

# **THE CASE FOR RAIL IN THE HIGHLANDS AND ISLANDS**

**Economic Analysis**

**Technical Report 1**

**March 2004**

**Prepared for:**

Highlands and Islands Enterprise  
Cowan House  
Inverness Business and Retail Park  
Inverness  
IV2 7GF

**Prepared by:**

Steer Davies Gleave  
68-70 George Street  
Edinburgh  
EH2 2LR

[t] +44 (0)131-226 9500

[i] [www.steerdaviesgleave.com](http://www.steerdaviesgleave.com)



<b>Contents</b>	<b>Page</b>
<b>1. ECONOMIC ANALYSIS – TECHNICAL REPORT</b>	<b>1</b>
Freight	1
Time Spent Working On The Train	2
Offsetting Employment	4
Car Use	4
Bus use	4
Air services	5
Multiplier values	5
Future Scenarios	6
<b>FIGURES</b>	
Figure 1.1 Five Year Delay Scenario	7
Figure 1.2 Alternative Future Scenario	8
<b>TABLES</b>	
Table 1.1 30 Year Employment Impacts	7



## 1. ECONOMIC ANALYSIS – TECHNICAL REPORT

1.1 This Technical Report covers the following:

- A discussion of issues affecting the freight sector and companies using rail freight;
- Issues concerned with working on trains;
- Offsetting employment;
- Multipliers used; and
- Future scenarios.

### Freight

1.2 In terms of employment impacts it is likely that most companies currently having goods moved by rail would seek to transfer this work to road haulage. However, there are shortages of HGV drivers nationally at current wages. From other work we believe wages in the sector to be “sticky”, due to very low margins on trunk haulage and easy entry to the sector, leading to increasing shortages. Ultimately either wages will increase to attract more labour to this sector which will feed through into rates, new and / or foreign companies (including owner drivers) will enter the sector or rates will rise to ration the available capacity.

1.3 Where rates rise it is likely that some economic activity in the manufacturing and processing sector would be lost to the Highlands and Islands. Only where foreign companies are prepared to enter the market at current haulage rates might low rates be sustained.

1.4 In the first case where rates rise and impact on Highlands and Islands businesses, the employment impacts are likely to be negative within the transport using sectors (manufacturing companies for example), while employment in the transport sector would not rise (where capacity is rationed) or would rise only slightly to meet the demands of those companies able to pay higher rates for haulage.

1.5 Where there are new entrants at the current haulage rates, the employment impacts of transfer of haulage from rail to road are likely to be positive, for two reasons. First, freight is a marginal activity for the rail network in the Highlands and Islands and hence very few jobs are actually directly attributable to the freight side of rail operations.

1.6 Second, road transport is more labour intensive and less capital intensive than rail (ignoring the costs of overhead labour within the rail system, the cost of which is due to and borne by passenger services), and accordingly it is likely that several lorry driving and servicing jobs would be created if rail freight were not an option.

1.7 However, it is also unlikely that new haulage jobs would be generated within the Highlands and Islands in the absence of an increase in wages and / or haulage rates (which would have negative impacts on transport using industries). This is because the ability to meet transport demand by road will require new entrants who are unlikely to be locally based or to employ local people. Thus while jobs in the rail sector directly associated with freight are mainly based outside the Highlands and Islands, the

position will be the same if new road haulage demand has to be met by new entrants to that sector.

1.8 Our view is that the net impact within the (freight) transport sector would be small. Where the haulage sector in the Highlands and Islands is unable to expand the (first round) net impact would amount to the loss of employment in the rail sector; where there is some response locally at higher rates, the net impact could be positive or negative but we believe minor. Where extra capacity comes from new entrants, the net effect would be the same as the case where the sector is unable to expand in the Highlands and Islands.

1.9 The more serious issue is the extent of any possible knock on effects on companies dependent on rail freight. Where haulage rates rise, those businesses with low margins and which are dependent on freight transport would become less competitive in their respective markets, and we would expect this to have some negative effects: without further study of potential rate changes and of those sectors likely to be affected it is not possible to quantify that impact.

Where rates remain at similar levels to those prevailing at present, we would expect no changes to be generated within transport using companies.

#### **Time Spent Working On The Train**

1.10 This is important as an element in the TEE analysis, and in Section 7 there is a more detailed analysis, including estimates of the value of lost working time, which amounts to £47m in a full year<sup>1</sup>. This value is calculated using a standard transport economics approach. The TEE analysis will normally be consistent with the EALI / economic impact analysis except where there are significant market failures or where the spatial scope of the appraisal is different<sup>2</sup>. It is useful to explore this in a little more detail, as the TEE value of working time is substantial.

1.11 The survey identified respondents who were on employers business or commuting and who were working. On the day trains, 58 passengers out of a total of 169 who were on employers business or commuting were working; two people on leisure trips were also doing some work. Across all the surveys, 52% were travelling between Inverness and Perth, and 40% between Inverness and Aberdeen. Seventeen percent of those working on the train were working for more than 80% of their journey, 34% for 50-80%, and 48% for less than half their journey time.

1.12 If the rail services were not available to these workers, 91% would still make the journey and of those not making the journey the majority were tour guides. Of those who would have still have made the journey, 66% would have taken their own car and 26% would have taken a bus or coach. Both these alternative modes would likely mean that work could not be undertaken whilst travelling.

---

<sup>1</sup> Actually for the first year after notional closure of the rail network

<sup>2</sup> This is the subject of the report Transport and the Economy by SACTRA (1999).

- 1.13 Those working on the train were asked to state the impact no rail services in the Highlands and Islands would have on their business. Of the total who were working, 48% were Highlands and Islands residents and of these a quarter felt that there would be no impact, but about 40% suggested a slight impact, mainly through inconvenience, and about 35% suggested a major impact, mainly through cutting into work time and direct business impacts such as for tour operations and business contracts in certain areas.
- 1.14 The TEE analysis estimates that this reduction in work time effect is valued at £47m, which represents potential loss of output in the Highlands and Islands as the stock of workers becomes (in reality very marginally) less productive. In practice it is likely that most businesses will seek to maintain levels of output, and will do so in different ways depending on their industry, work practices and the state of the labour market for the skills they require.
- 1.15 It is likely that the vast majority of people who work on trains are “white collar” workers who are able to do some aspects of their work on the train, for example reading reports, writing or using a lap-top computer. In contrast most blue collar jobs require to be done in a workplace with specific equipment for example for manufacturing or processing activities. Accordingly we need to consider the market reality of current white collar work practices, where in many sectors people work above a standard working week without overtime payments.
- 1.16 In a perfectly competitive situation in both product and labour markets, loss of on-train work would result in higher costs and reduced output by businesses in the Highlands and Islands whose workers are unable to work on-train. Labour rates would be “given” and hence any marginal businesses in Highlands and Islands would reduce output or cease trading. This would result in a loss in terms of total labour earnings with fewer hours worked and / or a loss of numbers employed. The TEE analysis would value this at the “given” value of work time and the EALI analysis would report a loss of labour input – though a simple quantification in terms of jobs might not fully reflect this.
- 1.17 In practice where white collar workers are unable to work on-train, it is likely that to some extent these will in effect make up some of this lost work within leisure time. That is, some of working time lost on train will be recovered by using leisure time. White collar workers in most industries are increasingly having to work flexibly and many experience working extended hours to meet employers’ requirements. This reflects the degree of monopsony<sup>3</sup> within many labour markets particularly in smaller population areas where the choice of alternative employment available without having re-locate is often relatively limited.
- 1.18 Thus in sectors of the economy where there are few businesses hiring particular types of white collar labour, productivity levels might in practice be less affected than the standard analysis would suggest, to the extent that work would be undertaken during leisure time. In general we would still expect some reduction in productivity even in

---

<sup>3</sup> where there is a degree of monopoly power on the part of buyers, in this case businesses hiring labour.

these cases, but only in extreme cases would there be no change in output or in labour input. In this extreme case there would be no EALI impact and the TEE analysis would need to reflect this by valuing work on-train as leisure rather than work time.

- 1.19 Our analysis stopped short of exploring these issues in practice, but our view is that the EALI impacts associated with people being unable to work on train journeys would be somewhat less than the full impact suggested by the standard approach, but still positive. This in our view reflects the present realities of the labour market.

### **Offsetting Employment**

It is clear that a high proportion of trips will continue to be made in the absence of the rail network and therefore while jobs will be lost in the rail sector jobs will be generated elsewhere in the bus and air sectors and in various sectors associated with car use. Estimating this has proved difficult and initial broad estimates based on previous work had to be revised downwards following the full calculation of “replacement” trip making by sector, which revealed higher levels of car use than initially seemed likely.

### **Car Use**

- 1.20 We estimate that there will be 21.93 million extra car kilometres in the absence of rail; details of this are in the TEE analysis. Using TEN vehicle operating costs and adjusting these for VAT and duty to obtain a resource cost, we calculated a total additional resource cost of just over £1.2 million per annum and to this we applied the type 2 employment effect for the distribution and repair of motor vehicles, adjusted by a factor of 0.8 to scale back for the Highlands. This gives a total of 31 jobs (including indirect and induced employment) in the Highlands.

### **Bus use**

- 1.21 In the TEE analysis we estimate that additional bus revenues will be £2.64 million in the first year. If we apply the multiplier for the “other land transport” sector at its Scotland value, this yields an estimate of 58 jobs (including indirect and induced employment) in the Highlands.
- 1.22 However, it seems likely that even this will under-state the number of direct jobs likely to be generated, as the nature of routes and timetables in the region are such that higher than average levels of labour input are likely to be needed to meet demand. In the TEE we estimated there would be some 293,000 additional single (i.e. one way) person-trips by bus per annum.
- 1.23 Based on our knowledge of bus operations and routes in the Highlands we estimate that this would which might amount to just over 60,000 extra bus vehicle trips per annum or 171 trips per day. This would require an additional 57 drivers based on three journeys per day per driver. This estimate is realistic based on the likely mix of medium and long distance trips that would be generated in place of rail. Allowing for support staff and cover for sickness, holidays and other absences gives a total direct staff requirement of 69. Multiplier effects would add a further 25 – 30 jobs. On

balance we believe this is a better estimate than that made simply using expenditure data.

### Air services

- 1.24 In the TEE analysis we estimate that additional air service revenues will be £4.09 million in the first year. Applying an adjusted multiplier based on the “air transport” sector (at 0.7 times the Scotland value) yields an estimate of 42 jobs (including indirect and induced employment) in the Highlands.
- 1.25 Taking all three sectors gives a total of 170 jobs (including multiplier effects) which would be generated in the absence of the rail network.

### Multiplier values

- 1.26 Here we briefly explain the derivation of two multiplier values used in the analysis, namely that used for the rail sector itself and that for Highlands residents who decide to remain in the Highlands if the rail network ceased to exist – referred to as “stay home” travellers.
- 1.27 For the rail sector, the Type 1 multiplier value at the Scotland level is 1.971; this is a relatively high value and is ranked 17<sup>th</sup> in the list of Type 1 multipliers. This probably reflects a high level of use by the rail sector and its principal suppliers of sub-contractors, from a range of things from catering to consultancy. However, it was our view that this value is unlikely to be realistic for the Highlands, as a high proportion of the contractors and sub-contractors used by the rail sector is likely to be located in the central belt. This applies particularly to services like engineering and consultancy. Accordingly we applied a value of 0.3 to the type 1 multiplier and then adjusted this to a type 2 multiplier by multiplying by 0.25 which we understand is a standard induced value used by HIE. This gave a final multiplier of 1.61.
- 1.28 For “stay home” travellers it is necessary to consider the counterfactual behaviour which might apply if the rail traveller did indeed decide to stay at home or within the Highlands. For these a tourism multiplier could have been used, but we believed this was too high as not all of the respondents would travel and it was possible that some would not spend immediately – for example some might choose to save and use the money for a more expensive trip – say a foreign trip which might be paid for from two or three years of not travelling out of the Highlands by rail. It was also possible that money saved could be used to buy goods on the internet rather than in local shops.
- 1.29 Accordingly it was felt that a spend per direct, indirect and induced job value of £25,000 - £30,000 (as used for tourism multiplier analysis) was too low. In constructing an alternative, we assumed that 25% of money which would have been spend on rail based trips would either be saved or spent outside the Highlands without travelling. Then we used a simple average value for retail distribution and hotels, pubs etc as sectors where expenditure would be channelled. We then used a slightly lower direct effect and lower indirect and induced effects for these sectors, to reflect first an allowance for some spare capacity in these sectors and second higher levels of leakage of expenditure from the Highlands for both purchases of inputs and expenditure of wages. From this we arrived at what we feel is a realistic multiplier (or more precisely

a spend per direct, indirect and induced job) for this category of traveller. This is however, very dependent on the assumptions used.

### Future Scenarios

- 1.30 The results presented in the man report are a first year snapshot of the impacts. However, the STAG guidance on employment impacts suggests that employment effects should be considered over a future period so that dynamic effects can more fully be captured. Therefore we have considered:
- What would be expected to happen to employment in the “actual” scenario; and
  - What might happen to employment in the no rail scenario.
- 1.31 For the actual scenario we have projected rail growth in line with that in the SSRS, which represents 32.3% growth over a 30-year period. We have then assumed that the relationship between rail use and employment is constant and therefore that there is no change in the passenger mix and no productivity growth or decline. This also assumes implicitly that capacity to handle the tourist component of this demand grows in line with demand – if not there would be growth in demand which would over time be suppressed due to lack of capacity such as hotel beds.
- 1.32 For the no rail scenario we took the view that the initial behavioural response to the loss of the network would not be sustained over a period as long as 30 years; this means we can not simply extrapolate the first year effect. It is likely that in reality people who (said they) would not travel if there were no rail network would reconsider this decision in later years if the rail network did indeed close.
- 1.33 Therefore in time the travelling population (as represented by survey respondents) who said they would not travel would adapt and a proportion of these would travel into, within and out of the Highlands by other modes. Thus while rail might have been critical to the travel decision at the time of the survey, in time the same people (or those with the same characteristics as our survey respondents) would learn that there are other travel options, or perhaps the pull of the Highlands as a destination would overcome their travel preferences. The mechanisms here do not matter – simply that the first year response is likely to overstate the post adjustment position.
- 1.34 In addition we would expect that businesses such as hotels would respond to the loss of tourist activity by marketing, for example by devising new promotions to appeal both to former rail users (who would adapt to lack of rail) or to replacement visitors who would not have been targeted by marketing prior to loss of the rail network. All these effects would likewise bring (or bring back) a combination of former rail users and entirely new visitors.
- 1.35 Within the tourism sector there might also be instances where demand was suppressed at peak times through lack of capacity. Some capacity would then become available due to loss of rail users, and this capacity would be filled by visitors whose demand would otherwise be suppressed.

- 1.36 Other factors which would tend to erode the initial impact include growth in car ownership and use, growth in budget air travel and increased provision and use of hire cars.
- 1.37 A number of scenarios were developed assuming either an immediate or a delayed response (that is, when travel behaviour begins to change and the counterbalancing process begins) and different timescales in which jobs lost due to rail closure are counterbalanced through travel by other modes and associated expenditure by these travellers.
- 1.38 Table 1.1 below shows the results for four scenarios based on two alternative periods for the response and two alternative timescales in which jobs lost are counterbalanced by new employment growth. The impacts are expressed as jobs defined as 10 person years of employment; the outcomes have been discounted at 3.5% over a 30-year period. These have been rounded to the nearest 100 jobs. Table 1.1 illustrates one scenario in which the response is delayed for five years and then it takes a further 15 years for the loss of jobs to be counterbalanced.

**TABLE 1.1 30 YEAR EMPLOYMENT IMPACTS**

	<b>Total Time for Counterbalance of Initial Employment Loss</b>	
Initial response period	15 yrs	20 yrs
Immediate	1,000	1,200
Delay by 5 years	1,300	1,600

- 1.39 The effect of assuming that initial impacts erode over time is of course to reduce the 30 year impact to a level below that which would happen had the initial snapshot level of impact been sustained. The longer the period it takes to offset the employment loss and the longer it takes before the counterbalancing response takes to “kick in”, the higher the 30 year level of impact. A higher rate of growth of rail use would also increase the future impact for any rate of erosion, when evaluated in this way.

Figure 1.2 shows an alternative future scenario in which the initial employment loss takes much longer to be counterbalanced and shows an S-curve for the off-set period.

**FIGURE 1.1 FIVE YEAR DELAY SCENARIO**

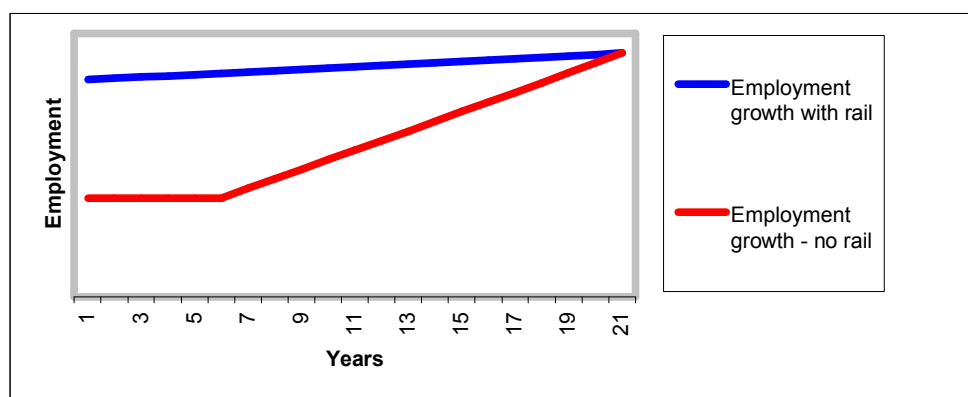
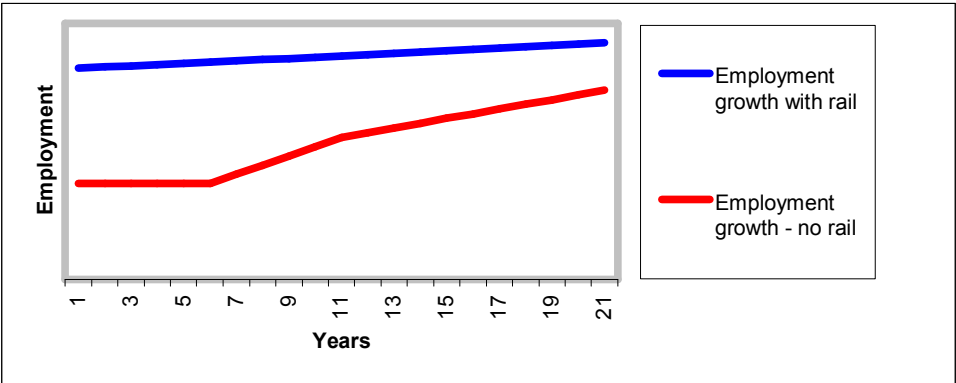


FIGURE 1.2 ALTERNATIVE FUTURE SCENARIO



**CONTROL SHEET**

Project/Proposal Name: THE CASE FOR RAIL IN THE HIGHLANDS AND ISLANDS

Document Title: Economic Analysis

Client Contract/Project Number:

SDG Project/Proposal Number: 205487

**ISSUE HISTORY**

Issue No.	Date	Details
	8 <sup>th</sup> March 2004	

**REVIEW**

Originator: John Stephens

Other Contributors:

Review By: Print:

Sign: .....

**DISTRIBUTION**

**Clients:** Highlands and Islands Enterprise

Steer Davies Gleave:

P:\Projects\205400 - 5499\205487 Valuing the Rail Network\Outputs\Final Report March 2004\Technical Report 1 Economic Analysis .doc

