HITRANS

Investment in Lifeline Rural Roads
Individual Scheme Appraisals – Kinlochbervie to Lairg
September 2004

Halcrow Group Limited

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Contents Amendment Record

This report has been issued and amended as follows:

Issue	Revision	Description	Date	Signed

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1 Introduction (Kinlochbervie to Lairg)

1.1 ***Background***

1.1.1 HITRANS, the Highlands and Islands Strategic Transport Partnership, commissioned Halcrow Group Ltd to undertake a study to support the campaign for further investment in lifeline rural roads.

1.1.2 The study was split into two stages. Stage One undertook an extensive consultation process to evaluate the issues surrounding lifeline roads including key problems and constraints facing rural communities. The aim of the second stage was to carry out an economic appraisal of nine designated routes in order to bolster the findings of the initial research, such as to make an economic case for sustainable increases in investment in lifeline roads.

1.1.3 This report represents part of the second stage of the project. It presents, in full, the economic assessment carried out on the proposed Kinlochbervie to Lairg road improvement scheme. It does not seek to encompass all the wider issues involved within the study and does not present the methodology. As such it should be read in conjunction with the main 'Investment in Lifeline Rural Roads: Stage Two Final Report'[1].

1.2 ***Report Structure***

1.2.1 **Section 2** presents the contextual background to the scheme. It also assesses the existing road conditions and the proposed scheme enhancements;

1.2.2 **Section 3** presents an assessment of the likely impacts of the scheme;

1.2.3 **Section 4** presents the Transport Economic Efficiently (TEE) analysis;

1.2.4 **Section 5** assess the business survey responses for the Salen to Tobermory route;

1.2.5 **Section 6** presents the Economic Activity Locational Impact (EALI) analysis; and

1.2.6 **Section 7** presents the conclusions.

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[1] Halcrow (2004)

2 Background (Kinlochbervie to Lairg)

2.1 *Contextual Background*

2.1.1 The A838 is a key route in the Northwest linking the fishing port of Kinlochbervie with the local centre and market town of Lairg. The road provides an onward link to the main road infrastructure leading south (A9). As well the communities accessed directly by route it also serves a larger catchment area incorporating Durness to the far north and Scourie further south. Figure 1 presents a map of the route.

2.1.2 The majority of the route is single-track resulting in high journey times from the northwest down to Lairg and Inverness. This is a particular issue to those industries reliant upon efficient transportation such as the fisheries and timber firms.

2.1.3 Public transport provision within the region is considered particularly poor with no regular connections to centres such as Inverness.

2.2 *Local Economy*

2.2.1 The Scottish Census Results On-Lin (SCROL) data (2003) presented in Section 4.4 indicates that region along the route has a population of around 3,600 [postcode area IV27]. Lairg is estimated to have just over 900 residents, whilst Kinlochbervie, Badcall and Oldshoremore at the far northwest of the route have nearly 400. Still within the catchment area of the A838 Durness and Scourie have a population of around 350 and 200 respectively.

2.2.2 Population within the remote area to the far northwest are generally on a downward trend. This is having knock-on effects on the sustainability of some of the smaller communities.

2.2.3 Employment levels across the region as a whole are estimated at just over 1,700, with the majority of the jobs in the tertiary sector.

2.2.4 Unemployment levels across the region are estimated at 5.9%. This compares to the rate for the Scotland as a whole of just under 4% indicating that the area suffers from much lower than average opportunities for employment.

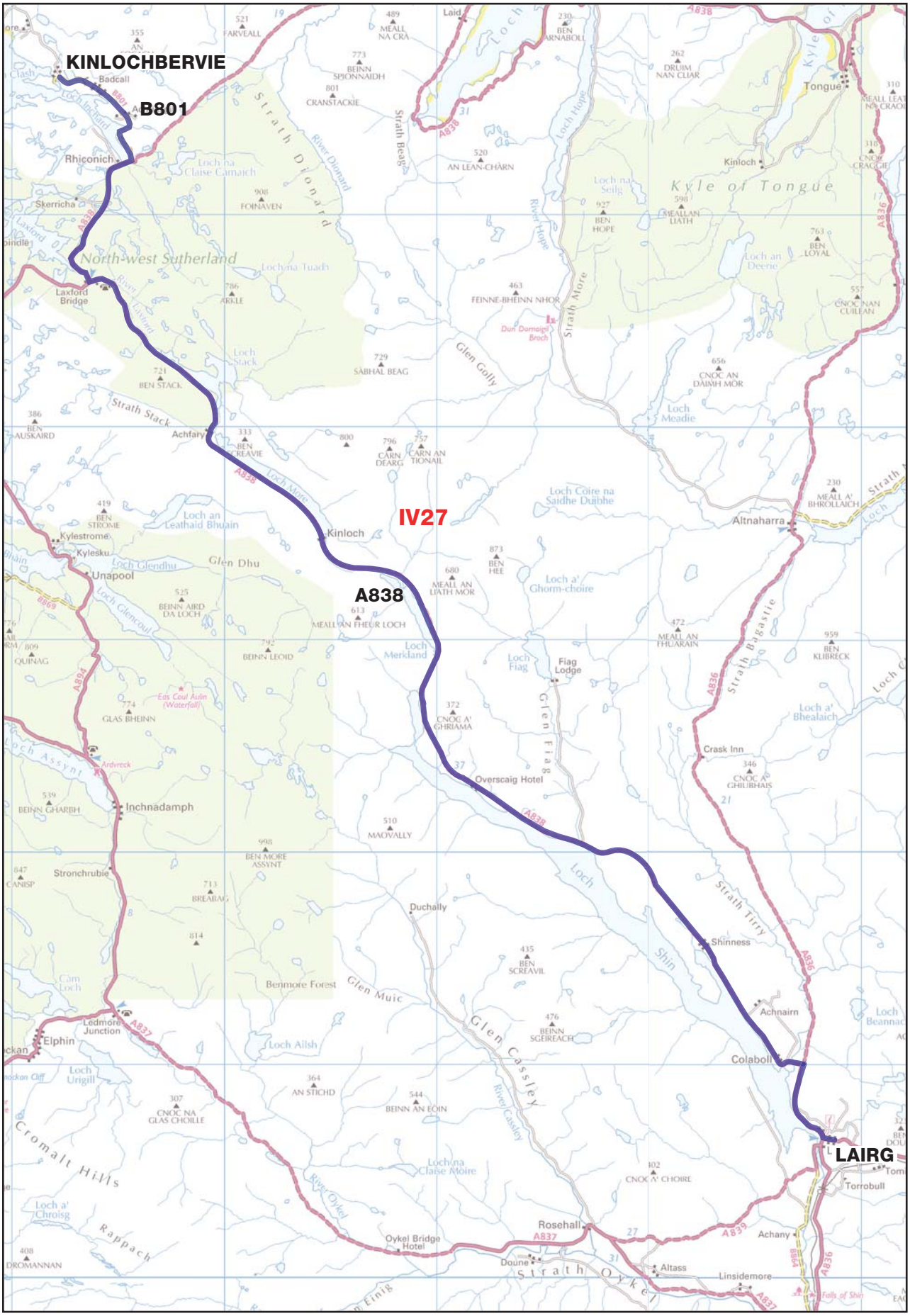


Figure 1: B801/A838 KINLOCHBERVIE TO LAIRG

2.2.5 The indices of deprivation, presented in Table 4.3 of the main report, imply that the region around the A838 is marginally more affluent than Scotland as a whole. However, it is generally recognised that these data can be distorted by the relatively high levels of car ownership that typify communities within the Highlands and Islands of Scotland. The remote nature of the island communities and low levels of public transport services result in private car ownership becoming a necessity. Perhaps critically if the deprivation rating for the region around the A838 is compared to the average across the Highlands and Islands then it comes out as being significantly worse.

2.2.6 An alternative approach to assess economically and socially disadvantaged parts of the Highlands and Islands is the Fragile Areas definition. A full description of this can be found in Section 4.4.8 of the main report, but in summary, it uses 12 criteria across three categories: geographic, demographic and economic, to assess whether a region can be considered economically and socially disadvantaged. The region around the A838 is classified as a 'Fragile Area' under this assessment process.

2.2.7 In addition Durness, part of West Sutherland, was also one of the original Initiative at the Edge (IATE)[2] areas designated by the Scottish Executive. This is a partnership programme which aims to give communities "*the power to identify their needs, required actions and develop projects accordingly*".

2.2.8 The fishing and fish farming industry constitutes a major employer in Kinlochbervie with around 40 people working in this sector. This represents an important source of economic activity in the area generally. Durness and Scourie are also dependant upon the fish farming as well as crafts and tourism. Crofting is an important activity within the areas however this generates very little in the way of income.

2.3 Existing Road Conditions

2.3.1 The current route is 80% single-track with an average carriageway width of only 3.3m. Passing places are provided every 125m, on average. Whilst the route does not have any width or weight restriction orders the practical constraints of the single-track carriageway limit the length of vehicles that can easily use the route.

[2] Ardnamurchan is an existing (pilot) IATE area. Jura and Glenelg will enter IATE on 1st April 2004. Areas in the Western Isles will also enter the IATA in 2004/05.

The route suffers from poor lines of sight and is in general in a poor state of repair.

2.3.2 The traffic count data provided by the Highland Council indicates that the average two-way, 24-hour traffic flow across the year is 543 vehicles. This count was taken just north of Lairg. It is estimated that only a proportion of these trips will have a final destination beyond Laxford Bridge. As a proxy therefore only 50% of these trips are have been estimated to benefit from the full extent of the scheme upgrade. This generates a two-way, 24-hour trips flow for the route of 272 vehicles.

2.4 ***Proposed Improvement Scheme***

2.4.1 The proposed scheme is relatively small in scale with an estimated scheme cost in the region of £4.0M across the 71.1km route. The majority of the works, however, is likely to be undertaken across a 4km section giving an estimated cost per km of around £1.0M.

2.4.2 The scope of the works includes upgrading a 1.1km section from single to double track just north of Laxford Bridge. In addition a number of sections of the single-track route will be widened, in particular around bends in order to help improve lines of sight. Some re-surfacing will be undertaken, along with the provision of additional passing places across the route.

2.4.3 Further small-scale works on structures, culverts and drainage will be undertaken where required. In order to manage the growing tourist traffic using the route improved signage will be provided along with lay-bys and picnic areas.

3 Assessment of Scheme Impacts (Kinlochbervie to Lairg)

3.1 ***Impact on Journey Times and Reliability***

3.1.1 Data provided by the Highland Council indicates that average speeds across the entire route are currently around 43km/hr. This is a reflection of the fact that around 80% of the route is single-track.

3.1.2 The Council believes that the upgrade of the 1.1km section from single to double track, along with enhancements to lines of sight and the provision of additional passing places will allow much smoother progression of traffic along the route. They estimate that average journey times between Kinlochbervie and Lairg could be reduced by as much as 10 minutes. This would translate to a journey time of 90 minutes against the current time of 100 minutes. This represents a 10% reduction in average journey time.

3.1.3 The estimated improvement in journey time would translate to an average speed across the route of just over 47km/hr. Whilst this appears to be a relatively modest reduction in average speed it does represent a positive return given the scale of the capital investment.

3.1.4 Improvements in journey time reliability are also expected as a result of the anticipated reduction traffic conflicts. It is estimated that 'average delay' (as described in Section 3.4.15 of the main report) could fall by as much as 3.7 minutes per trip.

3.1.5 Vehicle operating costs are anticipated to fall as a result of higher average speeds along the route and improved road surface conditions. Fuel costs would fall as a result of the shorter journey times with less requirement to accelerate and decelerate along single track sections. Non-fuel costs would fall as a result of less wear and tear on vehicles through improved road surfacing. Overall vehicle operating costs (as described in Section 3.4.7 of the main report) have been estimated to fall by around 1 pence per existing trip.

3.2 ***Diversionary Impacts***

3.2.1 The A838 from Kinlochbervie to Lairg is considered to offer an alternative route to road-based trips between certain origin – destination pairs. As such the

proposed upgrades to the route may result in some traffic diverting from other roads to take advantage of the reduced journey times and improved reliability on the A838.

3.2.2 In particular the following two generic trip types are considered to offer potential for diversion away from other routes to the A838:

- NW Highlands to Inverness
- N Highlands to Lairg

3.2.3 Analysis of journey times indicates that diversion is most likely occur along the latter route with road users choosing to travel along the A838 rather than alternative routes utilising the A836. Diversion may also occur amongst traffic travelling from NW Highlands to Inverness via the A894/A835.

3.2.4 It is difficult to accurately assess the potential levels of diversion due to the absence of origin–destination travel data for the region. This makes it difficult to estimate traffic volumes.

3.2.5 As such an estimation of potential diversion has been made utilising two known factors i) the level of base traffic flows on the A838 and ii) the scale of the journey time improvements as a proportion of overall route travel times. The latter has been used to generate a 'diversion scale' across three levels representing the likelihood of diversion - low, medium or high. These levels have then been translated into factors to apply to the base traffic flows in order to provide an estimate of increased traffic flows along the route. Section 3.4.18 of the main report provides a detailed description of this methodology.

3.2.6 Utilising this methodology the North Highlands to Lairg route is classified as having 'medium' potential for diversion, whilst the NW Highlands to Inverness is classified as 'low'. These translate to a central forecast level of diversionary trips of 19 per day.

3.3 ***Generated Traffic***

3.3.1 Section 3.4.24 of the main report provides details of the methodology undertaken to assess the likely levels of generated traffic. To summarise, within the TEE analysis, a journey time elasticity of -0.2 has been applied i.e. a 10% reduction in journey time will result in a 2% increase in traffic flows through generated trips.

This approach has been taken in order to incorporate a measure of generated traffic within the TEE analysis. A wider assessment of the impact of the schemes on economic activity and subsequent traffic generation is undertaken within the EALI analysis.

3.3.2 Applying a –0.2 elasticity to the forecast journey time saving of 10%, along with a base flow of 272 vehicles, gives a forecast traffic generation of 5 trips per day.

3.4 ***Accident Reduction Impacts***

3.4.1 The reported number of accidents along the A838 is relatively low. A single fatal, four serious and four slight accidents have been reported within the last five years (see Table 4.6 of the main report).

3.4.2 Historical evidence tends to indicate that a large proportion of 'damage only' accidents are often not reported. Furthermore, data suggests that 'damage only' accidents make up a high proportion of accidents on single-track roads[3]. It is therefore feasible that a much larger number of slight accidents may have occurred during the period than reported.

3.4.3 None-the-less the level of accidents, reported and unreported, is unlikely to be particularly substantial and therefore there is little margin for scheme benefits from accident reduction measures.

3.4.4 The scheme itself should help to reduce the potential for accidents, in particular between on-coming traffic. Upgrading sections to double-track, widening bends, and improving lines of sight should reduce the likelihood of vehicle collisions.

[3] J.C. Tomlinson & A.M. Ross, "Accidents on Single Track Roads" 1988

Table 3.1: Summary of Scheme and Estimated Impacts (Kinlochbervie - Lairg)

Description of Scheme Upgrade	1.1km upgrade from single to double track, limited re-surfacing and widening, additional passing places. Estimated scheme costs = £4.0m Scheme cost per km = £65k	
Impact on Journey Times	It is estimated that journey times along the route could improve by an average of 10 minutes Estimated existing JT = 100 min Estimated post-scheme JT = 90 min	
Diversionary Impacts	**Competing routes**	**Estimated diversion**
	NW Highlands to Inverness	Medium
	N Highlands to Lairg	Low
Generated Traffic	Assumed journey time elasticity of –0.2 10% reduction in JT = 2% increase in traffic	
Accident Reduction Impact	Low levels of reported accidents Scheme should improve safety levels	

4 Transport Economic Efficiency Analysis (Kinlochbervie to Lairg)

4.1 ***TEE Analysis***

4.1.1 As described above, the pre and post-scheme average journey time data indicates that significant journey time savings may result from this scheme. The estimated 10-minute journey time saving, along with a reduction in 'average delay' of 3.7 minutes, translates to an existing user benefit of just over 1 pence per vehicle trip plus 143 pence per person trip. With a base volume of vehicle trips of 272 and vehicle occupancy of 1.41 this gives a central forecast for existing user benefits of £173k per annum.

4.1.2 Section 3.2 above describes the assessment of potential 'diversionary benefits' deriving from the scheme. A broad-brush forecast of around 19 trips per day is estimated. This translates to around £8k per annum, based on the assumption that each diversionary trip derives half the marginal benefit of each existing users of the scheme.

4.1.3 Section 3.3 above describes the assessment of potential 'generated trip' benefits deriving from the scheme. The central forecast of 5 trips per day translates into a generated user benefit of £2k per annum.

Table 4.1: TEE Results (Kinlochbervie – Lairg)

Base Trip Matrix (vehicle trips/day)	Average Journey Time Savings	Existing User Benefits (£k/yr)	Diversionary Impact (trips/day)	Diversionary User Benefits (£k/yr)	Generated Trips (trips/day)	Generated User Benefits (£k/yr)	Total Users Benefits (£k/yr)
272	10	201	19	8	5	2	**211**

4.1.4 Overall total user benefits are therefore estimated to be in the region of £211k per year.

4.2 ***TEE Sensitivity Testing***

4.2.1 Sensitivity tests have been carried out on the TEE results in order to illustrate the potential variation in scheme benefits. The central forecasts are based on the data inputs as described above.

4.2.2 The low forecasts assume that only half the estimated journey time-savings are actually achieved by the scheme. So rather than journey times along the A838 falling from 100 to 90 minutes the low forecast assumes a journey time of 95 minutes. In addition the base trips/day are assumed to be 25% lower. This impacts upon 'existing-user' benefits, 'diversionary-user' benefits and 'generated-user' benefits. Furthermore, the journey time elasticity applied to estimate generated traffic is assumed to be only –0.1.

4.2.3 The high forecast assumes an additional 20% reduction in journey times is achievable over-and-above that within the central forecast. So the journey time along the A838 is assumed to fall to just under 88 minutes. In addition, the base trips/day are assumed to be 10% higher. Furthermore, the journey time elasticity applied to estimate generated traffic is assumed to be –0.3

Table 4.2: TEE Results – Central, Low and High Forecasts (Kinlochbervie - Lairg)

Central Forecast	Low Forecast	High Forecast
211	**80**	**280**

4.3 ***Present Value of TEE Benefits***

4.3.1 Table 4.3 indicates the present value of the TEE benefits over 30 years for the central, low and high forecasts.

Table 4.3: Present Value of Benefits (£M) - Central, Low, High Forecasts (Kinlochbervie - Lairg)

Central Forecast	Low Forecast	High Forecast
4.1	**1.7**	**5.8**

* assumes 3.5% discount rate

5 Business Survey (Kinlochbervie to Lairg)

5.1 ***Business Survey Data***

5.1.1 Section 5 of the main report describes the objective and methodology for undertaking the business survey. It further discusses the sample obtained and its representation of local business. In addition it presents the results at an aggregate level, across all schemes, in order to evaluate general trends.

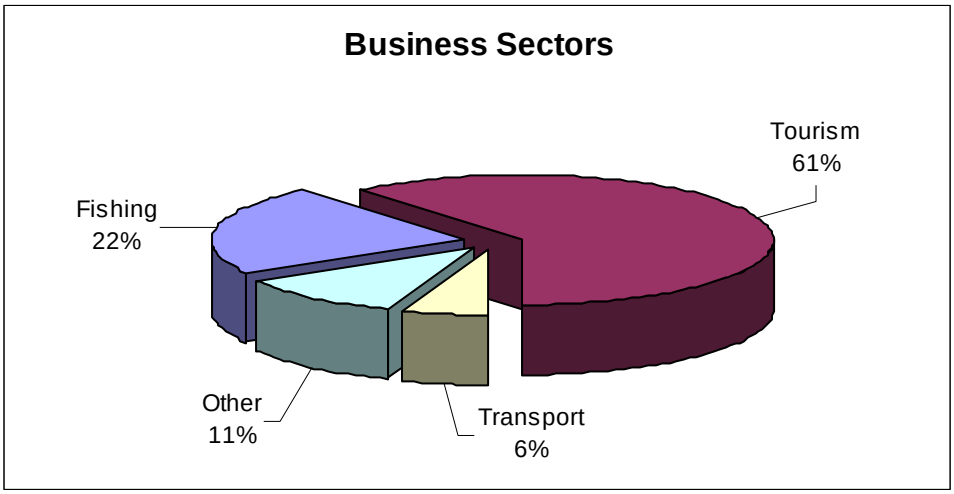
5.1.2 The section below presents the results for those businesses that will be directly affected by the proposed Kinlochbervie to Lairg scheme. Whilst the overall sample size achieved (18 firms) does not allow for statistically significant analysis to be undertaken, it does provide an insight into how the scheme may affect local firms.

5.1.3 The results have been used to inform the analysis in Section 6 evaluating the economic activity and locational impacts of the scheme.

Type of Business (Kinlochbervie to Lairg)

5.1.4 The majority of businesses surveyed along the Kinlochbervie to Lairg route reported to be 'tourism' related organisations (61%), with a further 22% in the 'fishing' sector. None of the respondents were in the 'forestry' or 'agriculture' sectors.

5.1.5 With the exception of 'forestry' sector representation, the sample can be considered roughly in line with the actual sectoral breakdown along the Kinlochbervie to Lairg route, with a particularly large representation from the tourism sector. The responses by sector are presented graphically below.

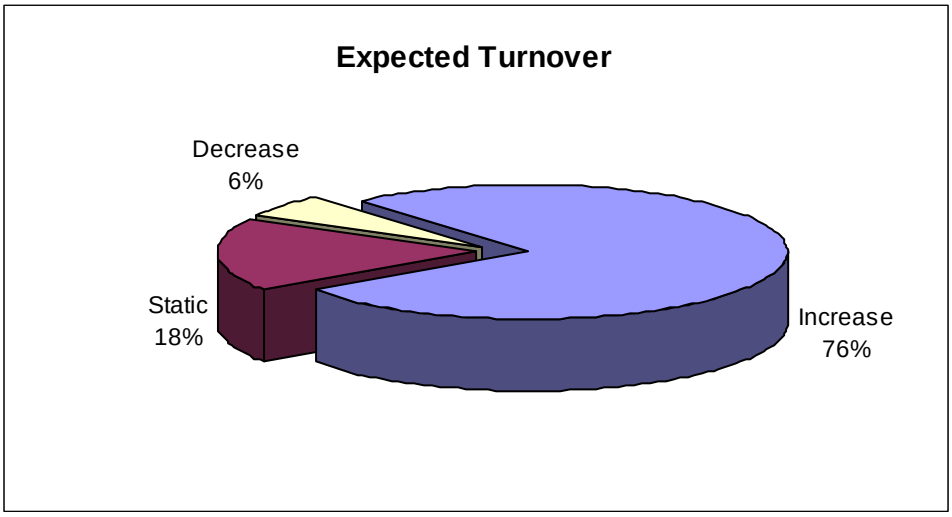


Turnover (Kinlochbervie to Lairg)

5.1.6 The table below summarises the annual turnover of firms surveyed in each of the business sectors. The majority of respondents quoted a turnover of less than £500k a year. One 'tourism' firm reported an annual turnover of between £500k and £1m, whilst a single firm within the 'other' sector reported a turnover in the range £1m to £5m.

Turnover	**Sector**				
	Fishing	**Tourism**	**Transport**	**Other**	**Total**
0 - 50k	1	6	0	1	**8**
50k - 250k	1	4	0	0	**5**
250k - 500k	1	0	0	0	**1**
500k - 1m	0	1	0	0	**1**
1 - 5m	0	0	0	1	**1**
> 5m	0	0	0	0	**0**
No response	1	0	1	0	**2**
Total	**4**	**11**	**1**	**2**	**18**

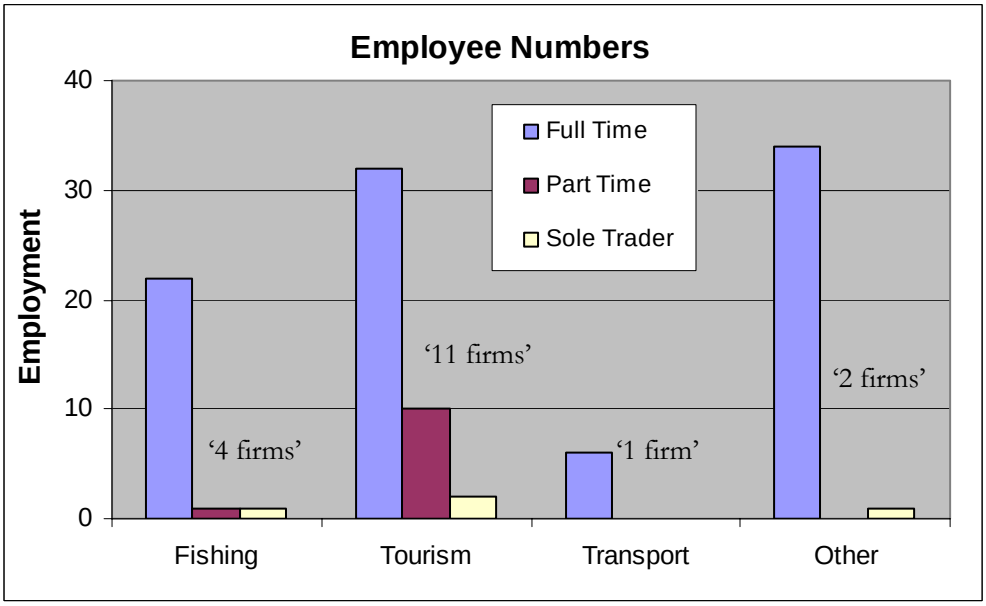
5.1.7 The following diagram indicates expectations amongst firms along the Kinlochbervie to Lairg route regarding future turnover. The results demonstrate that 76% of the businesses expect to witness an increase in turnover over the next three years, with only a small proportion predicting a decrease.



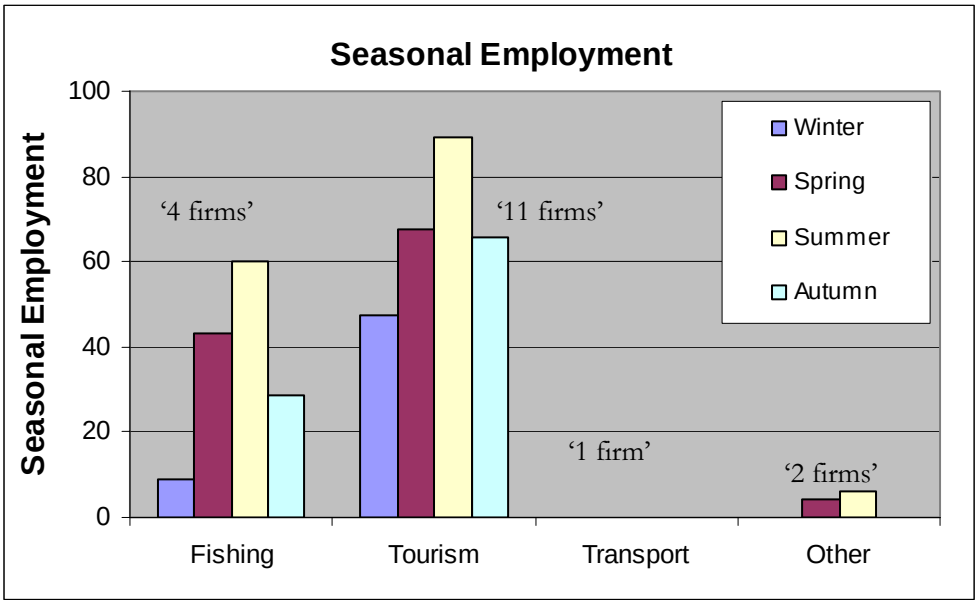
Employment (Kinlochbervie to Lairg)

5.1.8 In line with the data on turnover the majority of the businesses who responded employ a relatively small work force. Around 56% of firms employ less than ten staff; two firms reported they employ around 15 staff; one had 34 employees.

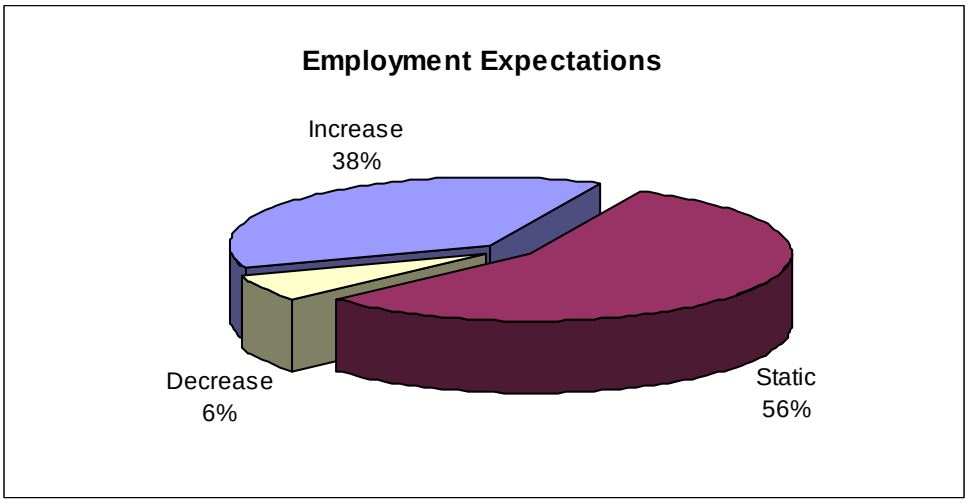
5.1.9 In total around 94 full-time and 11 part-time employees are represented. The histogram below presents the employment data by sector including the number of sole traders. The majority of full time employment was within the 'other' sector (34), closely followed by the 'tourism' sector (32).



5.1.10 The split of seasonal employment across sectors is shown in the following diagram. The results highlight the seasonal variations inherent within the 'tourism' sector.



5.1.11 The employment expectations of firms over the next three years are highlighted in the diagram below. Most firms (56%) expect employment levels to remain constant, while 38% expect employment to increase. The remaining 6% of respondents expect to see a decrease in staff numbers.

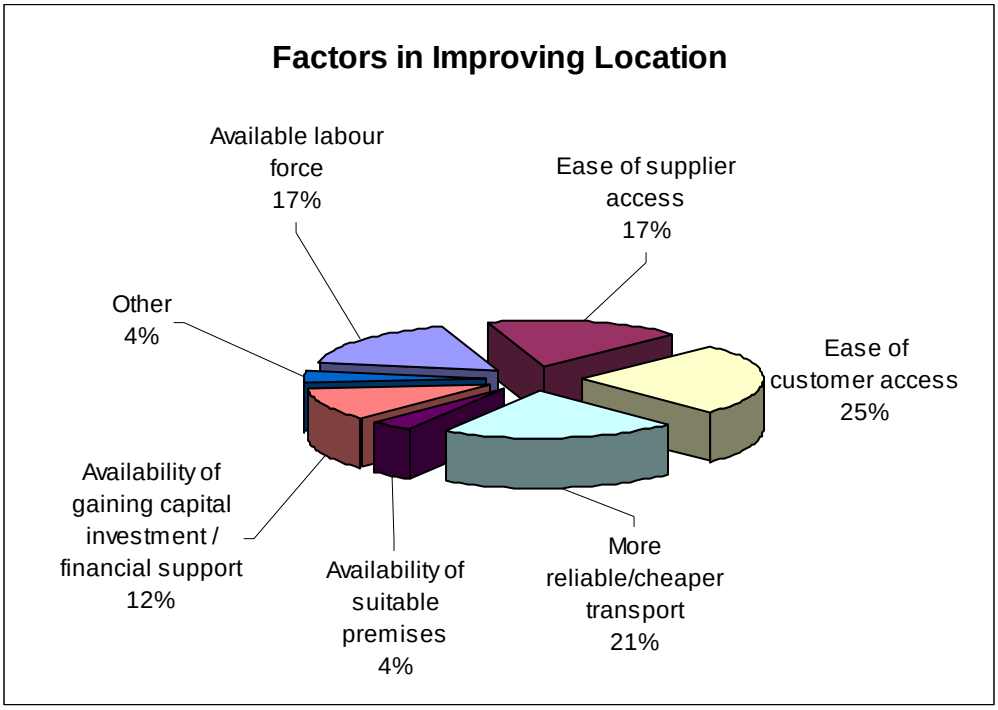


5.1.12 In comparison to expectations of turnover, firms generally predict a lower rate of growth in employment inputs than output. This indicates that firms expect to be able to obtain better utilisation of their current input capital.

Geographical Flexibility (Kinlochbervie to Lairg)

5.1.13 Businesses were asked about the feasibility of relocating as a measure of the geographically flexible of their operation. The overwhelming majority (60%) of companies reported the probability of relocating to be low, indicating the limited geographical mobility of businesses along the Kinlochbervie to Lairg route.

5.1.14 The diagram below highlights the relative importance of key factors in improving the location as a place to do business. Ease of customer access is considered to be the most important factor followed by reliable/cheap transport.

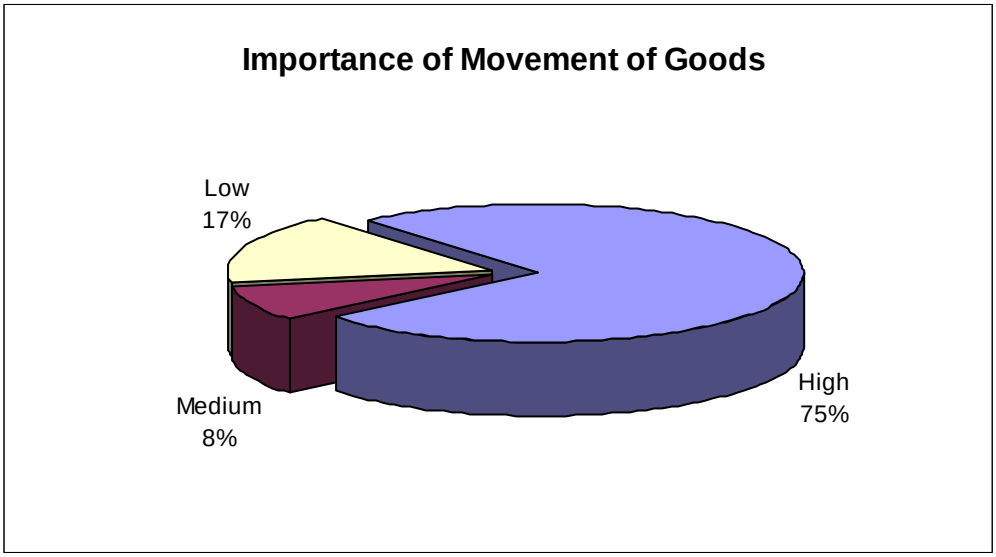


Transport (Kinlochbervie to Lairg)

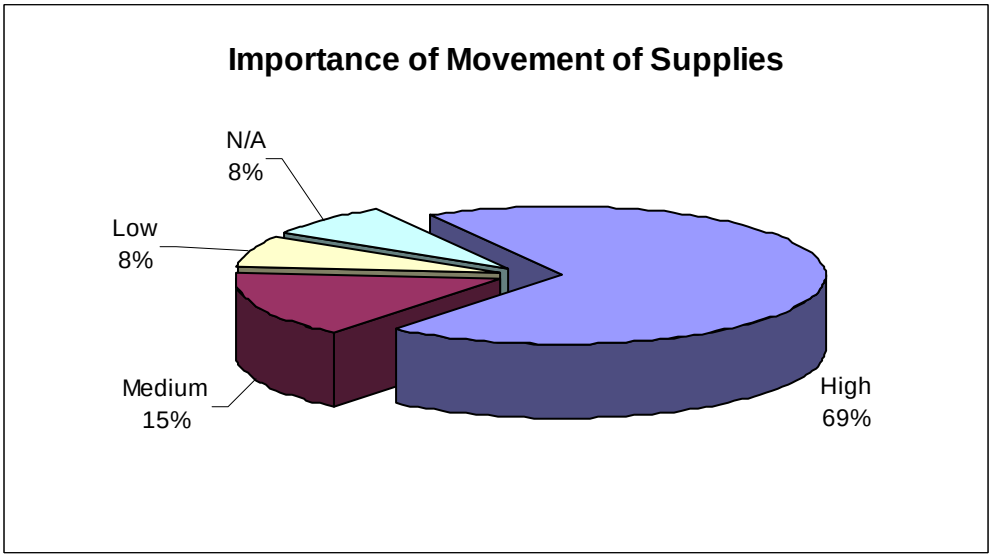
5.1.15 In order to gauge the significance of transportation within a firms operation, respondents were asked to rate the importance of the movement of goods and supplies to their business.

5.1.16 The diagram below indicates the importance of the movement of goods. Some 75% of businesses responded that the movement of goods was of high

importance. Furthermore, 50% of those who transport goods were unable to identify an alternative route for the transport of their finished products.



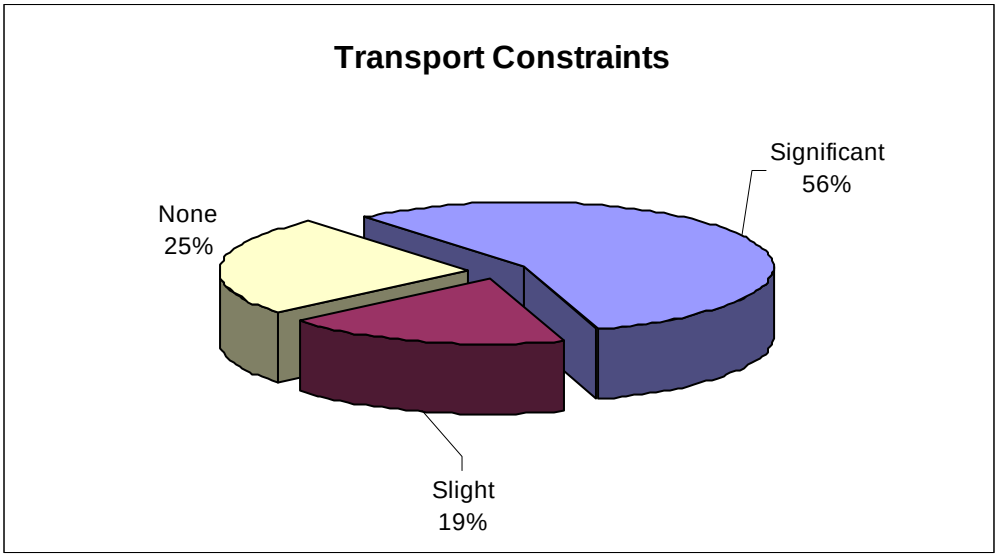
5.1.17 The diagram below indicates the importance of the movement of suppliers. Some 69% of businesses felt that the movement of supplies was of high importance and 58% responded that there was no alternative route for them to import supplies.



5.1.18 Businesses were asked to estimate the percentage of their total costs that are associated with the transportation of goods and/or supplies. Seven respondents

provided this data with six of them indicating transport costs were between 0% and 20% of total costs and one firm stating transport costs to be between 20% and 40% of total costs.

5.1.19 Respondents were asked whether their business currently faces any transport constraints. Around 75% of respondents stated that this was the case, with 56% considering these constraints to be significant.

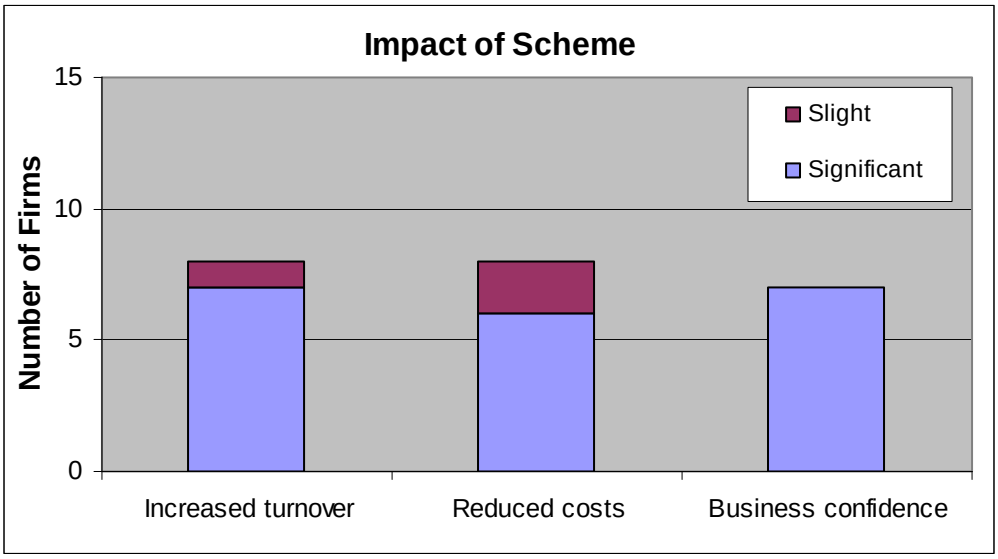


Scheme Impact (Kinlochbervie to Lairg)

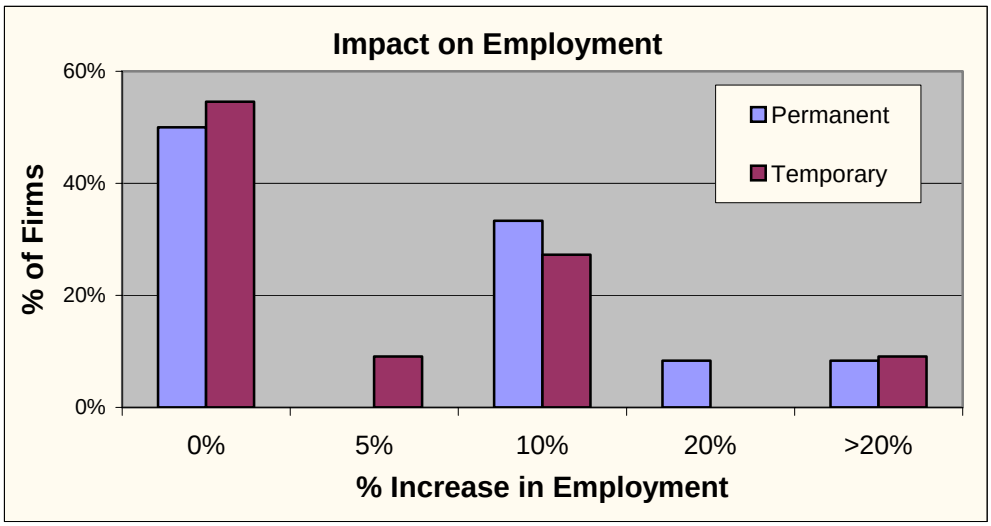
5.1.20 All firms were given a broad description of the type of scheme upgrade proposed along Kinlochbervie to Lairg route. Respondents were then asked to consider the likely impact of a road improvement upgrade upon their business.

5.1.21 The figure below presents firms perceptions of the likely impact of a road improvement on business confidence, turnover and costs. A total of 8 firms (44%) expected road improvements to decrease costs, eight firms (44%) expected road improvements to increase turnover and seven firms (39%) expected a significant boost in business confidence as a result of road improvements.

5.1.22 Four companies did not expect a road improvement scheme to have any impact upon their business.



5.1.23 Firms were further asked to quantify the impacts of a road improvement upon the level of employment. Some 50% of firms considered that an improvement scheme would have little or no impact upon the number of permanent staff that they employed. However, 41% of respondents perceived a road improvement scheme would increase their employment levels by up to 20%. The following table summarises the employment effects of the route improvements.



Additional Comments (Kinlochbervie to Lairg)

5.1.24 One of the main issues raised by respondents along the Kinlochbervie to Lairg route was the inadequate level of public transport. This was seen to impact upon both tourist levels and the availability of labour, in particular amongst the younger generation.

5.1.25 The fish companies also noted that they suffer from higher transport costs than companies in other geographic regions, making their products less competitive in many markets. In addition there is a requirement for products to be delivered on schedule to ensure fish is fresh when it reaches retailers. The poor state of the road makes this difficult and as a result many customers and suppliers are wary trading with companies within the region.

5.1.26 A number of respondents expressed concern over the proposed improvements as they believe the quaint, rural nature of the area to be the major appeal to visitors. However, in general respondents felt that improvements to the route would boost tourism and local business.

6 Economic Activity Locational Impact Analysis (Kinlochbervie to Lairg)

6.1 ***EALI Analysis***

6.1.1 The direct benefits to transport users have been estimated as part of the TEE analysis. However, the enhancements to the Kinlochbervie to Lairg route may also generate additional benefits in terms of stimulating economic activity at locations served by the route.

6.1.2 The assessment process for determining any potential EALI benefits is not straightforward in the absence of modelling tools. The business survey provides insights into how firms may react to improvements in accessibility. However the relatively small sample sizes make the translation of this data into quantifiable forecasts unreliable. This section therefore seeks to highlight the likely areas where EALI benefits may be derived from the scheme and provide an indication of their magnitude. A detailed description of the EALI methodology is presented in Section 3.6 of the main report.

Importance of Lifeline Roads to Key Sectors

6.1.3 As part of the Stage One and Workshop phases of this study a key aspect was to identify the main problems, issues and constraints facing firms and organisations within remote communities. More specifically the process involved analysing the importance of 'lifeline' roads to the various industry sectors. One output from this process was the extent to which forestry, fish farming and tourism rely upon the quality of the local and regional road network.

6.1.4 The timber industry is a particular heavy user of lifeline rural roads. The main representative body, the Timber Transport Forum, has an on-going campaign to improve key timber routes. The success of this campaign is reflected in the recent commitment in the Partnerships document (Scottish Executive, 2003) to provide support for roads affected by timber production. The timber industry as a whole in the Highlands and Islands is expected to almost double over the next 10 years, adding considerable pressure to an already unsuitable transport network. Upgrades to lifeline routes serving existing and potential forestry sites are therefore likely to help stimulate economic activity in this sector.

6.1.5 The fish farming sector also stressed the importance of lifeline roads, both in bringing raw materials to the fish farms as well as shipping out produce to domestic and international markets. A high proportion of fish farms are located along lifeline routes and thus the condition and upkeep of these routes is essential. Fish farming within the Highlands and Islands is facing considerable competition from abroad, which has driven down prices. As a result, quick and efficient deliveries are becoming increasingly essential in order for these firms to compete.

6.1.6 The tourism industry within the Highlands and Islands is a key employer within the region. Whilst tourist boards generally cite major exogenous variables as drivers for tourism performance the level of accessibility to the regions is an important factor. The condition of lifeline routes, in particular in providing access to ferry ports, is essential in encouraging visitors to access remote areas and thus stimulate economic activity.

6.1.7 Lifeline roads are therefore clearly an important aspect to the successful operation of these three key sectors within remote areas of the Highlands and Islands. Improved levels of accessibility along routes servicing existing or potential new sites for these industries can therefore be seen as likely to have a positive impact upon economic activity.

Kinlochbervie to Lairg Scheme Impacts

6.1.8 As described above, this scheme is anticipated to provide significant improvements to the accessibility of the Northwest Highlands. The reduction in journey times should enhance the attractiveness of using the route and subsequently encourage economic activity within the regions served by the routes

6.1.9 The improvement in reliability of journey times should also enable firms to operate with greater efficiency. Deliveries of goods and supplies can be managed more effectively with a reduced requirement for contingency planning as a result of late deliveries.

6.1.10 The improvements to transportation will be of particular importance to the primary industries. Within Kinlochbervie and to a lesser extent Durness and Scourie, the fishing industry constitutes a major employer.

6.1.11 The business survey responses indicated the following key results:

- A large proportion of firms are geographically immobile and thus are heavily reliant on the local infrastructure and service provision, rather than being in a position to look for alternative locations to undertake their business;

- A high proportion of firms are reliant upon the A838 for supplies and delivery of goods and that the current levels of transport provision create serious constraints to their business operation. Furthermore, 'greater accessibility to customers' was the most important factor in improving the desirability of the area, along with a 'more reliable/cheaper transport network'; and

- 44% of respondents considered that a road scheme improvement would significantly reduce their transport costs and allow them to expand turnover. In the majority of cases this would also lead to a requirement for an expansion in the workforce by up to 20%.

6.1.12 The responses outlined above provide a strong indication of the dependency of firms on good accessibility and the ability to efficiency transport goods to the markets. Maintaining and improving these routes is therefore a critical issue in sustaining the economic viability of these firms.

6.1.13 The proposed road improvement would provide a stimulus to all firms operating in the north-west end of the route, including Kinlochbervie, Durness and Scourie, releasing the constraints to travel currently experienced along the A838. This will be encompassed in the form of reduced transportation costs through improved journey times and journey time reliability. This is of particular importance due to the geographical immobility of a significant proportion of the firms in the region.

6.1.14 The operating efficiency of the primary industries should also be enhanced, in particular fishing and fish farming in Kinlochbervie, Durness and Scourie, through faster and more reliable transportation of goods (fish produce) to the markets. Delivery times and, more importantly, reliable delivery times are a critical aspect of the logistics process. A more reliable transport network will provide firms with the confidence in the ability to deliver their produce to the markets as required. This will not only allow sustainability within these industries but could in turn lead to their expansion.

6.1.15 Better accessibility along the A838 will encourage more visitors to the area. The improvements may therefore generate tourism within the Northwest Highlands. If

coupled with a campaign to promote the region this could have a significant impact upon individual local economies.

6.1.16 The general indicators for the region demonstrate that it is economically less prosperous than much of the rest of the Highlands and Islands. Unemployment levels are high and the region has been designated a "Fragile Area". Maintaining and improving the levels of accessibility is therefore a key aspect in ensuring the long-term vitality of the region.

6.2 ***EALI Conclusions***

6.2.1 The scale of the proposed road improvements would suggest that there could be considerable economic benefits derived from the scheme. Part of these will be reflected in terms of maintaining the viability of existing operations within the region. However, if journey time savings of up to 10 minutes can be realised then this, along with improved reliability, should help stimulate additional economic activity.

6.2.2 The EALI analysis indicates that the following key benefits could be derived:

- Provide stimulus to all firms operating in the north-west end of the route, including Kinlochbervie, Durness and Scourie, releasing the constraints to travel currently experienced along the A838;

- Enhance the operating efficiency of the primary industries, in particular fishing and fish farming in Kinlochbervie, Durness and Scourie, through faster and more reliable transportation of goods (fish produce) to the markets;

- Promote tourism within the Northwest Highlands. Better accessibility along the A838 will encourage more visitors to the area.

6.2.3 Limitations within the data set make it is difficult to accurately assess GDP or employment impacts. The business service responses suggested that around half the firms considered that the improvements would reduce their transport costs and subsequently lead to an increase in turnover. These firms tended to be from the primary industries. Just over a third of the firms felt that the improvement would provide a boost to their business confidence.

6.2.4 In terms of employment the business survey results suggest the impact could be mixed depending upon the industry. Amongst those firms who stated the

improvements would provide a positive stimulus to their operations the employment impacts could be considerable. Over a third of all the respondents considered that their workforce might expand by 10% or more. These firms were generally within the primary industries, in particular fishing.

6.2.5 Many of the benefits from the scheme may be reflected in terms of maintaining the current economic viability of the local economies. Instead of necessarily generating additional economic activity it will allow firms to remain competitive within their existing markets. The enhanced accessibility should enable localities such as Kinlochbervie, Durness and Scourie to maintain and expand their economic and social activities.

7 Conclusions (Kinlochbervie to Lairg)

7.1 ***Overall Scheme Evaluation Conclusions***

7.1.1 The aim of the Kinlochbervie to Lairg scheme is to improve the levels of accessibility to the Northwest Highlands. This area has been identified as being economically and socially 'fragile'. The analysis has demonstrated that sections of the route currently act as a constraint to primary industries, reliant on the route as a means of efficiently transporting goods to distant markets.

7.1.2 Direct transport benefits deriving from the journey time savings are estimated to be significant on an individual trip basis and despite the relatively low volumes of traffic, the overall benefits may be sufficient to justify the forecast capital costs (£4.0M) by themselves. The present value of benefits over 30 years is estimated to be in the region of £4.1M, with a low and high forecast of £1.7M - £5.8M, respectively.

7.1.3 Some indirect impacts upon the local and regional economy are also anticipated. It is estimated that primary industries, in particular fishing and fish farming, will benefit from the reduced transportation costs associated with enhanced road provision. The ability to deliver produce quicker and more reliably is likely to help sustain the economic viability of firms within the Northwest Highlands and may stimulate further interest in the development of these markets.

7.1.4 Accident rates along the A838 are relatively substantial in comparison to other routes, although still generally low in absolute terms. This suggests that there is some limited potential for accident reduction benefits along the route. The scheme improvements including upgrading single-track sections to double-track and widening narrow sections should improve safety along the route.