years at least, with some businesses indicating that this will impact on their future plans for expansion.

4.5.4 Increasing congestion will also affect the large proportion of business staff who commute to and from work. Not only will the commute become slower but arrival times at work less reliable, necessitating allocating a larger proportion of the day for commuting purposes, which is unproductive time. In addition, slow, unreliable journey times will mitigate against the desirable modal transfer to public transport as bus services are and will be increasing caught up in congested traffic.

4.5.5 The implementation of the bypasses at Nairn, Elgin and Keith will, according to the businesses interviewed, have a substantial impact on journey time savings. A substantial proportion of the trips where journey time savings were anticipated were relatively of a lengthy duration, half were typically over an hour long, and 85% were over 30 minutes duration. These journeys were also taken frequently, with 63% of businesses reporting they undertake them once a day or more.

4.5.6 The majority of businesses, 75% predicted journey time savings of between six and 30 minutes, and of these nearly half estimated journey time savings of between 16 and 30 minutes. Assuming this is a representative business sample, savings of this order of magnitude resulting from the implementation of the three bypasses is considerable, and would sustain meaningful economic benefits to the businesses concerned, particularly in delivering goods and picking up supplies.

4.5.7 Businesses also reported that they expected journey time reliability gains from the proposed bypasses. This is entirely as expected given the lengthy and frequent journeys the businesses interviewed undertake on the A96, both to deliver goods and to pick up supplies, and often between various locations in Moray and Aberdeen. Journey time benefits resulting from gains in journey time reliability have already been accounted for in the general disclosure of journey time benefits previously noted, so unpicking these would result in double counting of benefits.

4.5.8 In terms of the perceived opportunities that the proposed bypasses offer the businesses, over half of them agreed, with varying strength, that the bypasses would open opportunities in four of the five issues presented to them. Of these they most strongly agreed that proposed bypasses would present opportunities in expanding sales in existing markets (26% of businesses) and reduce the costs of sending goods and products to marketing outlets. The one area where more than half of businesses were ambivalent or disagreed was that the proposed bypasses would increase opportunities for sales in entirely new markets.

5. ASSUMPTIONS OF THE BYPASS OPTIONS TESTED

5.1 Introduction

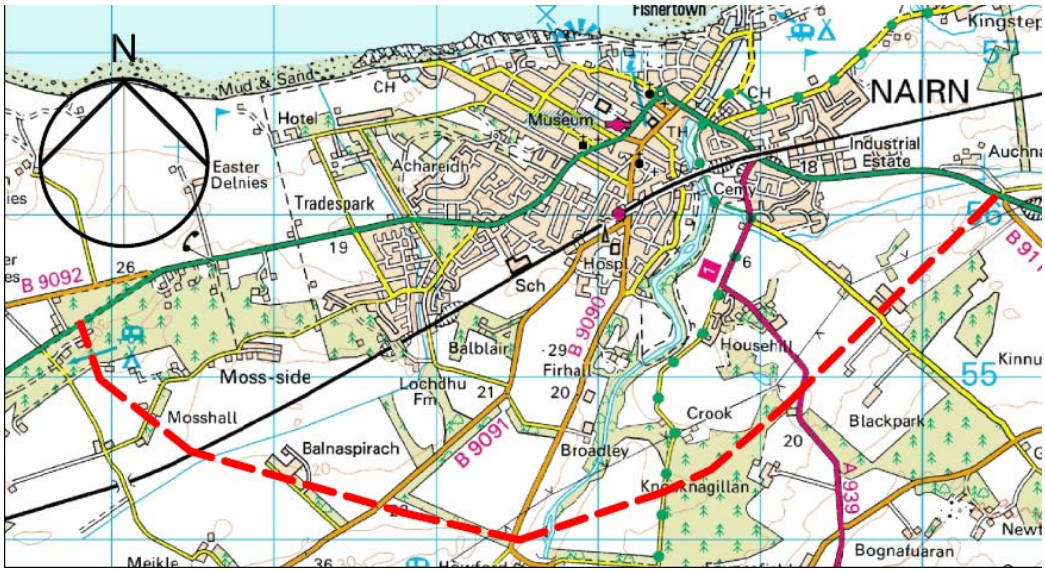
5.1.1 This Chapter sets out the assumptions used for each of the tested bypass route alignment options for Nairn, Elgin and Keith. A description of the alignments is given, with each bypass length noted, the design standards described, assumed speed limits and potential junctions on each of the alignments.

5.2 Alignment Characteristics

Nairn

5.4.1 Figure 5.1 shows the assumed alignment for Nairn.

Figure 5.1: Assumed Bypass Route Alignment for Nairn



5.4.2 Passing in an easterly direction, from the direction of Inverness, the tested alignment of the bypass joins the main A96 road approximately 500m before the B9092 and the A96 converge, and approximately 3.5km west from Nairn town centre. The alignment passes to the south-west of Nairn crossing a minor road close before crossing the Inverness to Aberdeen railway line close to Mosshall.

5.4.3 The alignment proceeds in a south-easterly direction, crossing the B9091 and the B9090, before re-aligning north-east. The proposed bypass alignment then crosses the A939 south of Household, before rejoining the A96 approximately 100m west of the junction with the B9111, approximately 2.8km east from Nairn town centre. Major junctions on the assumed alignment are likely to be located where the route crosses the B9091 and the A939.

5.4.4 The whole of the tested bypass alignment is approximately 7.1km from the junction of the bypass with the A96 to the west of Nairn and the junction with the A96 to the east of Nairn. The proposed bypass is assumed to be designed to Road Category 26 from Table 5/3/2 in the NESA Manual, Chapter 3 (July 2005). The properties of this road category are:

- standard rural 7.3m wide carriageway with a 2m verge;
- speed limit of 60 mph (96kph); and
- vehicle capacity of 1600 vehicles per hour per direction per lane.

Elgin

5.4.5 Figure 5.2 shows the assumed alignment for Elgin.

Figure 5.2: Assumed Bypass Route Alignment for Elgin

5.4.6 Passing in an easterly direction, from the direction of Nairn, the tested alignment of the bypass joints the main A96 trunk road adjacent to the Ardgilzean Forrest, and approximately 4.4km west from Elgin town centre. The assumed alignment proceeds in a south-south-westerly direction before crossing the Inverness to Aberdeen line and the B9010 at Pittendriech. The assumed bypass alignment then veers south-east and east crossing the A941.

5.4.7 The alignment then proceeds in a north-easterly direction, re-crossing the Inverness to Aberdeen railway line and rejoining the A96 approximately 200m west of the A96 junction with the B9103, approximately 4.1km east from Elgin town centre. Major junctions on the proposed alignment are likely to be located where the route crosses the B9010 and the A941.

5.4.8 The whole of the proposed bypass alignment is approximately 11.5km from the junction of the bypass with the A96 to the west of Elgin and the junction with the A96 to the east of Elgin. The bypass is assumed to be designed to Road Category 26 from Table 5/3/2 in the NESA Manual, Chapter 3 (July 2005). The properties of this road category are:

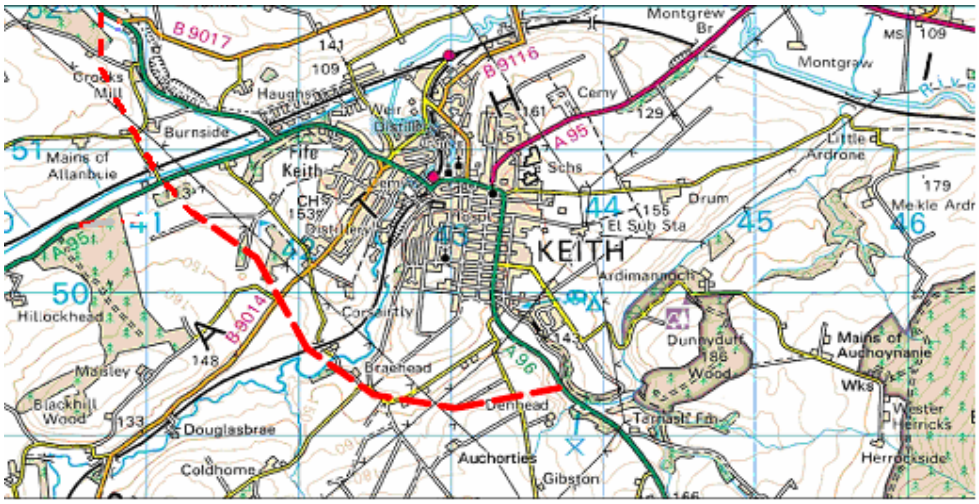
- standard rural 7.3m wide carriageway with a 2m verge;
- speed limit of 60 mph (96kph); and
- vehicle capacity of 1600 vehicles per hour per direction per lane.

Keith

5.4.9 Figure 5.3 overleaf shows the assumed alignment for Keith.

5.4.10 Passing in an easterly direction, from the direction of Elgin, the proposed alignment of the bypass joins the A96 trunk approximately 2.6km west of Keith town centre and passes to the south-west of Keith crossing the A95, the B9014, the Inverness to Aberdeen railway line and a number of minor roads before joining the A96 south of Keith, approximately 2.1km from Keith town centre. Major junctions on the proposed alignment are likely to be located where the route crosses the A95 and the B9014.

Figure 5.3: Assumed Bypass Route Alignment for Keith



5.4.11 The whole of the tested bypass alignment is approximately 3.4km from the junction of the bypass with the A96 to the west of Keith and the junction with the A96 to the south of Keith. The bypass is assumed to be designed to Road Category 26 from Table 5/3/2 in the NESA Manual, Chapter 3 (July 2005). The properties of this road category are:

- standard rural 7.3m wide carriageway with a 2m verge;
- speed limit of 60 mph (96kph); and
- vehicle capacity of 1600 vehicles per hour per direction per lane.

5.3 Combined Scenario

5.3.1 In addition to testing each bypass separately, a combined scenario may also be inferred from the results by adding up the benefits of each individual bypass to give a total impact across the region. This involves implementing all 3 bypasses together, based on the same assumptions as above.

6. ANALYSIS OF TRANSPORT BENEFITS

6.1 Introduction

6.1.1 The transport benefits that result from the new bypasses around Nairn, Elgin and Keith relate to the removal of heavy traffic loads on the existing alignment of the A96 in each of these towns, particularly at peak times of travel. We have used diversion curve techniques to determine the predicted transfer of traffic from the existing A96 to the proposed bypasses. From these results, the benefits to both businesses and the wider community can be estimated.

6.1.2 These resulting benefits extend over a number of areas. For businesses these include journey time savings and improved journey time reliability for a number of business activities, not least in delivering goods and products to customers and markets, in obtaining supplies for the business, and for commuting to work. The bypasses may also propagate improvements in vehicle operating costs and improvements to the network performance, in terms of a reduction in penalties with stop-start traffic flows currently experienced on the A96 in each of the towns.

6.1.3 Potential benefits of the wider community of the proposed bypasses would be expected to relate to the reduced severance of pedestrian access across each settlement, in particular for those pedestrians attempting to reach key facilities such as schools, hospitals, shopping centres and public transport terminals, and who often need to cross the heavily used trunk road. The wider social inclusion impacts are addressed in Chapter 8.

6.1.4 This Chapter examines the key benefits expected of the bypasses in turn.

6.2 Diverted Traffic

6.2.1 Diversion curve techniques were used in order to estimate the traffic impacts of the three bypasses on the flow of traffic flows through Nairn, Elgin and Keith respectively. Diversion curve techniques predict the displacement of traffic from the A96 through each of the three towns onto their respective bypasses based on the ratio of road journey times, alignment distance and average speeds, between the new bypass alignment distance and the existing A96.

6.2.2 The analytical method applied by the diversion curve technique gives the proportion of passengers on route 2 (the new bypass in each case) from the following equation:

$P_2 = f(x)$,

Where; $x = \dfrac{C_1 - C_2}{\sqrt{I(C_1 - C_2)}}$

And; C_1 is the mean disutility on route 1;

C_2 is the mean disutility on route 2;

I equals $V^2 / 3$;

V is the Burrell variation statistical term; and

f(x) is the normal integral.

6.2.3 The literature advises that for practical purposes f(x) (i.e. P_2) may be approximated if $x < 0$ by:

$$P_2 = \frac{0.5}{(1 + 0.196854x + 0.115194x^2 + 0.00344x^3 + 0.019527x^4)^4}$$

6.2.4 The number of potential vehicles that can transfer from the existing A96 trunk road to the new bypasses were identified from the annual average daily flows (AADT) for each of the towns. These are shown in Table 6.1.

Table 6.1: Traffic Flows (AADT) for Nairn, Elgin and Keith (2007)

	Westbound	Eastbound	Two way
Nairn Centre	6,854	6,673	13,527
Elgin Centre	10,656	9,621	20,277
Keith Centre	4,087	3,933	8,020

6.2.5 Having identified the potential traffic that can transfer onto the new bypasses, we applied the diversion curve algorithms described above. These are based on the parameters outlined in the Table 6.2 below. The distances are measured distances, the routes through the three towns were derived from the AA Route Planner, and the proposed bypasses were measured using the OS measuring tools.

Table 6.2: Major Parameters for Calculating Traffic Transfer

Parameter	Nairn	Elgin	Keith
Distance current alignment of A96	3.4km	5.0km	2.1km
Average speed – current alignment of A96	31kph	24kph	37kph
Distance of proposed bypass	7.1km	11.5km	3.4km
Average speed – proposed bypass	96kph	96kph	96kph

6.2.6 The average speeds on the current A96 alignment through Nairn was derived from approximate average speeds driven through the town while the speeds for the other towns of Elgin and Keith were sourced from previous speed surveys. The average speeds for the bypasses were assumed free-flow speeds for the road category type. After the bypasses are introduced, it was also assumed that traffic speeds on the existing sections on the A96 would return to their speed limits of 48kph due to the relief of traffic and associated congestion through each of the towns.

6.2.7 The results of applying the diversion curve algorithms to each of the bypasses are given in Table 6.3.

Table 6.3: Estimated Traffic Transfer to the Bypasses by Town (AADT)

Location	Proportion of Traffic Transferred to Bypass (AADT)	Estimated Traffic Transferred to Bypass (AADT)
Nairn	80%	circa 10,700
Elgin	60%	circa 12,200
Keith	65%	circa 5,200

6.2.8 The estimated traffic transferred to the respective bypass is two-way traffic flow.

6.3 Time Savings

6.3.1 Time savings resulting from the bypasses transferring traffic away from the current A96 alignments is a function of the following:

- the amount of displaced traffic to the bypasses;
- the relative distances involved between the current alignments and new bypass alignments;
- the difference in the average speeds between the current average speed on the A96 through the towns and the assumed free-flow speed of the bypasses; and
- the return to controlled free-flow conditions for remaining traffic in the three towns using the A96.

6.3.2 Based on the above, the annual time savings (assuming 300 working days per year) have therefore been estimated as:

- Nairn: circa 47,300 hours per year;
- Elgin: circa 163,200 hours per year;
- Keith: circa 35,100 hours per year; and
- Combined: circa 245,600 hours per year.

6.4 Link Performance

6.4.1 The efficiency of the bypasses for Nairn, Elgin and Keith can be measured using the link Performance Index (PI), which provides a value of the benefits on the existing A96 of reduced delays and start/stop penalties that bypasses present, in monetary terms. The term used for this calculation is:

$$PI = (w_t.T) + (w_s.S/100)$$

Where:

T is travel time; and

S is number of vehicle stop/starts.

6.4.2 Time savings are calculated as the difference in time (based on average speed) between for vehicles travelling on the current alignment of the A96 compared with the time the proportion of vehicles diverted to the bypass spend on the bypass plus the time spent by the balance of vehicles left using the A96.

6.4.3 Additional savings on network performance result from the removal of the constant stop-start regime that prevails on the current A96 alignments in the three towns. The derivation of the stop-start factor is from the following function:

$$S = 0.10514 + 0.41979V – 0.07786V^2 + 0.00731V^3 – 0.00033V^4 + 0.00001V^5$$

6.4.4 The link PI is calculated as a function of the relative time taken to traverse the current A96 alignments through each town and the relevant time taken to traverse. From the Government's Transport Analysis Guidance (webTAG unit 3.5.6, February 2006) the value per hour, adjusted to 2002 prices, is £11.28, and the value of stops (VoS) is given as £0.90 per hundred stops (from *TRANSYT)*. This gives the annualised total (first year) monetised benefits in 2002 prices as follows:

- Nairn: £5.2m per annum;
- Elgin: £14.6m per annum;
- Keith: £1.7m per annum; and
- Combined: £21.5m per annum.

6.5 Severance Impacts

6.5.1 One of the major disadvantages of the A96 has been to isolate the two halves of each town from eachother owing to the fact that the alignment of the route passes through the centre of each town. This causes severance impacts for vehicles attempting to cross the route perpendicular to it, but, as the road is a trunk route, this impact is particularly severe for pedestrians attempting to cross.

6.5.2 The degree of severance faced by pedestrians can be measured for each town separately, using the standard PV^2 calculation. The number of pedestrians crossing the A96 in each of the towns was observed during the inter peak period. This, and the respective PV^2 values, both without the bypass in place and with the bypasses are shown in Table 6.4.

Table 6.4: Observed Hourly Pedestrian Flows and PV^2 Values – With & Without Bypasses

Town	Location	Observed Hourly Pedestrian Flows	PV^2 Value – without Bypass	PV^2 Value – with Bypass
Nairn	Site 1: West-central Elgin – Fire Station/Somerfield Store	**48**	**3.1**	**0.1**
	Site 2: Central - Somerfield Store	**36**	**2.3**	**0.1**
	Site 3: East –central Nairn Community Centre	**108**	**6.9**	**0.3**
Elgin	Site 1: West - entrance to Gray's hospital – pedestrian crossing no.1	**49**	**5.9**	**0.2**
	Site 2: Central -pedestrian crossing no.2	**120**	**14.3**	**0.4**
	Site 3: East - entrance to shopping centre/bus station – pedestrian crossing no.3	**274**	**32.8**	**1.0**
Keith	Site 1: West – pedestrian crossing no.1 – west Keith bus stop	**33**	**0.7**	**0.1**
	Site 2: Central – pedestrian crossing no.2	**36**	**0.7**	**0.1**
	Site 3: East – pedestrian crossing no.3 – Keith Primary School & town centre	**252**	**5.1**	**0.2**

6.5.3 It is generally accepted that severance is not a problem for pedestrians where the PV^2 value is 1 or below. Clearly every site with the exception of the entrance to the shopping centre/bus station (pedestrian crossing no. 3) in Elgin saw a value well below 1 with the introduction of the bypasses. Even the pedestrian crossing no. 3 in Elgin returned a value just on 1, indicating that severance is at an acceptable level.

7. IMPACTS OF NEW LAND USE DEVELOPMENT

7.1 Introduction

7.1.1 There has been, and continues to be, significant major investment within the Inverness to Aberdeen Transport Corridor. Recent and planned investment in and around Nairn, Elgin and Keith to a certain extent has, and will continue to dramatically change the transport characteristics of the whole corridor between Keith and Inverness, placing greater pressure on the existing road network, especially in these towns, but also on the whole transport network and commensurate services.

7.1.2 This Chapter attempts to quantify the traffic impacts that these new developments will have on the A96, and examine the effect the proposed bypasses will have on mitigating these traffic impacts on each town respectively.

7.2 Impacts of New Developments: Nairn

7.2.1 As shown in Chapter 2, there are significant proposed residential developments planned to the west of the city based on a forecast doubling of the residential population. There is also some projected commercial development in the east of the city.

7.2.2 Table 7.1 shows predicted additional AM and PM peak period vehicle movements generated (based on the TRICS software, 2008 Version A) by the proposed developments by major land-use. As can be seen from the Table, the large-scale planned housing development is estimated to generate a significant amount of new vehicular trips.

Table 7.1: Predicted Vehicle Movements Resulting from Planned Developments – Nairn: AM Peak Hour (0800-0900) and PM Peak Hour (1630-1730)

Land-Use	Period	Predicted Additional Vehicle Loadings on Local Road Network	
		2010	2025
Residential	Total AM & PM Peaks (2 hr)	652	3096
Commercial	Total AM & PM Peaks (2 hr)	266	1262
Industrial	Total AM & PM Peaks (2 hr)	19	88
Retail/retail centres	Total AM & PM Peaks (2 hr)	339	1612
Leisure	Total AM & PM Peaks (2 hr)	5	23
Education	Total AM & PM Peaks (2 hr)	15	72

7.2.3 It is estimated that by 2012, the earliest likely opening of the by-pass (although it could be as late as 2014/15), a total additional 1,295 vehicle trips, both directions combined, will be generated during the one hour AM peak and the one hour PM peak by new developments in Nairn. New residential areas will contribute the biggest share (50%) in additional vehicle trips generated. However, by 2025 the increase in vehicles will be circa 6,150 for the AM and PM peak hours, both directions.

7.2.4 In the absence of the proposed bypass, not all additional traffic generated will use the A96. Some of this extra traffic will use alternative routes to reach the appropriate destination. From the review of new development locations in Chapter 2, the proximity of the new housing developments located along the southern periphery of Nairn suggests relatively few trips generated by additional housing

would use the A96 through the centre of the town. However, the location of the proposed commercial development on the east side of Nairn, close to the existing alignment, means that most of the additional traffic would be expected to use the A96 trunk road.

7.2.5 The proportion of additional trips generated by types of different land-use development assumed to use the A96 with no bypass in place, and traffic generated by 2010 is shown in Table 7.2.

Table 7.2: Predicted Proportion of Additional Vehicle Movements Loaded onto the A96 in Nairn Resulting from Assumed Developments by 2010, no Bypass

Planned Land-Use Type	Proportion Assumed to use A96	Additional Traffic, 2010 AM & PM Peak hrs
Residential	35%	228
Commercial	90%	239
Industrial	90%	17
Retail/Retail Centres	50%	170
Leisure Facilities	50%	2
Education	40%	6
Total		**662**

7.2.6 The diversion curve analysis given in Chapter 6 suggests that circa 80% of the additional traffic generated in Nairn that would normally use the A96 would use the new bypass. Although the analysis is not sophisticated enough to break this element down by planned land-use type, if this factor is applied to the total number of additional vehicles expected to use the A96 which are transferred onto the bypass, the total by 2010 is predicted to be 470 both the AM and PM peak hours, but this rises significantly to 2,233 both directions by 2025, the assumed design year of the bypass.

7.2.7 If it is assumed that the pattern of the AM and PM peak flows are both similar this gives an hourly peak flow on the proposed bypass of about 235 vehicles both directions, peak hour by 2010, and 1,116 vehicles by 2025.

7.2.8 Given the AADT flows and diversion curve analysis in Chapter 6, in the absence of new developments approximately 763 vehicles are estimated to transfer from the A96 to the bypass during the peak hour (assuming the AM and PM peak hours have similar flows). With the loading of the additional traffic generated by the new developments, total loading during the peak hour will rise to 998 both directions by 2010, and 1,880 during the peak hour by 2025, both directions.

7.2.9 The capacity of the bypass as a standard rural 7.3m wide carriageway, is 1,600 vehicles per hour per lane in one direction or 3,200 both directions. Therefore the bypass would be utilised at 31%, of its capacity during the opening year, 2010, and 59%, of its capacity by 2025 during the AM and PM peak hours, when use would be most intensive.

7.2.10 The new developments are also anticipated to generate additional pedestrian, bus passenger and cyclist trips. These are summarised in Table 7.3 overleaf.

Table 7.3: Predicted Pedestrian, Bus and Cyclist Trips in Nairn Resulting from Assumed New Developments

Planned Land-Use Type	Predicted Additional Pedestrian Trips Generated (Pk hour)		Predicted Additional Bus Trips Generated (Pk hour)		Predicted Additional CyclistTrips Generated (Pk hour)	
	2010	2025	2010	2025	2010	2025
Residential	92	437	18	85	13	63
Commercial	11	53	11	53	4	21
Industrial	2	8	0	2	0	2
Retail/retail centres	126	597	3	15	3	14
Leisure	2	9	1	4	0	0
Education	7	32	14	64	1	5
Total	**239**	**1136**	**47**	**223**	**22**	**105**

7.2.11 The Table indicates that the number of predicted trips are only substantial by 2025, particularly resulting from residential and retail development. Total additional peak hour pedestrian trips are forecast to grow to 1136, which in the absence of a bypass would only serve to increase the degree of pedestrian severance currently experienced.

7.3 Impacts of New Developments: Elgin

7.3.1 There will be significant new residential development proposed in Elgin which is planned alongside the southern bypass route. There is some new industrial and retail development planned for the east of the town. Moreover, there are a number of new community facilities planned, most of which will be located on the southern periphery of Elgin, abutting the proposed new residential development areas.

7.3.2 Table 7.4 shows predicted additional AM and PM peak vehicle movements generated (based on the TRICS software, 2008 Version A) by the proposed developments over the next few years by major land-use. As can be seen from the Table, the large-scale retail and retail centre development is estimated to generate a significant amount of new vehicular trips by 2010, but new housing development will contribute a much larger share by 2025 than in 2010.

Table 7.4: Predicted Vehicle Movements Resulting from Predicted Developments - Elgin AM Peak Hour (0800-0900) and PM Peak Hour (1630-1730)

Land-Use	Period	Predicted Additional Vehicle Loadings on Local Road Network	
		2010	2025
Residential	Total AM & PM Peaks (2 hr)	773	1689
Commercial	Total AM & PM Peaks (2 hr)	0	462
Industrial	Total AM & PM Peaks (2 hr)	4	4
Retail/retail centres	Total AM & PM Peaks (2 hr)	1245	1586
Medical-care	Total AM & PM Peaks (2 hr)	384	23

7.3.3 It is estimated that by 2012, the earliest likely opening of the by-pass (although it could be as late as 2014/15), a total additional 926 vehicle trips, both directions combined, will be generated during the one hour AM peak and the one hour PM peak by new developments in Elgin. New retail development areas will contribute the biggest share, 72%, in additional vehicle trips generated, but by 2025 this share will drop to 46% as new housing is built.

7.3.4 From the review of new development locations in Chapter 2, it is assumed, shown in Table 7.5, that the following proportion of additional trips are likely to use the A96 for trips within Elgin itself without the bypass in place, by type of land-use development.

Table 7.5: Predicted Proportion of Additional Vehicle Movements Loaded onto the A96 in Elgin Resulting from Assumed New Developments

Planned Land-Use Type	Proportion Assumed to use A96	Additional Traffic, 2010 AM & PM Peak hrs
Residential	60%	464
Commercial	90%	0
Industrial	90%	4
Retail/retail centres	90%	1121
Medical-care	50%	192
Total		**1780**

7.3.5 The diversion curve analysis given in Chapter 6 suggests that circa 60% of the additional traffic generated in Elgin using the A96 would use the new bypass. Although the analysis is not sophisticated enough to break this element down by planned land-use type, if this factor is applied to the total number of additional vehicles expected to use the A96 which are transferred onto the bypass, the total by 2010 is predicted to be 926 for both the AM and PM peak hours, both directions, rising to 1,587 both directions by 2025, the assumed design year of the bypass.

7.3.6 Given the AADT flows and diversion curve analysis in Chapter 6, in the absence of new developments approximately 753 vehicles are estimated to transfer from the A96 to the bypass during the peak hour (assuming the AM and PM peak hours have similar flows). With the loading of the additional traffic generated by the new developments, total loading during the peak hour will rise to 1,216 both directions by 2010, and 2,340 during the peak hour by 2025, both directions.

7.3.7 The capacity of the bypass as a standard rural 7.3m wide carriageway, is 1,600 vehicles per hour per lane in one direction or 3,200 both directions. Therefore the bypass would be utilised at 38% of its capacity during the opening year, 2010, and 73%, of its capacity by 2025 during the AM and PM peak hours, when use would be most intensive.

7.3.8 The new developments are also anticipated to generate additional pedestrian, bus passenger and cyclist trips. These are summarised in Table 7.6.

Table 7.6: Predicted Pedestrian, Bus and Cyclist Trips in Elgin Resulting from Assumed New Developments

Planned Land-Use Type	Predicted Additional Pedestrian Trips Generated (Pk hour)		Predicted Additional Bus Trips Generated (Pk hour)		Predicted Additional CyclistTrips Generated (Pk hour)	
	2010	2025	2010	2025	2010	2025
Residential	155	285	99	182	0	7
Commercial	0	20	12	24	1	8
Industrial	0	0	0	0	0	0
Retail/retail centres	213	331	7	7	17	17
Medical-care	80	80	20	20	3	3
Total	**448**	**715**	**138**	**232**	**20**	**33**

7.3.9 It is clear that from the Table that there is a significant increase in new pedestrian trips generated during the peak hour as a result of the new bypasses. In the absence of the bypass there is no doubt that the real problems currently experienced with pedestrian severance from key facilities in Elgin will escalate to an even more serious level. However, with the bypass in place, and given the lower PV^2 values, this increase should be absorbed and remain below the critical value of 2 for all crossing sites bar one, the level at which severance is considered to occur at an unacceptable level.

7.3.10 The number of potential additional bus trips is also substantial. Buses at present face congestion which make them unattractive and probably discourage their use by potential new bus passengers and encourage modal shift onto private transport, irrespective of existing bus load factors. However, with the bypass in place, congestion conditions on the present A96 alignment would be expected to ease, permitting faster bus trips. This should ensure that the additional potential bus passengers remain using public transport.

7.4 Impacts of New Developments: Keith

7.4.1 It is clear, in communication with Moray Council, that although new development sites have been earmarked for industry, it is much more likely that there will be some new residential and commercial development in Keith over the next few years. Housing is predicted to grow by a maximum of some 15 to 20 houses per annum, and Tesco, the major supermarket in the town, is expected to move location and in doing so, require an additional 20,000 sq feet.

7.4.2 Table 7.7 shows the predicted additional AM and PM peak vehicle movements generated (based on the TRICS software, 2008 Version A) by these proposed developments. The new retail development is expected to contribute most of the additional vehicle trips, some 80% of those generated.

Table 7.7: Predicted Vehicle Movements Resulting from Predicted Developments - Keith AM Peak Hour (0800-0900) & PM Peak Hour (1630-1730)

Land-Use	Period	Predicted Additional Vehicle Loadings on Local Road Network	
		2010	2025
Residential	Total AM & PM Peaks (2 hr)	19	87
Retail/retail centres	Total AM & PM Peaks (2 hr)	75	339

7.4.3 New housing development is scattered in Keith, and is unlikely to use the A96 for trips in Keith itself to any very significant extent. However, access to the retail development is likely to remain heavily dependent on the A96, and this is reflected in Table 7.8, which shows the assumed proportions of additional trips likely to use the A96 for trips within Keith itself without the bypass in place.

Table 7.8: Predicted Proportion of Additional Vehicle Movements Loaded onto the A96 in Elgin Resulting from Assumed New Developments

Planned Land-Use Type	Proportion Assumed to use A96	Additional Traffic, 2010 AM & PM Peak hrs
Residential	50%	10
Retail/retail centres	90%	68
Total		**78**

7.4.4 The diversion curve analysis given in Chapter 6 suggests that 65% of the additional traffic generated in Keith currently using the A96 would use the new bypass. Although the analysis is not sophisticated enough to break this element down by planned land-use type, if this factor is applied to the total number of additional vehicles expected to use the A96 which are transferred onto the bypass by new development, the total by 2010 is predicted to be 49 for both the AM and PM peak hours, both directions, rising to 220 both directions by 2025, the assumed design year of the bypass.

7.4.5 Given the AADT flows and diversion curve analysis in Chapter 6, in the absence of new developments approximately 379 vehicles are estimated to transfer from the A96 to the bypass during the peak hour (assuming the AM and PM peak hours have similar flows). With the loading of the additional traffic generated by the new developments, total loading during the peak hour will rise to 403 both directions by 2010, and 489 during the peak hour by 2025, both directions.

7.4.6 The capacity of the bypass as a standard rural 7.3m wide carriageway, is 1,600 vehicles per hour per lane one direction or 3,200 both directions. Therefore the bypass would be utilised at 13% of its capacity during the opening year, 2010, rising to 15%, of its capacity by 2025 during the AM and PM peak hours, when use would be most intensive.

7.4.7 The new developments are also anticipated to generate additional pedestrian, bus passenger and cyclist trips. These are summarised in Table 7.9.

Table 7.9: Predicted Pedestrian, Bus & Cyclist Trips in Keith Resulting from Assumed New Developments

Planned Land-Use Type	Predicted Additional Pedestrian Trips Generated (Pk hour)		Predicted Additional Bus Trips Generated (Pk hour)		Predicted Additional CyclistTrips Generated (Pk hour)	
	2010	2025	2010	2025	2010	2025
Residential	1	4	3	12	1	3
Retail	15	66	3	12	1	4
Total	**16**	**70**	**5**	**24**	**2**	**7**

7.4.8 Compared with Nairn and Elgin, these values are relatively modest. However, in the absence of the bypass, even additional pedestrian flows of this magnitude serve to exacerbate prevailing conditions of severance and problems of access to schools and retail facilities in particular.

7.5 New Gross Floor Area resulting from Potential new Development

7.5.1 The bypasses in each of the three towns releases land for development, over and above that identified in the local and structure plans, between the respective town and the alignment of the road. These areas were calculated for use in the analysis however we have not included the area at the western end of the bypass at the River Lossie which is part of the Flood Plain. After discussion with developers the following potential amount of land available for development and type of development was identified:

Table 7.10: Predicted Availability of Land and Number of Units/ New Gross Floor Area Associated with new Potential Development Released

Town	Residential Development			Commercial Development		
Nairn	80%	141.0 ha	2,820 units	20%	35.3 ha	105,900m^2
Elgin	50%	137.0 ha	2,740 units	50%	137.0 ha	411,000m^2
Keith	70%	36.9 ha	739 units	30%	15.8 ha	47,500m^2

7.5.2 The number of residential units was based on medium density rates of 20 units per hectare, characterised by detached or semi-detached housing with small garden plots. The area for commercial development is based on a rate of 30% of total land available for this type of land use development.

7.5.3 The new potential development area offered by the bypass releases resources in terms of developer contributions. In a relatively tight housing market, it is likely that the developer will pass these costs onto the price of the development, in effect transferring this tax on 'producer surplus' as a cost onto the consumer (purchaser). From discussions with developers, it is understood that these would be in the order of £3,500 per residential unit and £30 per square metre of commercial development. This gives the following value of developer contributions as:

- Nairn:
  - Residential: £9.87 million
  - Commercial: £3.18 million
- Elgin:
  - Residential: £9.59 million
  - Commercial: £12.33 million
- Keith:
  - Residential: £2.58 million
  - Commercial: £1.42 million

7.5.4 The total value of developer contributions amount to £38.97 million for the three towns of Nairn, Elgin and Keith. The impact of this area of potential development on employment and local GVA is shown in Chapter 9.

8. SOCIAL INCLUSION

8.1 Introduction

8.1.1 As part of the assessment of the socio-economic impacts of the different bypass options for Nairn, Elgin and Keith, this Chapter reviews the social inclusion impacts that are expected to result from the removal of traffic from the town centres.

8.1.2 Government transport appraisal guidelines describe the accessibility and social inclusion impacts in terms of public transport network coverage and local accessibility. For both elements, both community and comparative impacts need to be considered to demonstrate absolute changes and the distribution of impacts. This section describes the impacts on public transport coverage and local accessibility.

8.2 Comparative accessibility & deprivation

8.2.1 Comparative accessibility, the distribution of accessibility impacts, has become more central in the appraisal of transport projects in recent years. It is recognised that investment, such as new road building, can discriminate (unintentionally) against particular groups in society. This is in spite of the stated aims of Government transport policy that investment decisions should seek to support wider policy aims, including social inclusion, regeneration and rural development.

8.2.2 The social inclusion appraisal of the bypass options considers the distribution of impacts on sectors of the community by income group, car ownership and age, and understanding who gains and loses from the proposed bypasses is a key objective of transport appraisal.

8.2.3 The current official measure of deprivation in Scotland is the Scottish Index of Multiple Deprivation (SIMD). This is a relative-based measure, which identifies the most deprived areas across Scotland using data from a variety of sources.

8.2.4 Data from the 2004 and 2006 SIMD shows that the concentration of deprivation in the Moray Council and East Highland areas are much lower than for other parts of Scotland. None of the 17 data zones in the Nairn area, 28 data zones in the Elgin area nor the five data zones in Keith fall within the 15% of the most deprived areas of Scotland. Nevertheless this does not mean that deprivation does not exist, but merely that it is not particularly concentrated in particular areas.

8.3 Accessibility to Key Services

Key Facilities and Accessibility in Nairn

8.3.1 The education facilities in Nairn are relatively close both to the centre of Nairn and to the A96. Nairn Academy is situated to the west of Nairn town centre and close to the A96. Both primary schools, Rosebank Primary School which lies in the centre of Nairn and Millbank primary school are either situated on or close to the A96.

8.3.2 The principal GP facility in Nairn is the Lodgehill Clinic in the centre of the town, 200 meters to the south of the A96. The main post office on Harbour Street is barely 100 metre north of the A96, off Bridge Street. Nairn Bus station is located on the A96, within 400 metres from the post office, clinic, shopping and the majority of schools.

Key Facilities and Accessibility in Elgin

8.3.3 The area has three “employment assistance” offices, all located in the centre of town. Elgin has one hospital (Dr Grays Hospital) located some 750 metres to the west of Elgin town centre, where the A96 and Pluscarden Roads bifurcate. Elgin Health Centre is just to the north of the town centre, less than 100 metres from the

High Street (A96) and a GP surgery is situated just to the south of the A96 in Victoria Crescent in the east of Elgin.

8.3.4 The post offices in Elgin are scattered, with Elgin post office sited in the centre of the town, some 200 metres south of the A96. There are another two post offices, one located some distance in the north of Elgin and one in the south of Elgin, both more than a kilometre from the town centre.

8.3.5 Elgin has a number of primary schools; but only East End Primary School and St Sylvester's RC Primary School are located either on or in close proximity to the A96. In addition, Moray College is located in the centre of Elgin, only 250 metres from the A96, and the Ark Childcare based at Gray's Hospital.

Key facilities and Accessibility in Keith

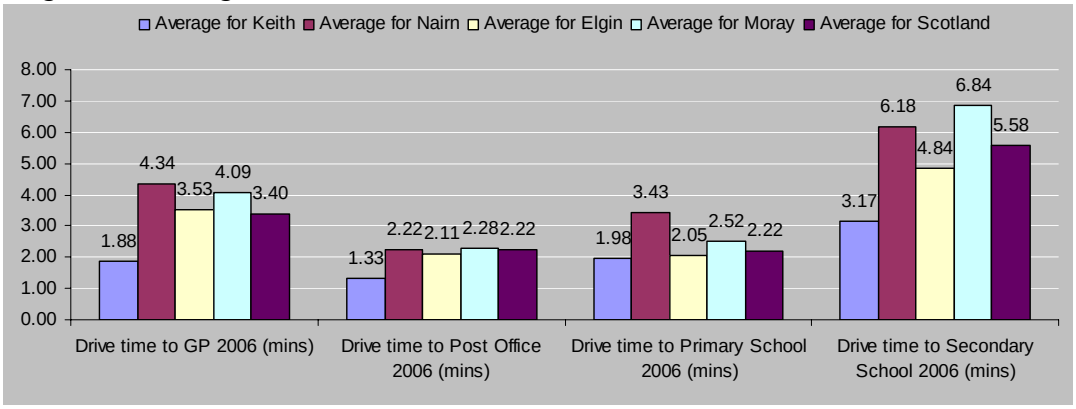
8.3.6 The two post offices in the centre of Keith in Mid Street are well served by buses, but the post office out in Newmill, approximately 2½ kilometres to the north of Keith centre less so. The Heath Centre, located in Turner Street is also in the centre of town, barely 200 metres south of the A96.

8.3.7 There are two primary schools in Keith, Keith Primary School just north of the A96, and the St Thomas RC Primary school in Chapel Street in the centre of the town and in addition to Keith Grammar School just north of the A96 and the shopping facilities in the centre of the town.

Average Drive Times

8.3.8 Figure 8.1 presents data extracted from the SIMD (2006), which shows the average drive time to a number of key services.

Figure 8.1: Average Drive Travel Time, SIMD



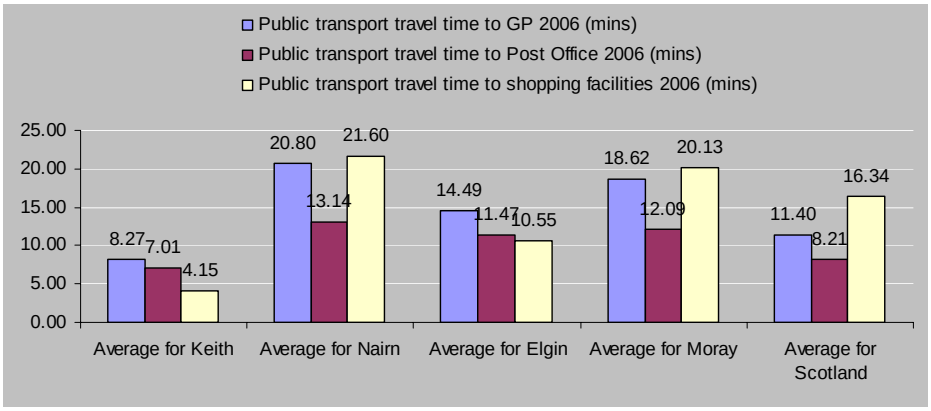
8.3.9 As might be expected, travel times within Moray are slightly longer than the Scottish Average.

8.3.10 However the travel times for Nairn are significantly worse than for Scotland, Moray, and also for the settlements of Elgin and Keith. Nairn scores particularly poorly, comparatively for the average drive times to the GP and the average drive time to the Primary schools. In the case of the latter, average drive times are nearly 55% longer.

8.3.11 Elgin and Keith compare relatively favourably with Scotland and Moray as a whole. By reducing the traffic flows in the centres of Nairn, Elgin and Keith, permitting increased average speeds to (controlled) free flow velocities, the bypasses should significantly reduce drive times to the key facilities identified in Table 8.1.

8.3.12 Figure 8.2 shows the average public transport (PT) time to a number of key services for Nairn, Elgin and Keith, and for Moray and Scotland as a whole.

Figure 8.2: Average Public Transport Travel Time, SIMD



8.3.13 For those without access to a car, and who rely on public transport, average PT times for Nairn to three key facilities, (GP, post office and shopping facilities) are again poor compared with Moray, Scotland and with Elgin and Keith. Access to a GP and to a post office in Elgin by public transport is worse than for Scotland as a whole, but better than in the rest of Moray, as might be expected given the urban concentration of facilities. It is only in Keith that PT travel times to these key facilities are better than for Scotland and Moray, and significantly so for the latter. Access by PT to other facilities would also be expected to be poor.

8.3.14 Access to a GP and to a post office in Elgin by public transport is worse than for Scotland as a whole, but better than in the rest of Moray, as might be expected given the urban concentration of facilities. It is only in Keith that PT travel times to these key facilities are better than for Scotland and Moray.

8.3.15 Reduced traffic flows resulting from the bypasses would allow higher PT speeds through the urban areas of Nairn, Elgin and Keith. The greatest improvement on accessibility by PT to facilities in the respective town centre would be seen in Nairn, and in particular to shopping facilities in the centre.

8.3.16 PT speeds in Elgin would improve markedly as a result of the bypass around the town, but the improvements would be more marginal than would likely to occur in Nairn, primarily because current PT speeds are higher and are comparable to the rest of Scotland.

8.3.17 However, average PT speeds in Keith are already reasonably good with respect to access to key facilities.

8.3.18 Chapter 6 has estimated the likely impacts of the bypasses in terms of reducing severance on pedestrian access to the major facilities in the centres of Nairn, Elgin and Keith. There is no doubt that the bypasses, by removing substantial volumes of traffic – estimated at up to 80% for Nairn, 60% for Elgin and 65% for Keith will ease the problems of people accessing the facilities in the three towns, for example, the schools and the retail areas and town centre in Nairn, the bus station, hospital and retail areas in Elgin, and in Keith access to the primary and secondary schools and the town centre.

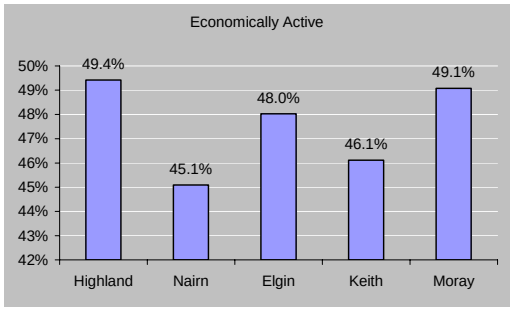
8.3.19 In this case the bypasses directly impact on children (and accompanying adults) accessing the schools meeting the primary Government transport objective of safety. But the bypasses also impact on a wider spread of people, such as those

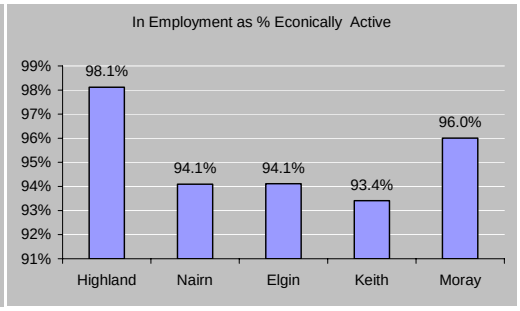
shopping in the respective town centres and those accessing community facilities such as the Community Centre in Nairn, post offices and bus stops, to name a few.

8.4 Accessibility & Employment

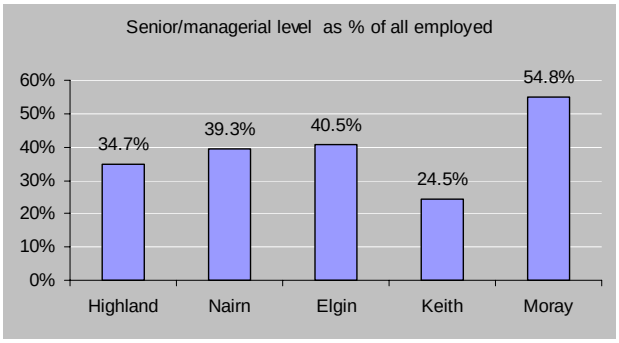
8.4.1 Figure 8.3 shows the levels of economic activity and proportion of the population economically active who are in employment for Nairn, Elgin and Keith, and for the Council areas of Highland and Moray for comparison. Clearly the proportion of the population who are economically active is low in all three towns when compared to the wider regions of Highland and Moray.

Figure 8.3: Levels of Economic Activity and Proportion of These in Employment, for Nairn, Elgin and Keith, and for Moray and Highland Council Areas (NOMIS, 2001)



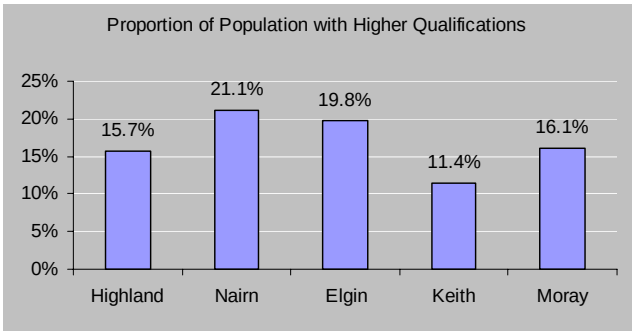


8.4.2 Even though the proportions of economic activity and employment are comparably low in the three towns, with the exception of Keith, the proportion of those employed in the highest categories of employment, those covering the management and professional cadres, are quite high (Figure, right), when compared with Highland, although the proportion for Moray as a whole is higher still.

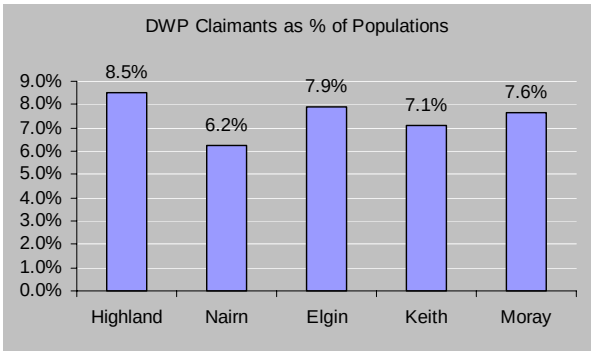


8.4.3 This is important as the structure of employment in the sub-regional economy is, owing to the respective disposable income, important in influencing the choice of mode of transport and the proportion of trips made to work by car, bus and other modes.

8.4.4 The levels of qualifications of the resident population as a whole are key to sustaining a highly qualified workforce. As seen in the Figure (right), both Nairn with 21.1% of the population with higher qualifications and Elgin (19.8%) have a particularly well educated population when compared to Highland and Moray (15.7% and 16.1% respectively). The exception is Keith, with half the level of the highest qualifications per capita as Nairn. This poor result possibly reflects the low levels of managerial and professional employment seen in the town.



8.4.5 The Figure (right) shows the proportion of the population claiming benefits from the Department of Works and Pensions (DWP). This is an indicator of deprivation of an area, which in turn influences the ability of the population to access work, shops and community facilities.



8.4.6 All three towns have a slightly lower proportion of the population claiming benefits than Highland, although Elgin is the only town in Moray to have more benefits claimants per capita than for Moray as a whole. Nairn has the lowest level of claimants at 6.2% of the population.

8.4.7 Table 8.1 translates the socio-economic characteristics seen above into the proportion of people of working age and above in employment or studying who access their place of work or study by different transport modes.

Table 8.1: Percentage of people aged 16-74 in employment or studying who access work or study by…(SCROL, 2001)

		Work/study from home	Train	Bus etc	Motorcycle etc	Car/van	Car/van passenger	Taxi etc	Cycle	Walk	Other	Distance in km to place of work or study
Scotland	2510494	6.07	3.5	14.0	0.5	50.0	8.3	0.8	1.4	14.1	1.5	12.58
Elgin	10553	4.83	2.0	3.4	0.9	50.0	9.8	0.8	5.3	21.5	1.6	14.11
Keith	2158	5.24	1.6	6.4	0.3	48.3	9.7	0.8	1.4	24.5	1.8	16.75
Nairn	3864	6.06	3.7	5.1	0.5	48.7	8.8	0.4	6.9	18.1	1.8	23.59
Highland	104345	9.8	1.2	7.7	0.5	50.6	9.0	0.7	2.9	16.0	1.7	18.05
Moray	44188	7.24	2.0	5.7	0.7	51.1	8.7	0.8	5.0	16.3	2.4	19.02

8.4.8 Interestingly a relatively high proportion, 3.7% of the population access their work or study by train. This is higher than for any of the other towns in the study, and higher even than for Scotland. By comparison access to work in Keith and Elgin by train are just about half that seen for Nairn.

8.4.9 This is most likely explained by the fact that Nairn is part of the commuter belt for Inverness. The infrequent nature of the regional rail services, however mean that the provision of the bypasses are unlikely to influence these proportions using the rail network to any great extent.

8.4.10 The use of buses to access work and studying is much lower for the three study towns than for Scotland as a whole, and at 3.4% in Elgin is particularly low for this town. This is unsurprising given the higher levels of car ownership in each of the towns and the degree to which congestion slows bus traffic on the A96. The provision of the bypasses may have a two-fold effect pulling in opposite directions. They may encourage higher usage of buses for access to the towns for work and study with the easing of congestion experienced, particularly at peak times. However, the bypasses, by substantially reducing journey times may encourage modal switch to cars and away from PT.

8.4.11 Those commuters who drive to work in the three towns roughly corresponds with the levels of driving seen in Scotland as a whole. However levels of car sharing are slightly higher, and are much the same as seen throughout Highland and Moray. This may be a function of the fact that OD patterns are more limited encouraging of car sharing.

8.5 Summary of Accessibility and Social Inclusion Impacts

8.5.1 Table 8.2 summarises the accessibility and social inclusion impacts resulting from the provision of the bypasses.

Table 8.2: Summary of Accessibility and Social Inclusion Impacts

Distribution of Impacts by People Group	Local Impacts		Regional Impacts	
	Winners	***Losers***	***Winners***	***Losers***
Public Transport Network Coverage	All groups will benefit, but the greatest benefits will be for local bus travel.	None clearly identifiable.	Improved public transport network coverage helping to facilitate access to centres of Nairn, Elgin and Keith.	Those unable to drive or walk but who require access to facilities elsewhere in region
Local Accessibility	Improved walking and cycling environment can assist access to many local services.	None clearly identifiable.	Improved access to key employment, commercial and retail sites from other towns in the Nairn – Keith transport corridor	Access by rural communities to the south of each town to facilities in Nairn, Elgin and Keith

8.5.2 There are no clear losers in terms of local impacts. With the significant reduction in congestion, the local communities living within Nairn, Elgin and Keith will be able to access facilities in the respective town centres more easily by foot and by bus. Easing of traffic should also encourage cycling for both work and leisure.

8.5.3 In terms of regional impacts, again PT access to key employment, commercial and retail sites in the town centres from nearby settlements should be facilitated with the bypasses, with the potential exception of communities to the south of the respective bypasses. Here access across the bypasses may slow journeys into the closest settlement. In addition, it is difficult to envisage how the bypasses will help those unable to drive or walk and need to access facilities in other towns, although there might be an opportunity to introduce strategic bus services serving the wider catchments along the Aberdeen to Inverness corridor and also the circular routes around these areas to and from the town centres (as identified during the stakeholder workshop described in Chapter 3).

9. WIDER SOCIO-ECONOMIC IMPACTS

9.1 Introduction

9.1.1 A major symptom of growing traffic flows has been increasing congestion, and nowhere has this been felt more keenly than in the towns of Nairn, Elgin and Keith. As traffic volumes grow several problems emerge consistent with too much traffic for the standard of the road.

9.1.2 The drop in traffic speeds through Nairn, Elgin and Keith has resulted in longer journey times, poor air quality, vehicle platooning and the lack of overtaking opportunities and causes frustration and leading to accidents. The impacts are also ones of perception, both in terms of companies and private individuals.

9.1.3 Diversion curve analysis in Chapter 6 has calculated that an estimated total of circa 25,000 vehicles would be transferred daily from the centres of Nairn, Elgin and Keith to the respective bypasses. This is bound to have a significant impact on the wider economic impacts both of the towns concerned and the wider region.

9.2 Efficiency Gains to Businesses

9.2.1 The wider economic benefits describe the impacts in terms of the A96 on the economy in terms of income and employment. The analysis considers how national, regional and local economic activity and its location are likely to be affected by the provision of the A96 bypasses and changes in traffic densities in the centres of Nairn, Elgin and Keith.

9.2.2 The analysis in Chapter 6 has shown that the bypasses, by expecting to transfer between 60% and 80% of the traffic for the three towns, will have a significant impact on both businesses and the wider community in terms of access to key facilities in the towns. The potential first year monetised benefits are calculated as approximately £21.5m over one year, in 2002 prices. Added to this are other welfare benefits conferred on the wider community by the proposed bypasses, not least improved accessibility in the towns centres as measured by reductions in the PV^2 value. This is most strikingly seen in Elgin, but also holds true for Nairn and Keith.

9.2.3 However, the aim of the wider economic appraisal is to develop a credible chain of cause and effect resulting from bypassing the A96 in Nairn, Elgin and Keith, using business surveys to furnish other relevant information on the potential wider impacts of the bypasses to businesses.

9.2.4 This requires a qualitative review and understanding of potential impacts on business performance and an assessment of potential additional investment opportunities arising from the proposed bypasses. It also involves a review and understanding of the potential wider regional and national economic development and regeneration outcomes from the investment.

9.2.5 The implementation of the bypasses at Nairn, Elgin and Keith will have a substantial impact on journey time savings. The majority of businesses, 75% predicted journey time savings of up to 30 minutes on lengthy journeys, trips that typically took over an hour. Moreover these trips are taken relatively frequently, with businesses reporting undertaking these once a day or more.

9.2.6 Savings of this order of magnitude, if replicated across the business communities of Nairn, Elgin and Keith would realise real benefits to the regional economy, helping to safeguard employment in the region and encourage increasing home-grown investment. This would help businesses to build on the most important advantage

they have in terms of their existing location, their proximity to customers and markets.

9.2.6 The main purpose of frequent business use of the A96, is to deliver goods to customers, and secondly to pick up supplies for the business. The high intensity of use of the A96 for delivering goods and picking up supplies means that traffic congestion and the resulting impeded road speeds and delays encountered seriously undermines business efficiency.

9.2.7 Without significant investment in the region's road infrastructure, and in particular, the bypasses at the local bottlenecks of Nairn, Elgin and Keith, these problems are seen to persist and deteriorate over the next five years at least. Although businesses would remain in place, some businesses view that persistent problems with congestion will impact on their future plans for investing in the future.

9.2.8 A significant proportion of businesses see investment in the proposed bypasses as offering them an opportunity to consolidate their commercial position by expanding sales in existing markets. There is no doubt that by reducing journey times, increasing journey time reliability, and reducing delivery costs helps to re-secure their comparative advantage in their particular sector. The bypasses were seen as less important in offering opportunities for sales in entirely new markets.

9.2.9 The A96 is also used intensively for commuting, where over 75% of staff to commute to and from work for half the businesses interviewed, almost entirely by car. Increasing congestion will also affect the large proportion of business staff who commute to and from work. Not only will the commute become slower but arrival times at work less reliable, necessitating allocating a larger proportion of the day for commuting purposes, which is unproductive time, In addition, slow, unreliable journey times will mitigate against the desirable modal transfer to public transport as bus services are and will be increasing caught up in congested traffic.

9.3 Location, Business Development and Regional Impacts

9.3.1 Published literature and business survey results were used to interpret how businesses would react to the changes in accessibility with and without upgrading of the road. The positive and negative impacts of upgrading are summarised in Table 9.1 (overleaf).

9.3.2 At the national business scale, improved access to smaller markets such as Keith are important considerations for businesses to locate or to remain in these markets, where slimmer margins per capita result from reduced economies of scale. However, increased accessibility can mean some large national companies can serve the region without investing in local infrastructure or employment.

Table 9.1: Regional Impacts of the Bypasses

Effect	Positive	Negative	Scale
National business expansion	Highly correlated with population trends and culture. Improved road connections encourage large businesses to locate/remain in smaller markets (Tesco in Keith)	National companies can serve East Highland – Moray economy without local presence. Examples include central belt builders and printers taking more of the market in the north.	The scale of the positive mechanisms is much greater than the scale of the negative mechanisms
Growth of markets for local companies	Bypasses potentially allow local companies to become more significant national players. Many examples in the food and drink sector. Reduced costs from being able to source material from further afield improve competitiveness.	None identified.	Transport is relatively unimportant relative to other factors.
Establishing a presence in new markets	Transport can be the critical factor constraining the choice of a new location in the region.	None identified.	This evidence suggests that the prevailing sector mix means that this is less critical on a local scale.
Growing employment catchments	Ability to attract high skill staff is dependent on some workers travelling long distances so stress free travel is required.	None identified.	Skill levels are the critical factors so growing the high skill populations could be a critical factor.
Business purchasing and supplies	Improves access to national business networks potentially enhances competitiveness, but this unlikely to be a critical factor.	Local businesses more likely to access higher quality services and supplies from the central belt and further afield.	Could be significant if East Highland – Moray businesses are perceived to be less remote.

9.3.3 One of the biggest impacts noted in the Table, and which featured in the survey results is that the new bypasses should assist in "growing" existing markets. It is clear that many businesses interviewed felt that present trunk road conditions impeded their ability to build on their existing markets owing to long and unreliable journey times.

9.3.4 These are often mature businesses, many representatives of the food and drink sector with robust established forward and backward linkages. Maintaining a frequent, reliable and relatively quick supply of produce to markets, including supermarkets, assists in strengthening the product reputation essential in expanding their sales when the opportunity presents itself.

9.3.5 As noted in Table 8.1, relatively few in Nairn, Elgin or Keith work or study from home compared with Moray and the rest of the Highland region. For the latter in particular, employment location appears becoming a less critical factor for many people selecting their home location. However for the three towns, commuting is still an important activity.

9.3.6 Although this element possibly benefits less from the proposed bypasses than other business activities, there is no doubt that by relieving the urban sections of the A96 through the three settlements, commuter times should improve. Shorter commuting times and faster journey times to Inverness may well assist in attracting potential employment of the skilled and professional and senior managerial level to these towns, where access by road to key facilities across the whole Inverness – Keith transport corridor is improved. This is not an important trend at present, but with the development of the bypasses could be critical.

9.3.7 The bypasses, by easing the present problems of congestion and the associated perceptions of the relative remoteness of Inverness to Keith corridor, may well have a greater impact on decision makers, whether businesses or private individuals, than the actual travel time savings and improved comfort resulting from the proposed bypasses at Nairn, Elgin and Keith.

9.4 SWOT Analysis

9.4.1 The stakeholder workshop described in Chapter 3 provided an early opportunity of evaluating the proposed bypasses in terms of the Strengths, Weaknesses, Opportunities and Threats (SWOT) assessment framework. These were discussed in turn.

Strengths

9.4.2 The strengths identified in providing bypasses for the three towns were as follows:

- they will improve journey times and opportunities for improving local journeys and vehicle efficiency;
- they will change of perceptions of the area including those of accessibility;
- they will foster a joined up area for the whole economy;
- they have a strong political fit with other relevant policies being pursued;
- their indicative (bypass) lines have gone through the Local Plan processes and safeguarded, indicating existing political support;
- they will improve business efficiency particularly on a strategic level where 45% of goods produced in Moray are sold outside Moray local economy;
- they will improve the tourism product with obvious knock-on effects (increased expenditure & employment); and
- they have strong local support from various previous consultations.

Weaknesses

9.4.3 Balanced against these perceived strengths there were a number of weaknesses with the bypasses noted, which were:

- they may result in a loss of passing trade;
- there is a lack of firm (development) land-use plans and (bypass) alignments;

- they may potentially increase traffic/car trips without complimentary measures; and
- they will involve land take and
- there may be environmental issues.

Opportunities

9.4.4 The proposed bypasses were seen as opening up the following potential opportunities for the region:

- they can open land for new development;
- they can open up land for other potential uses;
- they may allow existing roads to be de-trunked and re-allocated to other uses and modes (e.g. pedestrians, improved public transport);
- they can offer potential business support for significant brand-names and Scottish exporters (by expanding the marketing catchment envelope);
- they can attract potential (financial) contributions from private developers; and
- they can attract potential political support from MSP's and other politicians, and so raise awareness of the regional potential.

Threats

9.4.5 However, there were a number of threats identified that might compromise the ability of the proposed bypasses to realise these potential opportunities, and these were:

- the costs of the new infrastructure;
- competition (for financing) from other transport schemes; and
- political threats, such as objections to the proposed bypasses lodged by the Green Party.

9.4.6 On balance however, none of the weaknesses nor threats were seen to be able to neutralise the benefits of the proposed bypasses identified in terms of the strengths presented by the new road infrastructure and the opportunities subsequently opened up for the region.

9.5 Economic Impact of Potential New Development

9.5.1 The bypasses in each of the three towns releases land for development, over and above that identified in the local and structure plans, between the respective town and the alignment of the road. The potential amount of new development in terms of potential gross floor area (GFA) and residential housing units for each of the three towns was identified in Section 7.5. The development will have and economic impact in terms of construction employment and gross value added (GVA) resulting from the construction involved.

9.5.2 In order to calculate GVA at a high level, the ONS Annual Business Inquiry data (2007 prices) was used to determine wages and profits (the elements that make up GVA). There are significant additional wider economic benefits in terms of employment and local GVA resulting from the bypasses. A number of steps were undertaken and assumptions made to estimate the number of jobs sustained by the

bypasses and the additional GVA that is contributed to the local economy of each town respectively. These were:

- The estimation of the net additional developable land in each town;
- The take up rate of developable land will reach 60% five years after the bypasses were built;
- Developable land was allocated to key sectors, namely industry, warehousing and distribution, office and retail; and
- An allowance for employment displacement was made.

9.5.3 The calculation of job numbers resulting from new development and construction opportunities was obtained using employment densities to forecast job outputs from the OffPAT Appraisal Advice Note 1, which estimated employment density per unit gross internal floorspace. Net direct employment estimates were net of displacement. Job estimates are as follows:

- Nairn: net direct employment (FTEs): 1,725;
- Elgin: net direct employment (FTEs): 5,906; and
- Keith: net direct employment (FTEs): 715.

9.5.4 The total direct employment impacts if all the three bypasses were built is estimated to be 8,345 FTEs (including construction employment).

9.5.5 In terms of total local GVA impacts, the increase in employment is adjusted for the estimated annual wage rate in each town, which are assumed to be for Nairn: £12,000, Elgin £13,000 and for Keith, £10,000. GVA also includes an element for profit, which typically is approximately equivalent to 20% of the annual wage bill. Applying these elements gives an estimated GVA benefit for each town as follows:

- Nairn: GVA = £9.4 million for construction and £16.4 for wider impacts (total GVA = £25.8m);
- Elgin: GVA = £15.9 million for construction and £83.0 for wider impacts (total GVA = £98.9m); and
- Keith: GVA = £2.4 million for construction and £7.4 for wider impacts (total GVA = £9.8m).

9.6 Appraisal Summary

9.6.1 To summarise the identified impacts, STAG Appraisal Summary Tables (ASTs) have been used to set out the results. These are amended versions of the full STAG ASTs but provide a good means of summarising the anticipated effects of the three bypasses. The ASTs for each bypass are shown in Appendix C.

9.6.2 In terms of economic impact, the quantitative assessment results are given above. The direct employment impact if all three bypasses were taken forward would be 8,345 FTEs (including construction employment), and total GVA impacts would be in the order of £134.5 million in 2007 prices.

10. CONCLUSIONS

10.1 Introduction

10.1.1 HITRANS and Highlands and Islands Enterprise (HIE) appointed Scott Wilson to undertake a study to identify the economic benefits that could be obtained by providing the A96 with bypasses at Nairn, Elgin and Keith.

10.1.2 This was the result of a number of core strategic policies that had been defined in HITRANS' Regional Transport Strategy (RTS), submitted to the Minister in March 2007. These key policies included the reduction of journey time and the improvement of journey reliability on the A96, the main road on the Eastern Strategic Corridor linking Inverness, Moray and Aberdeen.

10.1.3 A major aspect of the appraisal was to fully involve key relevant public authorities as stakeholders in the discussion on the three bypasses for the areas of Nairn, Elgin and Keith on the A96. This included a workshop followed by a number of business and other stakeholder surveys.

10.2 Summary of Findings

10.2.1 Three bypass alignments were assumed and tested in this appraisal, along with a combined bypasses scenario which included all three being implemented together. These identified the following results.

Existing Major Problems

10.2.2 One of the principal existing problems identified was associated with congestion at peak hours within the three towns which resulted in slow journey times, including those commuting by bus, and this is exacerbated by poor overtaking opportunities offered over the whole route. The provision of bypasses was viewed as an opportunity to permit faster, less stressful travel, which would reduce congestion as a perceived barrier to business investment and growth.

10.2.3 The economy itself, particularly in Moray, is regarded as being relatively weak and geared towards the low value end of the economic spectrum. It is heavily dependent on two sectors, the RAF and distilling, which makes it particularly vulnerable to rapid contraction should either of these sectors shrink, or worse. Good road connections would encourage a diversification of the economy by linking up with the main regional services centres, and facilitate access to the major regional air and seaports.

10.2.4 The A96 has the unfortunate characteristic of bisecting each of the towns. This presents a significant barrier, both to traffic crossing the town on a perpendicular axis to the trunk road, and to pedestrians. As examples of the latter, there are school catchment areas on both sides of the A96 in Elgin, with two school-crossing patrols operating for primary schoolchildren. This is equally true for Keith, where one of the town's major primary school fronts onto the A96, and the regional secondary school is nearby. Nairn too has a large primary school, Rosebank, adjacent to the A96, which makes crossing of the A96 potentially perilous for schoolchildren, especially at peak times.

10.2.5 Nairn is considered by some to have particularly acute social and economic problems because the congested A96 splits the community in two and provides a barrier to movement through and across the town, both for pedestrian and vehicular traffic. There is only one bridge over the River Nairn, and this funnels local, commercial and trunk traffic through one point in the network.

Future Problems

10.2.6 Traffic levels on the A96 between Inverness and Keith are forecast to increase due to a rapidly rising population, associated economic activity and greater general prosperity, which in turn means greater regional car ownership. This will exacerbate the existing problems identified above.

10.2.7 In addition to forecast increasing traffic levels, there are important existing Highland and Moray Councils' Local Plan land allocations for new development, and this will generate considerable additional traffic onto the existing road network. Without the provision of bypasses for the three towns, it is anticipated that even before these developments are fully completed, there will be fundamental difficulties with the existing road capacity to absorb this additional traffic.

10.2.8 The lack of certainty as to the commitment to road improvements, foremost among these the A96, is seen as inhibiting both investment by local businesses and inward investment from elsewhere. However, it was noted that there was no potential for infrastructure improvements at existing road junctions on the A96 within the urban sectors, as these are effectively constrained by other land use.

10.2.9 In addition to this commitment to provide extra road capacity, improvements to the public transport, cycling and walking facilities may reduce the high levels of car dependence, especially for local journeys, and potentially mitigate some problems.

Business Performance and Expectations

10.2.10 The businesses surveyed advised they used the A96 relatively frequently, with two thirds or more of businesses using the A96 on a daily basis between Elgin and Nairn, within and around Elgin, between Elgin and Keith and within and around Keith. The main purpose of their use of the A96, at least on a daily basis, is to deliver goods and secondly to pick up supplies for the business. However, the A96 is also used intensively for commuting, where over 75% of staff commute to and from work for half the businesses interviewed, almost entirely by car.

10.2.11 The high intensity of use of the A96 for delivering goods and picking up supplies means that for the majority the major problem they face is traffic congestion and resulting impeded road speeds and delays encountered. Without significant investment in the region's road infrastructure, these problems are seen to persist and deteriorate over the next five years at least, with some businesses indicating that this will impact on their future plans for expansion.

10.2.12 Increasing congestion will also affect the large proportion of business staff who commute to and from work. Not only will the commute become slower but arrival times at work less reliable, necessitating allocating a larger proportion of the day for commuting purposes, which is unproductive time. In addition, slow, unreliable journey times will mitigate against the desirable modal transfer to public transport as bus services are and will be increasing caught up in congested traffic.

10.2.13 The implementation of the bypasses at Nairn, Elgin and Keith will, according to the businesses interviewed, have a substantial impact on journey time savings. A substantial proportion of the trips where journey time savings were anticipated were relatively of a lengthy duration, half were typically over an hour long, and 85% were over 30 minutes duration. These journeys were also taken frequently, with 63% of businesses reporting they undertake them once a day or more.

10.2.14 The majority of businesses, 75% predicted journey time savings of between six and 30 minutes, and of these nearly half estimated journey time savings of between 16 and 30 minutes. Assuming this is a representative business sample, savings of this order of magnitude resulting from the implementation of the three bypasses is considerable, and would sustain meaningful economic benefits to the businesses concerned, particularly in delivering goods and picking up supplies.

10.2.15 In terms of the perceived opportunities that the proposed bypasses offer the businesses, over half of them agreed, with varying strength, that the bypasses would open opportunities in four of the five issues presented to them. Of these they most strongly agreed that proposed bypasses would present opportunities in expanding sales in existing markets (26% of businesses) and reduce the costs of sending goods and products to marketing outlets. The one area where more than half of businesses were ambivalent or disagreed was that the proposed bypasses would increase opportunities for sales in entirely new markets.

Quantified Transport Impacts

10.2.16 An analysis using mathematical diversion curves to estimate the potential traffic impacts of providing bypasses was carried out. This has shown that the bypasses could potentially transfer between 60% and 80% of the traffic for the three towns, which is anticipated to have a significant impact on both businesses and the wider community in terms of access to key facilities in the towns.

10.2.17 Based on standard calculations, the annual time savings have been estimated as:

- Nairn: circa 47,300 hours per year;
- Elgin: circa 163,200 hours per year;
- Keith: circa 35,100 hours per year; and
- Combined: circa 245,600 hours per year.

10.2.18 A link performance index (PI) was also calculated for each section of the A96 passing through each town. This is a function of the relative time taken to traverse the current A96 alignments through each town and the reliability effects (as measured in terms of the numbers of vehicles starting/stopping due to congestion effects). When compared to a series of tests for bypasses in each of the three towns, this gave the annualised total (first year) monetised benefits of providing the assumed bypasses in 2002 prices as follows:

- Nairn: £5.2m per annum;
- Elgin: £14.6m per annum;
- Keith: £1.7m per annum; and
- Combined: £21.5m per annum.

10.2.19 The severance effects of the existing A96 were also estimated using the standard PV^2 value and compared to the potential benefits due to the bypasses. This showed that in almost every site measured on the A96 in the three towns except those on the west side of Keith the PV^2 value was well above the acceptable level. In the case of the three sites observed at Elgin, the community centre at Nairn, and the pedestrian crossing in Keith close to the Primary School, these values suggest potentially extreme cases of pedestrian severance in the absence of the proposed bypasses. With the bypasses in place, they are estimated to fall for all the sites observed, with the exception of the pedestrian crossing at the entrance to the shopping centre and bus station in Elgin.

10.3 Impacts of New Development

10.3.1 As noted earlier in paragraph E2.3 there will be major new development in the three towns and this is expected to generate substantial new traffic. The anticipated total increase in traffic in the three towns including that from the predicted developments is as follows:

- Nairn: by 2012, traffic volumes on the A96 estimated to be transferred to the bypass will be 998 vehicles for each of the AM and PM peak hours both directions, and this number is expected to rise to 1,880 by 2025, well within the capacity of the bypass;
- Elgin: by 2012, traffic volumes on the A96 estimated to be transferred to the bypass will be 1,216 vehicles for each of the AM and PM peak hours both directions, and this number is expected to rise to 2,340 by 2025, at a loading of 73%, well within the capacity of the bypass; and
- Keith: by 2012, traffic volumes on the A96 estimated to be transferred to the bypass will be 403 vehicles for each of the AM and PM peak hours both directions, and this number is expected to rise to 489 by 2025, well within the capacity of the bypass.

10.3.2 The construction of the bypasses will release additional land for development within the respective alignments over and above the development identified above. This releases resources in terms of developers' contributions, available to the local authority, for example, to offset any adverse environmental impact occurring during the construction of the bypasses, the amount of which, based on discussions with developers, is estimated for the three towns as follows;

- Nairn: £13.1 million;
- Elgin: £21.9 million; and
- Keith: £4.0 million.

10.3.3 In addition to these resources, there are significant additional benefits resulting from the employment and local GVA. The total direct employment impacts if all the three bypasses were built is estimated to be 8,345 FTEs (including construction employment).

10.3.4 The total local GVA impacts in the order of £134.5 million per annum in 2007 prices. Breaking these down by town gives the following results:

- Nairn: net direct employment (FTEs): 1,725;
- Elgin: net direct employment (FTEs): 5,906; and
- Keith: net direct employment (FTEs): 715.

10.3.5 In terms of GVA:

- Nairn: GVA = £9.4 million for construction and £16.4 for wider impacts (total GVA = £25.8m);
- Elgin: GVA = £15.9 million for construction and £83.0 for wider impacts (total GVA = £98.9m); and
- Keith: GVA = £2.4 million for construction and £7.4 for wider impacts (total GVA = £9.8m).

Appendix A

Stakeholder Workshop Notes

Meeting Notes

*Job Title / Ref.:	A96 Bypasses Economic Appraisal	**Job No. S 101138** Project No.	
Subject of Meeting	Public Authority Stakeholders Workshop	Meeting No.: 1	Date & Time: 25-Jan-08 13:00
Attendees:	Marwan AL-Azzawi MA Scott Wilson Jonathan Campbell JC Scott Wilson Howard Brindley HB HITRANS Tony Jarvis TJ HIE Percy Macinnes PM HIE Inverness & East Steven Hutcheon SH HIE Moray Tom Matthew TM Reference Consultants Richard Gerring RG Moray Council Catriona Ramsay CR Moray Council Gordon Holland GH Moray Council (left at circa 14:30 hrs) Cameron Kemp CK Highland Council (arrived at circa 15:15hrs, but a subsequent Tele-Conference was held on Tuesday 29 January and is also noted in these minutes)	Venue: HITRANS' offices	Notes By: Marwan AL-Azzawi
		Distribution: Attendees plus Project Director and Apologies	

Item No.	NOTES	ACTION
1	**Welcome and Introductions** MA thanked everyone for attending and made the introductions. The purpose of this workshop was to discuss the issues, from the view of the relevant public authorities, for the study into three bypasses for the areas of Nairn, Elgin and Keith on the A96. The workshop followed feedback from an issues questionnaire sent out by Scott Wilson and returned by the invited attendees. A presentation was prepared by Scott Wilson summarising the feedback from the returned questionnaires and used as the basis for discussion at the workshop. These minutes reflect the items raised and followed in the presentation *[Post-Meeting Note: a copy of the presentation was e-mailed to attendees after the workshop]* HB emphasised the study was a high-level desk-based study of the wider economic benefits of the proposals. MA then also clarified that it is not proposed to undertake a Transport Economic Efficiency (TEE) analysis. Furthermore, it is not proposed to undertake a full Economic Activity and Location Impact (EALI) assessment as contained in STAG. However, we hold sufficient information from our previous projects which will allow us to undertake a reasonable assessment of potential transport benefits including journey time and other highway improvements and safety enhancement and opportunities for other modes (e.g. bus, walk, cycle, etc) and land use implications. We propose to carry out limited and targeted stakeholder and business consultation (circa 30 interviews) so it will still be possible to prepare an assessment which takes cognizance of the wider impacts but focussing solely on the economic issues RG asked for timeframes for the appraisals and MA advised they would be 2012 for the short-term and 2022 for the long-term	
2	**Key Issues on the Current Transport Infrastructure & Services on the A96** MA summarised the feedback gained from the questionnaires: • Poor, particularly for road transport. Elgin & Nairn are particularly bad with “delays up to 20mins at peak times”; • Bus service is OK but rail services timings do not match up with each other. PT services are not well linked; • A96 passing through the towns means urban speed limits apply, and at busy times traffic speeds can be well below 30mph; • Traffic passing through Elgin has to negotiate a series of very busy junctions, sharing road space with local journeys, leading to congestion problems, especially at the am/pm peaks. The problems in Nairn & Keith are less severe, but also hinder long-distance traffic;	

Item No.	NOTES	ACTION
	• Currently no express Inverness-Elgin-Aberdeen bus service – possibly because this would offer very little journey time benefit without bypasses for the towns; • Busy urban environment, with A96 providing some of the main cycling, pedestrian links through towns making this poor for locals wishing to access town centres on foot/bike. This is also unattractive to visitors; • Travel can be difficult, or at least stressful, due to lack of overtaking opportunities; • Congested in Nairn and Elgin during the working day makes it difficult for buses to enter the traffic stream. There is no provision for bus only lanes. Poor environment for cyclists and pedestrians with no cycle lanes; and • Poor and capacity of the trunk road design The above were agreed as being key issues. In addition, after some discussion, the following were also noted/agreed as also being important issues: • The Trunk Road authority have said that the traffic on the A96 within Elgin comprises of a high proportion of local trips. TMC have collected data which suggests most of the traffic is through trips. RG to supply information; • The A96 also suffers from flooding. Occurrences were noted in 2002 and 2004. RG to e-mail photos; • Saturday is one of the busiest days for Elgin due to shopping; • Based on previous discussions with stakeholders, the bus timetable is tight. A good bus service between Aberdeen to Inverness would be welcomed and it is believed there would be sufficient demand; • Freight traffic experiences similar issues as private cars and other road users; • There is a braking effect on the growth of the economies (e.g. Gordon & MacPhail have stated they need a better trunk road to compete due to access hindrance); • Due to the current situation, Elgin is becoming less attractive for businesses to set up in the area; and • Some local businesses view the A96 as unsafe, and have advised their staff not to use it	RG RG
3	**Key Issues on the Current User Needs for the A96** MA summarised the feedback gained from the questionnaires: • Market view from another study suggested that there is a hindrance to inward investment due to the lack of proper transport infrastructure linking Inverness and Aberdeen; • There is a need to alleviate conflicts between different road users with different journey needs but competing for the same road space – inhibitor to the free and effective flow of different modes; • Community discussions in Nairn in relation to the A96 Corridor Masterplan raised the need for a by-pass for the town; • Issues seem to be the same for private/passenger trips as well as freight and business trips; • Improving the overall efficiency of the A96 would benefit those businesses who use this route for freight or make regular business trips; • Longer distance road travellers (freight and cars) are subject to significant delay passing through the towns. Cyclists are poorly provided for and dedicated lanes are required to avoid conflict with traffic; and • It is not possible to make integrated rail and bus journeys and better physical integration/timetabling and ticketing is required The above were agreed as being key issues. In addition, after some discussion, the following were also noted/agreed as also being important issues: • In terms of better integration with the town centres and the train stations, after any by-passes were introduced TMC believe it could be possible to introduce a shuttle bus linking the stations with the respective town centres; • TMC & THC would be willing to adopt the old sections of the A96 following any by-passing, subject to the appropriate condition assessments. These road sections could then be developed to accommodate a more balanced provision for sustainable transport; • Scottish Parliament Petitions Committee received a petition with circa 8,000 signatures for a by-pass for Elgin. In terms of Keith, the proposed by-pass alignment was favourably received and thought of highly by the local community. These points reinforces bullet point number 3 above; • There is up to 1 million tonnes of timber transported through Moray per annum;	

Item No.	NOTES	ACTION
	• In Elgin, there is a by-pass action group who have been lobbying for by-pass for some time; • The emerging Local Plans have lines for the by-passes and land has been safeguarded through the LP's; • The importance of reliability of journey times including to the airports was also raised; and • The hindrance of growth of existing businesses (not just encouraging new businesses) was also highlighted as being important and should not be overlooked	
4	**Problems** Existing MA summarised the feedback gained from the questionnaires: • Congestion at peak hours within the towns; • Slow journey time; poor overtaking opportunities; • Aside from the RAF and distilling, the economy in Moray is relatively weak / low-value. Good road connections important as these are the main regional service centres, and also provide access to air and sea-ports; • A96 bisects the towns and is a barrier to crossing journeys (including pedestrians); • Lack of bypasses, which would permit faster, less stressful travel is a significant barrier to business growth / investment, at least in a perceptive sense; and • In Elgin, there are school catchment areas are both sides of the A96, with two school-crossing patrols operate for Primary School Children. In Keith, the Primary School fronts on to the A96 and the regional Secondary School is nearby The above were agreed as being key issues. In addition, after some discussion, the following were also noted/agreed as also being important issues: • There is also a school catchment areas adjacent to the A96 in Nairn, Rosebank Primary School; and • MA asked for accident statistics on the urban sections of the A96 passing through the towns of Elgin & Keith • The congestion at peak times is particularly difficult for commuting to and from work and also bus services in general Short-Term Future MA summarised the feedback gained from the questionnaires: • Significant existing Local Plan allocations will begin to be fully built out and generate additional traffic on to the existing road network. Without by-passes there would be "fundamental difficulties"; • Lack of certainty to the commitment to road improvements seen as inhibitor to investment by local businesses and inward investment; • Traffic levels are forecast to continue to increase, due to increasing population, economic activity, car ownership etc. So current problems will start to become more acute; and • Need to make significant improvements in the public transport/cycling/walking alternatives in order to reduce car dependence for local journeys The above were agreed as being key issues. In addition, after some discussion, the following were also noted/agreed as also being important issues: • There is no scope for infrastructure amendments on the existing major junctions, which are effectively land-locked for improvements or widening; • It was noted that Baxters & Walkers are high-value businesses in the region and predominantly use the A96; and • It was noted that the Trunk Roads Authority has carried out some PV^2 calculations which could compliment the analysis being carried out by Scott Wilson. TMC to provide details	RG RG

Item No.	NOTES	ACTION
	Long-Term Future MA summarised the feedback gained from the questionnaires: • Problems will increase if bypasses are not built and will constrict the expansion of towns; • Further development proposals, which are needed to support regional economic development, at Nairn and Elgin will have further impacts on traffic volumes; • Unless there is significant investment in the A96, there is a risk that the economic potential of the area may be constrained; and • Economic growth will also require new edge-of-town developments for housing and new economic activities, which will in turn require new supporting infrastructure. In some cases this may not be feasible without bypass construction The above were agreed as being key issues. In addition, after some discussion, the following were also noted/agreed as also being important issues: • National Planning Policy constrains local authorities and encourages relocation of large retail developments to town centres (e.g. the Aldi store in Elgin). This has caused significant traffic generators to mix with strategic traffic and a by-pass would remove through traffic thereby relieving the problems currently being experienced; • There was a general discussion regarding how well defined the by-pass alignments were in the Local Plans. TMC have not defined road standards just set out lines; • There was also a general discussion about whether there were similar plans for the A95 traffic to be by-passed at Keith. RG advised there could be a link with potential benefits in terms of connectivity to the A95; • There is a possibility the southern alignment in Elgin might be extended further south depending on the outcome of the results of a recent public inquiry into the Local Plan	
5	**Data Needs** Following the above discussions and references in the returned questionnaires, some other studies or appraisals were identified as being worth considering. These are summarised below: • Invernet 2 Report – there is no need to review this. the main issue is the need for an hourly rail service; • Tesco Planning Consent should be considered. RG to supply trip estimates; • Various developments were discussed. RG to provide a list of committed developments to take into the appraisal; • Donaldsons Study (Market View & Perceptions) – CR to supply; • HITRANS Cycling Infrastructure Study – HB to check if there are any issues; • HITRANS Park and Ride Study – HB advised there were no issues identified in this study; and • There was a general discussion on the Socio-Economic Impacts Study and Moray 2020	RG RG CR HB
6	**SWOT Analysis** Strengths There was a discussion on the strengths of providing by-passes for the three towns, which raised the following: • Improved journey times and opportunities for improving local journeys and vehicle efficiency; • Change of perceptions of the area and accessibility; • Fosters a joined up area for the whole economy; • Improves both wider environment and local areas making them more attractive; • Opens up land for potential other uses and development; • Strong political fit with policies; • Indicative lines have gone through the Local Plan processes and safeguarded; • Improve business efficiency (45% of goods produced in Moray are sold outside Moray local economy); • Improve tourism with obvious knock-on effects; and • Strong local support from various previous consultations	

Item No.	NOTES	ACTION
	Weaknesses Discussions on the weaknesses of implementing by-passes for the three towns, raised the following: • Loss of passing trade; • Lack of firm land-use plans and alignments; • Could potentially increase traffic/car trips without complimentary measures; and • Environmental land take Opportunities After some discussion, the following opportunities were raised: • Potential political support from MSP's and other politicians; • Opens up land for new development; • Potential business support from significant brand-names and Scottish exporters; • Potential for contributions from private developers; and • Existing roads could be de-trunked and re-allocated to other uses and modes (e.g. pedestrians, improved public transport) Threats The following was raised as possible threats: • Costs of the new infrastructure; • Competition from other transport schemes; and • Political threats (e.g. the Green politicians objecting)	
7	**Any Other Business** There was a discussion about the need for a vision statement to assist with the appraisal. It was agreed that the vision from Moray 2020 should be the basis for the appraisal, since if the lack of by-passes was constraining this vision then this should be highlighted	
	Tele-Conference with CK, HB and MA Since CK could not attend the first half of the workshop, CK, HB and MA arranged a tele-conference to discuss the problems and issues from the point of view of The Highland Council. This was held on Tuesday 29 January 2008 at 11am, and is summarised below. The discussion findings are appended to the above notes Key Issues on the Current Transport Infrastructure & Services on the A96 • CK agreed with the views set out by other workshop attendees. He also added that sections of the A96 in Nairn are subject to part-time 20mph speed limits at different times of the day (morning, lunchtime and evening). HB & CK also mentioned the timber operations at Gordons Sawmill in Nairn where HGVs are not allowed to access via the town centre and have to use minor roads (SW & SE of Nairn). This could be alleviated with the new by-pass which improves access to the south Key Issues on the Current User Needs for the A96 • CK agreed with the views set out in these notes. He also confirmed the view held by TMC regarding better integration with the town centre and train station, after a by-passes was introduced. This could be possible in Nairn by re-routing bus services supported by THC. CK to supply details Problems (Existing) • CK agreed with the views raised at the workshop by other attendees. He also re-enforced the issue of school catchment areas being bisected by the A96 (e.g. Rosebank Primary School). CK to supply accident data for the last 5 years (split by damage only and injuries) Problems (Short-Term Future) • CK agreed with the views highlighted. He also discussed the planned new land-use proposals and advised there were a number of committed developments which would emphasise the problems in the short to long terms. These are set out in the A96 Framework Study which also included workshops to develop realistic proposals which are achievable Problems (Long-Term Future) • CK agreed with the views set out by others. He also highlighted the need to make significant improvements in the public transport/cycling/walking alternatives	CK CK

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Appendix B

Business Questionnaire

Questionnaire – Business_3

Introduction to Sections 1-3: The Local Authority in Partnership with a number of organisations has plans to improve the A96 between Keith and Inverness. In order to assess, as objectively as possible, the impact of these improvements, please answer as many of the questions we will be asking as possible.

	Name of Interviewer	
	Date of interview	
	Time of interview	
	Place of Interview	
	Name of company	
	Name of interviewee	
	Position of interviewee	

SECTION 1: GENERAL

Q1		*Please specify business address including postcode*
	Please confirm the location of your business	

Q2	Is this the same as the business HQ?	*Yes / No (please circle one)*
		Please specify town, Local Authority Area, region & country (if outside Scotland)
	If *no*, where is your business HQ?	

Q3	Does your company have locations elsewhere?	*Yes / No (please circle one)*
		Please specify town, Local Authority Area & Region & Country (if outside Scotland)
	If *yes*, where?	1. 2. 3.

Q4	What best describes your business at this location?	*Please tick one*
	Agriculture, hunting and forestry/timber	
	Fisheries	
	Mining and quarrying	
	Manufacturing	
	Electricity, gas and water supply	
	Construction	
	Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods	
	Hotels, Restaurants and B&B's	
	Transport, storage and communication	
	Banking & Finance (Financial Intermediation)	
	Real estate, renting and business activities	
	Public administration and defence; compulsory social security	
	Education	
	Health and social work	
	Other community, social and personal service activities	
	Leisure/ tourist industry	
	Other (*please specify*)	

Q5		*Please specify (approximate) number*
	Approximately how many employees are there in this location?	
	Approximately how many employees are there in the company as a whole?	

SECTION 2: BUSINESS USE OF THE A96

Q6	Please select three of the following as the main strengths of the current location of your business, and indicate the relative importance of these by ranking them in order, (where 1 is the most important)	*Please rank in order 1 to 3*
	Access to workforce	
	Access to skilled labour	
	Proximity to customers/markets	
	Proximity to supplies/suppliers	
	Historical accident, no particular reason	
	Access to trunk road network	
	Access to airports	
	Access to ports	
	Access to rail	
	Other, please specify	

Q7a	What proportion of your deliveries of supplies and services to the site are	*Please specify (approx) %*
	The business's responsibility (own account)	
	Contracted out to hauliers by the business	
	Suppliers' responsibility	
		100%
Q7b	What proportion of your deliveries of goods and and products to customers and markets are	*Please specify (approx) %*
	The business's responsibility (own account)	
	Contracted out to hauliers by the business	
	Customer's responsibility	
		100%

Q8	How often does your business use the following sections of the A96? *Please tick*						
		Once a week or more	Once every fortnight	Once a month	Once every 6 months	Less frequently than once every 6 months	Never
	Between Nairn and Inverness						
	Within & around Nairn						
	Within & around Elgin						
	Within & around Keith						
	Between Elgin & Nairn						
	Between Keith & Elgin						

	Between Keith & Aberdeen						

Q9		*Please specify (approx) %*
	Approximately what proportion of staff commuting to and from work use the A96?	
	Of these, what proportion commute by	*Please specify (approx) %*
	Private Car	
	Bus	
	Other mode (*please specify*)	

Q10 How frequently does your business use the A96 for the following reasons

	Once a week or more	Once every fortnight	Once a month	Once every 6 months	Less frequently than once every 6 months	Never
Meetings with (potential) customers?						
Meetings with (potential) suppliers?						
Delivering goods?						
Picking up supplies?						
Internal business meetings?						
Access to business services- banking, legal, financial etc?						
Other (*please specify*)						

SECTION 3: KEY ISSUES ON A96

Q11	Which 3 of the following modes of transport are of most importance to you? Please rank in order 1 to 3 in descending order, with 1 the most important	
	Walking	
	Cycling	
	Bus (local)	
	Bus (long distance)	
	Rail	
	Airports	
	Freight – heavy goods vehicles	
	Freight – light goods vehicles	
	Private Car	
	Other (*please specify*)	

Q12	What is your view of the current **transport infrastructure** on the A96, considering in particular the the most important modes identified above?

Q13	What is your view of the extent to which the **transport needs of the user** are satisfied with the A96?

Q14	What are the **key problems**, both measurable and perceived, **currently** on the A96, and what do you think are the underlying causes?

Q15	What are the **key problems** using the A96 likely to be in the future in the short to medium term, say up to 5 years?

Q16	What are the **key problems** using the A96 likely to be in the future over the longer term, say between 5 and 15 years in the future?

Q17a	What **business plans or schemes** presently committed or in preparation that you think will require significant additional use of the **A96** by your business in the short to medium term, say up to 5 years in the future?
Q17b	What **business plans or schemes** presently committed or in preparation that you think will require significant additional use of the **A96** by your business in the longer term, say between 5 and 15 years in the future?

Introduction to Section 4: The improvements on the A96 that we mentioned at the start of this interview concern a series of bypasses, one each at Keith, Elgin and Nairn. Please answer as many of the remaining questions as possible so that the impacts of these bypasses may be evaluated as accurately as possible.

SECTION 4: PERCEIVED BUSINESS IMPACTS OF BYPASSES

Q18	How likely do you think the proposed bypass of the A96 will have an impact on your business? *Please tick one per issue*					
		Very likely	Quite likely	Neutral	Quite unlikely	Very unlikely
	1. Meetings with (potential) customers					
	2. Meetings with (potential) suppliers					
	3. Delivering goods					
	4. Picking up supplies					
	5. Internal business meetings					
	6. Access to business services- banking, legal, financial etc					
	7. Safer commuting to and from work					
	8. Encourage employees to walk or cycle					
	9. Other (*please specify*)					

Q19	If you answered **very likely** or **likely** for any of the issues above, can you please specify in more detail what this impact will be stating the the reasons behind these	
		Impact
	Issue	
	Issue	
	Issue	

	Issue	

Q20	How much do you agree with the these statements:- (*please tick*)					
		Stongly agree	Agree	Neutral	Disagree	Strongly disagree
	1. The bypasses will specifically increase opportunities for expanding sales in existing markets					
	2. The bypasses will significantly increase opportunities for sales in entirely new markets					
	3. The bypasses will specifically reduce costs of inputs and supplies					
	4. The bypasses will specifically reduce costs sending products to marketing outlets					

Q21	If you agreed or strongly agreed with any of the statements above, please can you specify in more detail as to why you agree or strongly agree?	
	Statement	
	Statement	
	Statement	
	Statement	

Q22	How much do you agree with the following statements:- (*please tick*)					
		Stongly agree	Agree	Neutral	Disagree	Strongly disagree
	1. The proposed bypasses will save on journey time					
	2. The proposed bypasses will improve journey time reliability					
	3. The proposed bypasses will reduce the incidence of vehicle platooning					
	4. The proposed bypasses will improve safety					
	5. The proposed bypasses will reduce stressful/difficult driving conditions					

Q23	If you answered **very likely** or **likely** for **savings on journey time** or **improvements to journey time reliability**, can you please estimate savings in terms of which journeys these would apply, how often these are undertaken and what the journey times/improvements in reliability are.									
	Journey time savings	Trip	From	To	Current time for trip (approx) - minutes		Frequency of trip – per day/per week/per month (circle one)		Time savings per trip - minutes	
		1								
		2								
		3								
		4								
	Journey time reliability				Estimated proportion (%) of trips time savings achieved (*tick one per trip*)					
		Trip	From	To	All	85%-100%	65%-85%	45%-65%	25%-45%	<25%
		1								
		2								
		3								
		4								

Q24		*Please state amount*
	Please confirm annual turnover at these premises	
	Or if respondent is unwilling or unable to specify amount is it -	
	Less than £50k	
	£50k – £250k	
	£250k – £500k	
	£500k – £1m	
	£1m – £3m	
	More than £3m	
	Don't know	
	Refused	

Thank you very much for participating in this survey. We look forward to completing our survey with you in due course.

Appendix C

Appraisal Summary Tables

Appraisal Summary Table – Nairn A96 Bypass

Name and address of authority or organisation promoting the proposal:		HITRANS Building 25 Inverness Airport IV2 7JB	
Proposal Name:	Nairn A96 Bypass	Name of Planner: Estimated Total Public Sector Funding Requirement:	Scott Wilson Scotland Ltd 25 Tyndrum Street Glasgow G4 0JY
Proposal Description:	The proposal would consist of a Single Carriageway road bypass, for use by general traffic.		
Background Information			
Geographic Context:	Nairn, in the Highland Council is situated approximately 24 km east of Inverness and 33 km west of Elgin. With a resident population of 8,418 (2001 Census) the town lies within the commuter belt of Inverness, yet has a distinct socio-economic profile of its own. The town is physically well connected both to Inverness and to settlements further east by road and rail. The main road link is the A96, links Inverness with Aberdeen and which passes through the centre of the town. There is a rail halt and a number of bus stops in Nairn. However, although the town is relatively well connected, transport services are comparatively poor owing to congestion on the trunk route and relatively infrequent rail services. Nairn has ambitious development plans over the next few years, especially in commercial and residential growth. This is likely to put additional strain on the local and regional transport network, in particular on the already congested A96. Most of the residential development is likely to occur on the west sides of the town, with some further commercial development earmarked in the east part. The problems associated with current traffic volumes on the A96, and the likely further pressure put on the trunk road by new developments will put continually greater pressure on the transport network and services. Hitrans and its partner, Highland and Islands Enterprise are pursuing a new bypass to address the existing problems on the local trunk road network and to serve the development proposals in the years to come.		

Social & Economic Context:	Nairn contributes 4% of the Highland Council area population Of the total resident population of 8,148, approximately 48% are male and 52% are female, much in line with the both the Highland and Scottish relative proportions. The proportion of the population that is of school age and working age are lower than that of Highland as a whole, and much lower than that for Scotland in the 16 – 29 age bracket, and the corresponding proportion of those of pensionable age is relatively higher than for the other regional scales. The average number of people per household is slightly lower for Nairn than for the Highland region as a whole but equivalent to the Scottish value, and at 0.95 cars per household, this is a lower value than for the Highland region (1.07), but slightly more than for Scotland (0.93). Seen in another way, 29.3% of households in Nairn have no car or van compared with 34.2% for Scotland, and the lower figure of 25.1% for eth Highland region. Rates of economic activity as a percentage of the population are rather lower for Nairn than for the Highland region, 57.9% as opposed to 62.0%, but very similar to the Scottish value (58.0%) Long term unemployment rates are however, those who have been out of work since 2001 also similar to Highland as a whole, but are considerably higher than for Scotland (32.8% compared with 28.9%). Proportionally fewer of the population work in manufacturing in Nairn than in Scotland as a whole, and rather more in the wholesale and retail trade and in hotels and restaurants. Compared with the rest of Highland, a slightly larger percentage of the working population are employed in both manufacturing and in wholesale and retail, but notably less in the transport, storage and communications sector. A larger proportion of the population work in the higher occupation groups in Nairn than they do in Highland as a whole, but this is not the case in comparison with Scotland, except for the top occupation group. However, the levels of education in Nairn are slightly lower comparable to both Highland and Scotlland as a whole, (with 18.2% achieving the highest level qualifications compared with 19.6% and 19.5% respectively). A similar proportion of the working population travel to work by car (27%) in Nairn than for the Highland region as a whole, (23%). This proportion is also similar to Scotland as a whole (also 24%).

Safety		
Sub-objective	Item	Qualitative Information
Accidents	Change in Annual Personal Injury Accidents	The analysis of observed traffic flows and road accident data shows that the accident rate is higher than Scottish averages. The bypass tested in this appraisal has identified a potential transfer of traffic of up to 80% (circa 10,700 AADT) from the existing A96. This is anticipated to improve accidents.
Security	Change in Balance of Severity	Construction of the new bypass will improve security by improving severance effects. The bypass tested in this appraisal has identified a potential transfer of traffic of up to 80% (circa 10,700 AADT). Using standard PV² calculations this has suggested the potential improvement of severance to be: • Site 1: West-central Elgin – Fire Station/Somerfield Store PV² falling from 3.1 to 0.1 • Site 2: Central - Somerfield Store PV² falling from 2.3 to 0.1 • Site 3: East –central Nairn Community Centre PV² falling from 6.9 to 0.3

	Sub-objective	Qualitative Information
Economy	Local Economic Impacts	The economic aims of this scheme are to reduce traffic congestion on the A96 in Nairn. Bypasses potentially allow local companies to become more significant national players. Many examples in the food and drink sector. Reduced costs from being able to source material from further afield improve competitiveness. In addition, growth is highly correlated with population trends and culture. Improved road connections encourage large businesses to locate or remain in smaller markets The estimated first year time savings are approximately 47,300 hours per year.
	National Economic Impacts	There are no significant effects at the National Level save that employment during construction could assist the unemployed to get back to work. There may be some agglomeration effects, which may assist with economic consolidation on the Inverness to Keith corridor.
	A96 Link Performance Impacts	Given the AADT flows approximately 763 vehicles are estimated to transfer from the A96 to the bypass during the peak hour. The significant diversion of traffic onto the bypasses ensures that the savings from improvements in the network performance are considerable, with major other travel time savings and savings in costs associated with the stop-start regime currently experienced for trips through the centre of Nairn. The estimated first year benefits are approximately £5.2m in 2002 prices.
	Land use impacts	The new developments, particularly new residential and commercial development is expected to generate additional traffic, with total flows during the peak hour rising to 998 both directions by 2010, and 1,880 by 2025, both directions. The capacity of the bypass in both directions is 1,600 vehicles per hour one direction or 3,200 both directions. Therefore the bypass would be utilised at 31%, of its capacity during the opening year, 2010, and 59%, of its capacity by 2025 during peak hours, when use would be most intensive. Developer contributions could be up to £13million.

Accessibility & Social Inclusion		
Sub-objective	Item	Qualitative Information
Community Accessibility	Public Transport Network Coverage	In terms of local impacts for obvious reasons, with the focus on private car usage, this option performs relatively poorly in terms of local community accessibility using the public transport network. However with improved bus speeds expected through Nairn this option will generally help to open up the centre of the town, and possibly encourage greater bus patronage.
	Access to Other Local Services	This option greatly improves pedestrian access to the key facilities in the centre of town, from the residential locations further out. The standard measure of severance, the PV2 value, drops from values of well over 2 (the value where severance occurs) to well below this value in all the sites surveyed.
Comparative Accessibility	Distribution/Spatial Impacts by Social Group	The high penetrative ability of private transport means that the A96 bypass will score relatively well in terms of comparative accessibility, although by excluding households without access to private transport, less so than other options that include public transport.
	Distribution/Spatial Impacts by Area	In terms of spatial impacts, those solutions scoring the highest are the roads-based solutions, and this option is no exception, being able to cover, relatively quickly, areas between work, home, leisure and shops.

Appraisal Summary Table – Elgin A96 Bypass

Name and address of authority or organisation promoting the proposal:		HITRANS Building 25 Inverness Airport IV2 7JB	
Proposal Name:	Elgin A96 Bypass	Name of Planner: Estimated Total Public Sector Funding Requirement:	Scott Wilson Scotland Ltd 25 Tyndrum Street Glasgow G4 0JY
Proposal Description:	The proposal would consist of a Single Carriageway road bypass, for use by general traffic.		
Background Information			
Geographic Context:	Elgin, in Moray Council is situated approximately 33 km east of Nairn and 24 km west of Keith. With a resident population of 20,829 (2001 Census) the town dominates the sub-region with a number of large home-grown businesses that tend to dominate the local economy. The town is physically well connected both to Nairn and Inverness and to Aberdeen in the east by road and rail. The main road link is the A96, links Inverness with Aberdeen and which passes through the centre of the town. There is a rail halt and a number of bus stops in Elgin. However, although the town is relatively well connected, transport services are comparatively poor owing to congestion on the trunk route and relatively infrequent rail services. Elgin has ambitious development plans over the next few years, especially concerning residential growth, but also with some commercial and industrial development. This is likely to put additional strain on the local and regional transport network, in particular on the already congested A96. Most of the residential development is likely to occur on the south side of the town, not far from the bypass itself, with some further industrial commercial development earmarked for the east of Elgin. The problems associated with current traffic volumes on the A96, and the likely further pressure put on the trunk road by new developments will put continually greater pressure on the transport network and services. HITRANS and its partner, Highland and Islands Enterprise (HIE) are pursuing a new bypass in Elgin to address the existing problems on the local trunk road network and to serve the development proposals in the years to come.		

Social & Economic Context:	Elgin contributes 24% of the Moray Council area population. Of the total resident population of 20,829, approximately 49% are male and 51% are female, much in line with the both the Moray and Scottish relative proportions. The proportion of the population that is of school age and working age very similar to that of Moray as a whole, and much the same as for Scotland in general. The average number of people per household is much the same as for the Moray region as a whole, and at 2.33 persons per household slightly higher than the Scottish average (2.27). In terms of car ownership levels, a greater proportion of households have no access to a car or van in Elgin (28.1%) than for Moray (23.6%). However, levels of car ownership are much lower for Scotland as a whole, with 34.2% of households without a car or van. Rates of economic activity as a percentage of the population are very similar for Elgin as for the Moray, 63.2% as opposed to 63.0%, but both are significantly higher than for Scotland as a whole (58.0%). Long term unemployment rates, those who have been out of work since 2001 are very similar for Elgin and Moray, but both are slightly more than for Scotland as a whole, (31% compared to 29%). Proportionally fewer of the population work in manufacturing in Elgin than in Moray or Scotland as a whole, and rather more in the wholesale and retail trade and in hotels and restaurants. A very similar proportion of the population work in the higher occupation groups in Elgin as they do in Moray, but both levels are significantly lower than the case for Scotland, especially for the two top groups where Scotland's percentage is significantly higher. However, the levels of education in Elgin are slightly lower comparable to both Moray and Scotland as a whole, (with 16.9% achieving the highest level qualifications compared with 17.9% and 19.5% respectively). A slightly higher proportion of the working population travel to work by car (27%) in Elgin than for Moray as a whole, (24%). This proportion is also higher than for Scotland as a whole (also 24%).

Safety		
Sub-objective	Item	Qualitative Information
Accidents	Change in Annual Personal Injury Accidents	The analysis of observed traffic flows and road accident data shows that the accident rate is higher than Scottish averages. The bypass tested in this appraisal has identified a potential transfer of traffic of up to 60% (circa 12,200 AADT) from the existing A96. This is anticipated to improve accidents.
Security	Change in Balance of Severity	Construction of the new bypass will improve security by improving severance effects. The bypass tested in this appraisal has identified a potential transfer of traffic of up to 60% (circa 12,200 AADT). Using standard PV² calculations this has suggested the potential improvement of severance to be: • Site 1: West - entrance to Gray's hospital – pedestrian crossing PV² falling from 5.9 to 0.2 • Site 2: Central -pedestrian crossing PV² falling from 14.3 to 0.4 • Site 3: East - shopping centre/bus station entrance – ped crossing PV² falling from 32.8 to 1.0

	Sub-objective	Qualitative Information
Economy	Local Economic Impacts	The economic aims of this scheme are to reduce traffic congestion on the A96 in Elgin. Bypasses potentially allow local companies to become more significant national players. Many examples in the food and drink sector. Reduced costs from being able to source material from further afield improve competitiveness. In addition, growth is highly correlated with population trends and culture. Improved road connections encourage large businesses to locate or remain in smaller markets The estimated first year time savings are approximately 163,200 hours per year.
	National Economic Impacts	There are no significant effects at the National Level save that employment during construction could assist the unemployed to get back to work. There may be some agglomeration effects, which may assist with economic consolidation on the Inverness to Keith corridor.
	A96 Link Performance Impacts	Given the AADT flows approximately 750 vehicles are estimated to transfer from the A96 to the bypass during the peak hour (circa 10,500 AADT). The significant diversion of traffic onto the bypasses ensures that the savings from improvements in the network performance are considerable, with major other travel time savings and savings in costs associated with the stop-start regime currently experienced for trips through the centre of Elgin. The estimated first year benefits are approximately £14.6m in 2002 prices.
	Land use impacts	The new developments, particularly new residential and commercial development is expected to generate additional traffic, with total flows during the peak hour rising to 1,216 both directions by 2011, and 2,340 by 2025, both directions. The capacity of the bypass in both directions is 1,600 vehicles per hour one direction or 3,200 both directions. Therefore the bypass would be utilised at 38%, of its capacity during the opening year, 2011, and 73%, of its capacity by 2025 during peak hours, when use would be most intensive. Developer contributions could be up to £22million.

Accessibility & Social Inclusion		
Sub-objective	Item	Qualitative Information
Community Accessibility	Public Transport Network Coverage	In terms of local impacts for obvious reasons, with the focus on private car usage, this option performs relatively poorly in terms of local community accessibility using the public transport network. However with improved bus speeds expected through Elgin this option will generally help to open up the centre of the town, and possibly encourage greater bus patronage.
	Access to Other Local Services	This option greatly improves pedestrian access to the key facilities in the centre of town, from the residential locations further out. The standard measure of severance, the PV^2 value, drops from values of well over 2 (the value considered acceptable) before the bypasses are built to well below this value for all observed sites bar one surveyed.
Comparative Accessibility	Distribution/Spatial Impacts by Social Group	The high penetrative ability of private transport means that the A96 bypass will score relatively well in terms of comparative accessibility, although by excluding households without access to private transport, less so than other options that include public transport.
	Distribution/Spatial Impacts by Area	In terms of spatial impacts, those solutions scoring the highest are the roads-based solutions, and this option is no exception, being able to cover, relatively quickly, areas between work, home, leisure and shops.

Appraisal Summary Table – Keith A96 Bypass

Name and address of authority or organisation promoting the proposal:		HITRANS Building 25 Inverness Airport IV2 7JB	
Proposal Name:	Keith A96 Bypass	Name of Planner: Estimated Total Public Sector Funding Requirement:	Scott Wilson Scotland Ltd 25 Tyndrum Street Glasgow G4 0JY
Proposal Description:	The proposal would consist of a Single Carriageway road bypass, for use by general traffic.		
Background Information			
Geographic Context:	Keith, in Moray Council is situated approximately 81 km east of Inverness and 24 km east of Elgin. With a resident population of 4,491 (2001 Census) the town lies within the commuter belt of Elgin and possibly as far a field as Inverness, yet has a distinct socio-economic profile of its own. The town is physically well connected both to Inverness and to settlements further east, including Aberdeen, by road and rail. The main road link is the A96, links Inverness with Aberdeen and which passes through the centre of the town. There is a rail halt and a limited number of bus stops in Keith. However, although the town is relatively well connected, transport services are comparatively poor owing to congestion on the trunk route and relatively infrequent bus services. The problems associated with current traffic volumes on the A96, and the likely further pressure put on the trunk road by new developments will put continually greater pressure on the transport network and services. HITRANS and its partner, Highland and Islands Enterprise (HIE) are pursuing a new bypass in Keith to address the existing problems on the local trunk road network and to serve the development proposals in the years to come.		

Social & Economic Context:	Keith contributes 5% of the Moray Council area population. Of the total resident population of 4,491, approximately 48% are male and 52% are female, much in line with the both the Moray and Scottish relative proportions. The proportion of the population that is of school age (less than or equal to 16 years old) is 18% and working age (above 16 years old) is 82%. The average number of people per household is much the same as for the Moray region as a whole, and at 2.20 persons per household slightly lower than the Scottish average (2.27). In terms of car ownership levels, a greater proportion of households have access to one car or van in Keith (50.8%) than who do not have a car or van (23.6%). Rates of economic activity as a percentage of the population are slightly lower for Keith (60.6%) as opposed to Moray (63.0%), but both are higher than for Scotland as a whole (58.0%). Of the population working, 23.9% work in manufacturing, 16.8% in wholesale/retail and 11.4% in construction. However, in terms of education the levels of unqualified in Keith are higher compared to Moray as a whole (with 40.5% compared with 31.5% respectively). A slightly higher proportion of the working population travel to work by car (29%) in Keith than for Moray as a whole, (24%). This proportion is also higher than for Scotland as a whole (also 24%).

Safety		
Sub-objective	Item	Qualitative Information
Accidents	Change in Annual Personal Injury Accidents	The analysis of observed traffic flows and road accident data shows that the accident rate is higher than Scottish averages. The bypass tested in this appraisal has identified a potential transfer of traffic of up to 65% (circa 5,200 AADT) from the existing A96. This is anticipated to improve accidents.
Security	Change in Balance of Severity	Construction of the new bypass will improve security by improving severance effects. The bypass tested in this appraisal has identified a potential transfer of traffic of up to 65% (circa 5,200 AADT). Using standard PV² calculations this has suggested the potential improvement of severance to be: • Site 1: West – pedestrian crossing – west Keith bus stop PV² falling from 0.7 to 0.1 • Site 2: Central – pedestrian crossing PV² falling from 0.7 to 0.1 • Site 3: East – Keith Primary School & town centre PV² falling from 5.1 to 0.2

	Sub-objective	Qualitative Information
Economy	Local Economic Impacts	The economic aims of this scheme are to reduce traffic congestion on the A96 in Keith. Bypasses potentially allow local companies to become more significant national players. Many examples in the food and drink sector. Reduced costs from being able to source material from further afield improve competitiveness. In addition, growth is highly correlated with population trends and culture. Improved road connections encourage large businesses to locate or remain in smaller markets The estimated first year time savings are approximately 35,100 hours per year.
	National Economic Impacts	There are no significant effects at the National Level save that employment during construction could assist the unemployed to get back to work. There may be some agglomeration effects, which may assist with economic consolidation on the Inverness to Keith corridor.
	A96 Link Performance Impacts	Given the flows approximately 5,000 AADT vehicles are estimated to transfer from the A96 to the bypass. The significant diversion of traffic onto the bypasses ensures that the savings from improvements in the network performance are considerable, with major other travel time savings and savings in costs associated with the stop-start regime currently experienced for trips through the centre of Keith. The estimated first year benefits are approximately £1.7m in 2002 prices.
	Land use impacts	The new developments, particularly new residential and commercial development is expected to generate additional traffic, with total flows during the peak hour rising to 403 both directions by 2010, and 489 by 2025, both directions. The capacity of the bypass in both directions is 1,600 vehicles per hour one direction or 3,200 both directions. Therefore the bypass would be utilised at 13%, of its capacity during the opening year, 2010, and 15%, of its capacity by 2025 during peak hours, when use would be most intensive. Developer contributions could be up to £4million.

Accessibility & Social Inclusion		
Sub-objective	Item	Qualitative Information
Community Accessibility	Public Transport Network Coverage	In terms of local impacts for obvious reasons, with the focus on private car usage, this option performs relatively poorly in terms of local community accessibility using the public transport network. However with improved bus speeds expected through Keith this option will generally help to open up the centre of the town, and possibly encourage greater bus patronage.
	Access to Other Local Services	This option greatly improves pedestrian access to the key facilities in the centre of town, from the residential locations further out. The standard measure of severance, the PV^2 value, drops from values of well over 2 (the value considered acceptable) before the bypasses are built to well below this value for all observed sites.
Comparative Accessibility	Distribution/Spatial Impacts by Social Group	The high penetrative ability of private transport means that the A96 bypass will score relatively well in terms of comparative accessibility, although by excluding households without access to private transport, less so than other options that include public transport.
	Distribution/Spatial Impacts by Area	In terms of spatial impacts, those solutions scoring the highest are the roads-based solutions, and this option is no exception, being able to cover, relatively quickly, areas between work, home, leisure and shops.

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