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An Expanded Air Services Network

For the Highlands and Islands

A Report for HITRANS by A&TC

February 2003

Updated March 2004

Volume I - Text

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Executive Summary

A. In 2001, the network of scheduled air services linking the ten airports of the Highlands and Islands to the Scottish Mainland cost approximately £22.4 million to operate 'empty', before allowing for the marginal costs of carrying the current level of 383,000 passengers a year.

B. It is estimated that the net passenger revenues on these routes, having deducted the same marginal costs, was of the order of £24 million, suggesting that the routes overall were marginally profitable for the airlines. Certain routes are calculated to be significantly profitable, while many of the smaller routes incur operating losses.

C. At the same time, there is a general consensus that fare levels on these routes are very high compared to other domestic routes and that they are holding back the economic and social development of Scotland's peripheral regions. Growth of air traffic in the Highlands and Islands has been stagnating for many years while traffic to and from lowland Scotland has continued to grow apace.

D. Fare levels are high because the average costs of operating scheduled services in this region are high, for two main reasons. Firstly, the low density of demand requires the use of small aircraft in order to provide the frequency of service needed – and the cost per seat-mile of a 30-seat turboprop is significantly higher than that of a 150-seat jet. Secondly, the average annual hourly utilisation of aircraft in this region is severely compromised by the current opening hours of many of the regional airports, caused in part by the high cost of staffing them to CAA standards.

E. This study seeks to determine the cost to society of breaking this vicious spiral and converting it into a virtuous spiral of economic growth and improving levels of social inclusion.

F. The method chosen was to study the cost of arbitrarily reducing the average fare paid by around one third, and providing improved schedules and frequencies to meet minimum standards of service and access for each peripheral community.

G. Reducing the average fare by 33% was estimated to increase demand on the existing routes by an average of 28%. This extra demand helps to justify additional frequencies on some routes, and occasionally new direct routes.

H. The new operating pattern selected is a combination of: improved schedules (offering longer times at the destinations, and reducing the number of overnight stays required); extra frequencies (giving passengers a wider range of possible itineraries); new airports (with operations to Oban and Skye – Broadford); and new routes, such as Stornoway – Aberdeen and Benbecula – Inverness.

I. One of the significant features of the new network is the proposed creation of a single wave, early afternoon hub at Inverness Airport, which would enable all parts of the Highlands and Islands to have rapid daily access to all parts of Scotland.

J. The impact of these new schedules is to grow demand by a further 45%, suggesting a revised number of passengers using these routes in 2001 of around 719,000, an overall increase in the base year of some 87%.

K. The cost of operating this network 'empty' rises from £24.5 million to around £46.36 million each year, an increase of some 89%.

L. The estimated net passenger income, with all passengers paying a third less, is calculated at some £29.4 million for the year 2001. However, with passenger growth forecast to rise by 2.5% a year between 2001 and 2005 (the earliest that such a proposal could realistically be introduced), and 3.5% a year thereafter, this would result in annual net revenues of £32.4 million by 2005, £35.9 million by 2008 and – theoretically – an almost break-even £45.7 million by 2015.

M. However, the load factors needed to obtain a revenue of £45.7 million are simply unachievable without a great deal of inconvenience to intending passengers, and large levels of turnaway on peak flights and routes.

N. On a continuing basis, the routes ought to be able to operate at an average annual load factor of around 65%, which would generate some £36 million a year.

O. This would suggest that, once the routes had been running for some years, the average annual loss would be of the order of £9-11 million, with possibly greater amounts in the initial years of 2005-2007 as loads built up.

P. Although this £9-11 million would need to be provided from the transport budget of the Scottish Executive in the form of revenue support, there would be some Government savings elsewhere. The current PSO expenditure of around £1 million supporting the routes to Barra, Campbeltown and Tiree would cover a proportion of the some £10 million. Secondly, there would be an annual increase of £4.2 million revenue for HIAL, from which it would be expected to show an increased profit of around £2.0 million which could be regarded as a reduction in the Scottish Executive subsidy. Thirdly, around 20% of passengers on the network have their fares paid for by the Health Service and other bodies. Reducing these Government fares by some 33% will lead to a reduction in cost of at least £1.5 million each year, while a further £1 million could be saved by reducing drastically the number of overnight stays occasioned by the current schedules.

Q. This total of around £5.5 million a year saving elsewhere in Scottish Executive budgets effectively halves the cost of the proposed network, and takes no account of the expected benefits to the economic and social lives of these communities.

R. Additional capital infrastructure costs such as new or lengthened runways have been costed at between £14.5 to £16.5 million, predominantly at Barra.

A. Introduction

1. In October 2002, A&TC presented the findings of its 'Cost Modelling Study for Air Services in the Highlands and Islands' to HITRANS, the Highlands and Islands Strategic Transport Partnership.

2. The main purpose of this pilot study was to determine the aircraft operating costs on five major, representative air routes within the Highlands and Islands and to assess the impact of reducing air fares by a substantial proportion, of improving the schedules and of increasing the frequency of flights. The five routes, each of which would possibly become the subject of Public Service Obligation orders [or PSOs], were Sumburgh to Aberdeen, Kirkwall to Inverness, Wick to Edinburgh, Stornoway to Glasgow and Islay to Glasgow.

3. The study concluded that – on the specific assumptions made – the annual subsidy required to operate these five major routes at the desired frequencies and fare levels was of the order of £2.0 – 2.8 million. On this basis, the report concluded that adding in all other significant intra-Scottish routes to and from Highlands and Islands airports might cost an additional £5.0 – 8.0 million a year. It was assumed that the £1.0 million subsidy [through PSO] to routes from Barra, Tiree and Campbeltown would continue, giving a total annual subsidy requirement in the region of some £8.0 – 11.8 million.

4. Upon consideration of this pilot study, HITRANS commissioned A&TC to extend its study to cover all intra-Scottish routes, and this report contains the methodology, assumptions and conclusions of that second Study, presented in February 2003.

5. The assumptions and conclusions were modified during the succeeding twelve months, in particular the decisions to:

   - break the unified network into four PSO bundles,
   - amend some of the routes, frequencies, schedules and aircraft types,
   - reconsider the amount of aircraft cover required

6. The study has also been extended to develop the section on capital cost and revenue cost requirements of operating the full schedule, and of delaying parts of Bundle C ['Western Isles'] and Bundle D ['Argyll and Highland'] until such time as the existing PSO on routes to Barra, Campbeltown and Tiree has been completed, and decisions made on the future of Barra and Skye airfields.

B. Summary of Methodology

7. A&TC based its 2002/2003 study on the latest available data, specifically:

   - information from the 2001 survey of passengers at Inverness, Aberdeen, Edinburgh and Glasgow Airports by the Civil Aviation Authority [CAA]
   - detailed passenger flows in 2001/2002 from Highlands and Islands Airports Ltd [HIAL]
   - airline schedules as published in the Official Airline Guide [OAG] for November 2001

8. No survey information was available on routes such as Sumburgh to Kirkwall, which do not include one of the four survey airports; for these, A&TC has used its knowledge of the industry to determine the probable composition of each market.

9. The study then costed the whole of the existing operation using the cost model developed in the earlier phase of this study. All current operated routes were included except for the 'local' routes operated within the Shetland Isles, within the Orkney Isles and within the Western Isles, each of which is separately funded by the relevant local council, and which have been excluded from this study.

10. Based on average fare levels as reported by the CAA, an estimate was then made of the passenger revenue generated by these routes in 2001, allowing an interpretation of the overall current profitability of the routes.

11. A standard average return fare was then imposed upon the network of £35.00 plus £0.30 per nautical mile, based on the direct air mileage between each pair of airports. This formula was proposed by the earlier study as one which reflected the general shape of aviation cost levels in 2001, but which gave average fares in line with HITRANS' own expectations as to the fare levels that should be charged.

12. In general, although with wide variations, this new fare level is approximately 33% less than the current average fares paid, as reported by passengers surveyed by the CAA.

13. Based on the reduction of average fares, route by route, and assuming differing elasticities of demand for business, leisure and interlining [or connecting] passengers, a revised level of passenger demand was then obtained.

14. HITRANS also requested that each major route met certain improved operating objectives or parameters in terms of frequencies and detailed schedules. These are given in more detail later, but they have the effect of improving the range of travel options both for those who are resident in the peripheral areas, and for those wishing to visit these areas. Estimates of further traffic growth arising from these improvements were then made.

15. Specifically, the study had to incorporate services to two potential new airports at Oban and Skye (Broadford), and to assume that all airports would be available to scheduled aircraft at the times of day and week required.

16. A&TC then began a substantial iteration of potential schedules, of levels of demand, and of aircraft availability in order to reach an optimal network, which maximised aircraft utilisation, met as many of the operating parameters as possible, and operated at annual load factors which were considered achievable. No more than four aircraft types were to be used, three if possible.

17. Following discussion of the original February 2003 Report, additional iterations have been made to take into account certain comments and decisions – specifically in relation to the schedules at Wick and the need to split the network into four independent Bundles.

18. Once a final operating plot was achieved, the resultant demand levels [for 2001] were re-assessed and the revenue estimates calculated. The study then costed the new aircraft operation, and compared the costs with the revenues to determine the level of subsidy required over the following years, allowing for growth in demand.

19. A short sensitivity analysis was run to assess the impact of changes in certain cost and revenue assumptions.

20. Bearing in mind: that there are already subsidies paid for the routes from Glasgow to Barra, Tiree and Campbeltown; that there would be additional revenue to another subsidy recipient [HIAL]; and that a proportion of the fares savings would be received by other public bodies such as Health Authorities; the study seeks to determine the incremental subsidy required by the revised, expanded operation.

21. The study was also asked to assess the additional capital expenditure and additional airport running costs needed to provide the proposed operation with the necessary infrastructure.

C. Available Data

22. In November 2001, there were twenty-three direct intra-Scottish routes operated from the ten HIAL airports, excluding local routes in the Shetland, Orkney and Western Isles. In that month - used as the study baseline - eighteen of these were operated non-stop, five were operated one-stop (Edinburgh to Kirkwall and Stornoway, Glasgow to Kirkwall, Glasgow to Sumburgh via Aberdeen, and Inverness to Sumburgh) and one was also operated two-stop (Glasgow to Sumburgh via Inverness and Kirkwall). (There are minor variations at the weekend).

23. In addition data was collected on local traffic flying between Aberdeen and Glasgow, as this forms part of a current daily service between Sumburgh and Glasgow.

24. ***Appendix One*** gives a fact-sheet on each of these twenty-four routes, based on data supplied by the CAA Passenger Survey on twenty-one of the routes (excluding Kirkwall to Sumburgh, Kirkwall to Wick and Sumburgh to Wick), and on data supplied by HIAL and OAG for all routes.

25. The data shown for each route is as follows:

- Total Origin and Destination [O&D] passengers in 2001/2002
- Average O&D passengers per week 2001/2002
- Average O&D passengers per week, November 2001
- Ratio of the average November 2001 week to the average week 2001/2002
- Scheduled services advertised for November 2001 – departure times, arrival times, en-route stops, days of operation, aircraft types
- Average number of passengers in November 2001 by day of week and flight number

26. Data for the twenty-one surveyed routes is taken from the CAA Passenger Survey for 2001. Each selected parameter has been analysed for each end of each route, giving responses for passengers resident at the peripheral end of the route and for those elsewhere. Thus on the Aberdeen – Kirkwall route, responses have been analysed for those resident in the Orkneys and Shetlands separately from those living elsewhere. Each response is also shown as the number of passengers actually interviewed, and the grossed-up number of annual passengers they represent. It should be noted that [apart from the three routes not covered at all] the CAA sample size is considered insufficient on five of the routes – GLA-BRR, GLA-CAL, GLA-KOI, GLA-TRE, INV-LSI – and data given for those routes needs to be treated with greater caution.

27. The CAA data shown covers:

- detailed journey purpose, with up to 29 categories, and sub-totalled into 'business' and 'leisure'
- itinerary, with passengers at the mainland [or non-peripheral] end of each route shown according to the proportion making an onward journey by air, and those travelling on by surface. For each of these segments, the major destinations are shown, either as airports or as local authority areas [on those routes which were surveyed at both ends, e.g. Inverness – Edinburgh, the itinerary data is shown for both ends of the route]
- length of stay at destination
- price paid for round trip ticket – a word of warning: passengers are asked to remember how much they paid for their ticket, rather than produce it as evidence. On average, only half the passengers offered a response, and there will be some confusion from passengers who are on multi-sector journeys. Some of the responses will be net of all taxes and charges; others will include them. However, it is the only available information on fares, as the airlines involved were not prepared to provide this information for the study
- maximum fare per round trip in 2001 – source Air Tariff Publishing Company [ATPCO]
- average fare paid as percentage of the maximum fare

28. In addition, the study collected cost data from a variety of sources to ensure that the cost model accurately reflected real cost conditions. Data was provided by BAA Scotland, HIAL, Eurocontrol, aircraft manufacturers, the CAA and various publications. A full description of the cost information used in the cost model is provided at ***Appendix Two***.

D. The Cost Model

29. A brief description of the original cost model developed for the five initial routes is provided at ***Appendix Three***.

30. The model was designed to calculate direct operating costs incurred by airlines operating a variety of appropriate aircraft on each of the original five key routes. Assessments were made of the overheads and of the additional fixed costs incurred by airlines in providing aircraft, maintenance and crews to support the services. A critical feature was to measure the impact of varying the overall annual utilisations of each aircraft, so as to spread the fixed ownership costs as widely as possible.

31. The model is not able to predict the level of passenger traffic and revenue that would result from any particular frequency, detailed schedule, aircraft type, or average yield decision. These decisions have been taken by experienced forecasters within the Aviation and Travel Consultancy.

32. The model was designed to study only single-sector operations, as requested in the original brief.

33. The changes made to the original model to enable it to provide the data for the second phase of the study were as follows:

- ✍ extension of the number of routes capable of being examined from five to fifty-one
- ✍ addition of two additional aircraft types, the Twin Otter and the Jetstream 32.
- ✍ a minor change was made to the calculation of certain Fixed Operating Costs, notably engineering costs, to reflect varying rates per aircraft by aircraft size, rather than the prior assumption of a fixed cost for all aircraft types.
- ✍ assessments of airport charges at Oban and Skye were based on HIAL rates, and on the cost of fuel at Wick.
- ✍ calculations were made at £1 = $1.60 compared to the $1.56 of the earlier study, although the model can be calibrated for any chosen exchange rate.

34. The revised model has not been attached to this report. Recipients of the earlier pilot study have access to the basic cost model.

E. Assessment of Costs and Revenues on Current Operation at Current Yields

35. ***Appendix Four*** is a diagram showing the operating pattern of scheduled passenger routes in November 2001. Airports are shown according to ownership, and each line represents a daily frequency on weekdays, by approximate aircraft size.

36. ***Appendix Five*** is a summary of the predicted costs of operating the November 2001 schedules for a period of twelve months, calculated with the aid of the modified cost model.

37. Excluding the existing Aberdeen – Glasgow sector, BA, Loganair, Highland Airways and Eastern Airlines operated twenty different sectors in November 2001. Three of the sectors (ABZ-LSI, GLA-INV, INV-SYY) were operated using two different aircraft types. Three of the routes for which there are passenger numbers (EDI-KOI, GLA-KOI, GLA-LSI) did not receive non-stop service in November 2001.

38. The model calculates that the cost of operating this network empty – with zero passengers – was £21.5 million in 2001. The assumed utilisation rates are based on CAA data for aircraft utilisation by British Regional Airways and Loganair in 2001.

39. If the Aberdeen – Glasgow sector were to be added back in, the revised annual total cost would be around £22.4 million.

40. ***Appendix Six*** is a similar summary of the expected revenues. The average fare has been taken from the CAA Passenger Survey responses and is one of the most suspect of the figures used in this whole study. The average round trip fare paid is assessed at £174.68. From this average fare quoted, the round trip per passenger costs (averaging £36.10) have been subtracted, leaving a net contribution to the airline operating-empty costs of some £138.59 per Round Trip.

41. This gives an annual net revenue contribution towards the 'empty' costs of £25.7 million for 2001.

42. In summary, it would appear that the airlines therefore made a profit of some £3.3 million in 2001 (£25.7 - £22.4 million). There are however two reasons why the revenue figure may be over-estimated: firstly, the calculations assume that all passengers are 'revenue' passengers and that there are no staff or other 'non-revenue' passengers on board, whereas a figure of around 2% has been provided by Loganair. Secondly, there may be confusion in passengers' minds over the payment of Airport Passenger Duty [APD] which is not included in the A&TC assessments of either cost or revenue, but are likely to be included in many passenger responses to the total cost of their ticket.

43. Taking these matters into consideration, it would appear that the airlines probably make a profit of around £1.0 – 2.0 million a year on this network overall, on the assumption that – again, overall – the calculated costs are reasonable.

44. It is difficult to determine the existing profit or loss situation on many individual routes because of the number of multi-sector operations that exist. However, on

those single-sector routes that are measurable, it will be seen that several routes currently appear to show a high level of profit while others experience significant losses. The only consistent feature is that routes operated by the 66 seat ATP (and therefore routes operated by British Regional Airlines in 2001) appeared to be significantly more profitable than any other. The figures also suggest that the three PSO routes to Barra, Campbeltown and Tiree lose some £600,000 a year before receipt of financial assistance.

F. Estimated Impact of Reducing Fares on Demand Levels

45. The figures in ***Appendix Seven*** show the impact upon revenues [and thus profitability] of reducing the fare levels, but with [for the moment] no increase in passenger carryings as a result.

46. As agreed with HITRANS, the target fare levels are based on the airlines receiving an average yield per passenger of £35.00 per round trip plus £0.30 per nautical mile. The resultant fares are shown alongside the achieved fares in 2001 according to the CAA. Overall, they result in a tariff reduction of almost exactly one third, although there are significant variances by route.

47. ***Appendix Eight*** shows the comparison between the existing fares, the current average fare paid, and the proposed average fare for the sixteen largest routes. It also shows the rate per nautical mile of the current basic fare, being over £1.50 per nm on routes from Aberdeen to Wick and Kirkwall. On one short route – KOI-WIC – the new fare level would actually result in an increase in average fare, while the Edinburgh – Kirkwall route benefits most, with a new fare level only some 52.8% of current levels.

48. Round trip costs per passenger decline from £36.10 to £32.59 as a result mainly of commission rates declining as the fare received declines.

49. The net round trip yield per passenger falls to £83.77, and the total revenue declines from £25.7 million to some £15.5 million. Allowing for some profit in the figure of £25.7 million, this would suggest there would be a need for some £8.0 – 9.0 million in extra subsidy to allow existing passenger numbers to benefit from the proposed lower fares.

50. However, it is known that the lower fares would lead to increased demand, providing there are sufficient seats available.

51. Three elasticity levels have been used to determine the increase in demand caused by such lower fares, on the assumption of the existing frequencies and schedules, and assuming sufficient capacity.

52. The table below shows what happens to the three major markets – business, leisure and interline – when fares are decreased by 10%. Business traffic, with a predicted elasticity of 0.75 – grows by 7.5% and revenue from business travellers declines to 96.75% of its former levels. Leisure traffic is assumed to respond more favourably: its elasticity of 1.25 leads to an increase in total revenue of some 1.25%. Interline traffic responds least well – an elasticity of just 0.65 leading to a fall in revenue of 4.15% - because it is assumed that the other parts of the overall air fare are not affected by the decline in one part of the fare only:

Travel type	Business	Leisure	Interline
Current fare	100	100	100
Current demand	10,000	10,000	10,000
Current revenue	1,000,000	1,000,000	1,000,000
Elasticity	0.75	1.25	0.65
New fare	90	90	90
New demand	10,750	11,250	10,650
New revenue	967,500	1,012,500	958,500

53. The elasticities used are in alignment with generally-observed elasticities on routes to and from the UK, and refer only to newly-generated traffic. They do not take into account any traffic diverted from other routes or operations where fares are not being reduced. It has also been difficult to determine the levels of cross-over traffic from competing ferry services – the figures may thus be understated.

54. Using these ratios, the total passengers by route, the known [or forecast] proportions of business, leisure and interline by route, and the decreases in the current fare levels, it has been possible to forecast the resultant levels of traffic as a direct result of decreasing fares by an average of 33%.

55. The results are shown in ***Appendix Nine***. Overall, the elasticities used lead to an increase of traffic of 28% following a larger fare reduction, of some 33%. Taking all routes together [as a result of relatively high interline proportions, and the significant level of business traffic] the Highlands and Islands routes are assumed to be marginally inelastic, with the result that overall passenger revenue is forecast to decline slightly if fares are lowered.

G. The New Route Network – the Parameters

56. The Consultants were asked by HITRANS to develop a new route network for the Highlands and Islands which would in turn be expected to increase travel to, from and within the region, irrespective of the fare levels.

57. HITRANS laid down certain parameters for the new route network, following consultation with its member organisations. These parameters were that the proposed network would:

- reduce the effects of peripherality by providing a maximum flight time from the peripheral airport to the selected key Scottish service centre of one hour
- maximise the time available for a day's business at the key centre, and also allow time for a reasonable day's business at the periphery
- recognise that the key service centre for Shetland is Aberdeen; for Orkney and Caithness is Edinburgh; and for the Western Isles and Argyll is Glasgow
- include new scheduled routes from Oban to Glasgow and from Skye (Broadford) to Glasgow
- offer a frequency between the periphery and the key service centre of three rotations per day, with some Saturday and Sunday services
- offer schedules to the key service centre hubs that provide convenient onward connections to the main UK and European centres
- not schedule any route to have more than two sectors
- maximise the efficient use of aircraft, so as to minimise cost

58. HITRANS recognised that the final network proposed would be optimised to achieve as much of the above as possible. However, it would be difficult to achieve all the scheduling objectives while at the same time achieving the efficient use of aircraft, and obtaining an economic passenger load factor.

59. A&TC was told to assume that there were no other over-riding restrictions on what it could propose. Airport opening hours were assumed to respond to demand, and runways could be lengthened [within reason] if necessary. All such requirements were however to be detailed, for subsequent cost analysis.

60. Originally, the network was designed to be operated by one airline as a single network. Subsequently, towards the end of 2003, it was agreed that (in order to gain acceptance under EU PSO regulations) it would be necessary to be able to sub-divide the network into a number of discrete bundles.

61. It was also recognised that the proposed network would assume that all necessary infrastructure improvements – such as the provision of a surfaced runway at Barra – were available immediately. This 'phasing' aspect is addressed at a later stage in the study.

H. The New Route Network – Description

62. A substantial number of manual iterations were necessary in order to achieve the final proposed network.

63. Throughout the initial exercise, it was assumed that the operation would be run as if it were all operated by one airline. Eventually, it might prove necessary to operate it more along the lines of a co-operative. The important aspect is that individual aircraft would be able to operate on a variety of routes within the region, routes that were at that time operated by more than one airline. Only in this way, could a proper network of routes and schedules be developed and operated as a whole.

64. At a later stage, the network was divided into four Bundles on geographical lines, with slight amendments necessary and a small number of complications arising.

65. Regarding aircraft selection, it was believed that the current range of aircraft used in the Highlands and Islands (the 18 seat Twin Otter, the 33 seat Saab 340B, and the 66 seat ATP) give approximately the most suitable range of sizes. If demand was to be encouraged by increasing frequencies and improving schedules, it was unlikely that this could be achieved by the use of aircraft larger than those currently used. Certain iterations included the use of a fourth aircraft size of around 48-50 seats, such as the Saab 2000 aircraft, but it has proved difficult [and therefore uneconomic] to develop a set of operations suited to that particular aircraft size.

66. In addition, it would be preferable to operate a network with three aircraft types rather than four, because of the increased flexibility of the resultant network. Ideally, airlines would like to operate with just one fleet, and seek commonality benefits. However this is impracticable in the Highlands and Islands. A single airline with a single aircraft type would either have to operate a large number of daily services on Aberdeen – Shetland with an aircraft of some 20 seats, or lose substantial sums of money operating larger aircraft on routes such as to Campbeltown.

67. Following the pilot analysis, it was considered that there are no obvious replacement aircraft for the 33-seat Saab 340 or the 666-seat ATP, although the 66 seat ATR72 appears to be identical to the ATP in cost and operating characteristics. Studies of jet replacements for the ATP showed that the incremental cost was substantial and would lead to significant additional losses that would be difficult to justify.

68. Following the original route and aircraft recommendations of February 2003, HITRANS has decided against the expensive lengthening of Broadford Airstrip, Skye, which has meant that there is only one aircraft type of the appropriate size to operate the route to Edinburgh – the 37-seat Dash 8-100. This will lead to complications for the operator selected to operate Bundle D [Argyll and Highland].

69. In addition, a replacement for the Twin Otter is needed. The sole reason for the use of the 'fixed-undercarriage' [as well as being slow and unpressurised] Twin Otter is because it is the only aircraft suitable for landing on the salt-laden beach at Barra – the retractable undercarriages of all other options are affected badly by

salt spray and lead to considerable engineering expenditure. For the purposes of this study, it is assumed that the Barra Beach airstrip is replaced by a tarmac runway of around 1,199 metres, so that other, pressurised and faster, aircraft could be considered.

70. The basic daily operation proposed for the whole network is shown diagrammatically at ***Appendix Ten***, and is slightly amended from the operation as originally proposed in February 2003. The first four maps show the networks operated by each individual Bundle, followed by the network as a whole.

71. The detailed operation proposed is shown at ***Appendix Eleven*** in terms of individual aircraft scheduling and utilisation. The daily operating plot for each aircraft in the fleet is shown, by Bundle, so that the proposed schedules can be seen to be achievable, and that the aircraft turn-round times are also acceptable.

72. The network assumes the use of nineteen aircraft – three 66 seat ATPs, ten 33 seat Saab 340Bs [or 37-seat Dash 8-100s], and six 18-seat Jetstream 32s; or aircraft of similar size. Although not costed as part of this exercise, the proposed network also suggests a complementary schedule for the proposed 'Argyll Islander' based at Oban, and offering links to various airfields, including Coll and Colonsay.

73. The fleet includes a reasonable level of cover. It is expensive but necessary to maintain a cover aircraft for the two-aircraft operational ATP fleet; however this aircraft can also be used to cover failures of other, smaller aircraft types. Operated by Bundle C, it would be expected to be based permanently at Inverness, although a case could be made for stationing it at Stornoway. In addition, one Saab 340 operated by Bundle A would provide additional cover at Sumburgh between 11:30 and 17:30; and a second unit by the Bundle B operator at Kirkwall between 10:30 and 17:30. Bundle D bears the expense of a Saab 340 [or Dash 8-100] to cover the major maintenance requirements of the operating fleet of eighteen aircraft, being leased out to other Bundle operators as and when required, but will be available for operational cover when not required for maintenance cover.

74. The resultant utilisations are a significant improvement over the existing levels achieved by BA and Loganair, but are not unreasonable. Averaging 2,200 hours a year they compare with other UK operators in 2001 as follows:

Operator	Aircraft	Annual hours per aircraft
Proposed	ATP	1,784
	Saab 340B	2,308
	Jetstream 32	2,227
British Regional	ATP	2,101
Loganair	Saab 340B	1,442
British European	Dash 8	2,667
British European	SD 360	1,691
Brymon	Dash 8	2,481
CityFlyer	ATR 72	2,197
Gill Airways	ATR 42	2,233
Gill Airways	ATR 72	1,952
ScotAirways	Dornier 328	1,987
EasyJet	*B737-700*	*4,692*

75. No figures were available from the CAA for Highland Airways or for Eastern Airways, although the latter airline has agreed that the proposed utilisations are readily achievable.

76. ***Appendix Twelve*** provides individual timetables for each major airport in the network, to enable HITRANS and others to appreciate what is being proposed in terms of schedules, frequencies, routes and aircraft types. Monday to Friday arrivals and departures are shown in time sequence.

Sumburgh

77. Aberdeen, the key service centre, is scheduled to receive five flights a day from Sumburgh on weekdays, with a flight every three and a half hours. Four would be by ATP, with an extra Saab 340 operating early in the morning from Aberdeen, returning in the late evening. The daily non-stop Saab to Edinburgh becomes twice-daily; and the twice daily service to Glasgow (currently once via Aberdeen and once via both Kirkwall and Inverness) becomes twice-daily via Kirkwall only. The four flights to and from the Central Belt are well-spread across the day, while also offering a full day's work in the Orkneys.

78. In addition, there is a morning and evening service to Inverness via Wick, and a middle-day non-stop service to and from Inverness, connecting to the Inverness hub (for which, see the Inverness section). Utilising the Inverness hub provides additional rapid daily onward connections to Edinburgh and Glasgow, as well as daily links to Oban, Benbecula and Stornoway.

79. The twelve outbound flights a day provide 528 seats for the population of 22,500, or one seat for each 43 residents. This compares with 264 seats a day in 2001, an increase of 100%.

Kirkwall

80. Kirkwall is scheduled to receive eleven flights a day by Saab 340 and three by Jetstream 32. These provide 417 seats for the population of 19,600, or one seat for each 47 residents. This compares with 231 in 2001, an increase of 80%.

81. The key service centre nominated is Edinburgh, and this receives two non-stop Saabs a day, compared to the current service of two Saabs via either Wick or Inverness. In addition, the once-daily service to Glasgow via Inverness becomes twice-daily non-stop (with space being made available for Sumburgh-Glasgow passengers). There are thus four non-stop departures to one of the central belt airports across the day – passengers needing a long day on the mainland would fly to Edinburgh airport, while passengers from the Central Belt requiring a long day in the Orkneys would find the schedules from Glasgow the more useful. In addition, connections via Wick and Inverness provide additional links with Glasgow and Edinburgh at off-peak times.

82. The route to Aberdeen is increased to four flights a day, all operated by Saab 340, with a fifth operation via Wick by Jetstream providing extra off-peak capacity. The service to Inverness is operated three times a day, twice by Jetstream 32, while the middle-day service to access the Inverness hub operation is by Saab 340. This would be used mainly for making connections to Oban, Benbecula and Stornoway, as well as to Glasgow and Edinburgh.

83. A mid-morning service to Wick by Jetstream 32 continues on to Aberdeen, returning late afternoon. An additional morning and evening service to Wick was considered, but it is felt that if this is required, it should be operated by the aircraft based at Kirkwall for the Orkney PSO operations.

Wick

84. There has been a significant increase in operations at Wick, up to twelve flights a day, four by Saab 340, and eight by Jetstream. They provide 276 seats a day for the Caithness population of 26,100, or one seat for each 95 residents. This compares with 102 seats a day in 2001, a significant increase of 170%.

85. Four Jetstream flights a day are offered to the central belt, with flights to Glasgow and Edinburgh alternating every three and a half hours, and offering a wide range of options both for travellers from, and visitors to, Caithness.

86. In addition, the current twice-daily Jetstream service to Aberdeen is maintained, as is the daily link to Kirkwall, although at different times. There is also a morning and evening service to Inverness, as well as a midday link to the Inverness hub, offering excellent connections to Glasgow and the Western Isles, as well as additional connections to Aberdeen and Edinburgh. There is also a twice-daily flight to Sumburgh.

Stornoway

87. The key route of Stornoway – Glasgow is increased to four flights a day, all by ATP. These offer a working day of up to eleven hours in Glasgow, and nearly eight hours in Stornoway.

88. The route to Inverness becomes a shuttle service, with five flights a day by Saab 340, one every three and a half hours. The middle-day frequency offers additional connections to Aberdeen, Edinburgh and Oban.

89. Detailed analysis of traffic departing Stornoway proves there is sufficient demand for at least one flight a day to Aberdeen on a Jetstream, and this is operated on the same aircraft that now also offers a twice-daily frequency non-stop to Edinburgh. The existence of the current bmi Embraer 145 50-seat jet on this route at lunchtime since November 2002 has been ignored: it is being operated on a marginal cost basis, and may not have a long-term future. It is believed that PSO regulations will enable this service to be maintained, if so desired by bmi.

90. Not including the continuing service to Benbecula under the current Western Isles PSO, these twelve flights a day provide 483 seats a day for the 22,300 residents of Lewis and Harris, or one seat for each 46 residents, or similar to the ratios planned for the Northern Isles. This compares with 216 seats today, an increase of 124%.

Benbecula.

91. The existing daily service to Glasgow by 66 seat ATP is replaced by three flights a day with the Saab 340, providing a working day in Glasgow of up to eight and a half hours, and up to eleven hours on the Uists.

92. In the middle of the day this aircraft operates to Inverness, and provides connections to the Northern Isles, Caithness, Aberdeen, Edinburgh and Oban, as well as another link to Glasgow.

93. 132 seats a day are provided by these four flights for the 6,000 residents of the Uists, or one seat for each 45 residents.

Barra

94. The schedules assume that the tidal beach airfield is replaced by a tarmac runway which will be able to offer consistent schedules. The current daily Twin Otter would be replaced by two flights daily from Glasgow by Jetstream, offering Barra residents seven hours on the mainland, but mainland residents would be restricted to four hours on Barra.

95. However, it is recommended that the same aircraft also be used for the Stornoway - Benbecula and Benbecula - Barra services once the current PSO agreement expires. Apart from providing the necessary links within the local council area, connections over Benbecula would allow Barra to be linked to the mid-day Inverness hub, and passengers from Glasgow could spend up to ten hours on Barra.

96. Discounting the seats provided from Barra to Benbecula and beyond, this operation would provide 36 seats a day for the Barra population of 1,300. This equates to one seat for each 36 residents, and compares with the 18 seats provided daily in 2001.

Skye

97. The original assumption was that Broadford Airfield would be extended from its current length of 771 metres to some 1,199 metres, with an operating plan of a twice daily service to Edinburgh by Saab 340.

98. Subsequent studies suggest that it is possible to operate this service with a 37-seat Dash 8-100 aircraft which can operate into the current restricted airfield at Broadford with only a small passenger payload restriction. As a result, only limited lengthening of the runway is now contemplated at the time of constructing a terminal and taxiway and obtaining a CAA licence.

99. The Edinburgh schedules are geared more for the leisure market than the business market, without early and late schedules, but offering a wide range of connections at Edinburgh. Although it was initially sought to offer the route to Glasgow, it has proved possible [so far] to integrate it only into Edinburgh-based schedules, but this is not felt to be too disadvantageous.

100. Initially, this route is assumed not to operate from the earliest possible date for the PSO, April 2005, but would be introduced as soon as the airfield was suitably licensed.

101. The twice daily service by Dash 8-100 [with 37 seats installed but only 33 available] offers 66 seats for the 12,000 residents of Skye with Lochalsh, or one seat for each 182 residents. This is considered acceptable for an area linked by road to the Central Belt in less then four hours. This compares with a ratio of 1:95 for the more distant Caithness.

Oban

102. Upgrading the 1,240 metre Connel Airstrip to CAA public licence standards will enable the planned network to include regular operations by all of the aircraft under study. The operation assumes a Glasgow-based Jetstream 32 aircraft operating three times a day to Oban, offering both ends of the market the ability to conduct a full day's work. However, it is recognised that the surface journey is not unreasonable, and it is believed that the most valuable part of the route would be the opportunity for residents of Lorn and the Inner Islands to make interline connections at Glasgow Airport, and to receive inbound tourists.

103. The morning and evening rotations are extended to Tiree, offering that community the ability to conduct business in both its regional centre as well as the Central Belt.

104. The middle-day rotation is extended to Inverness to connect with the hub, and to provide immediate onward connections to Aberdeen, Caithness, the Northern Isles and the Western Isles.

105. Full details of a proposed Islander operation are also shown. In principle, it would offer a morning and evening service to either Coll or Colonsay, connecting with the flights to and from Glasgow; the aircraft would night-stop in Islay, and provide a morning service to Oban via Colonsay, returning each evening; in late morning and mid-afternoon it could operate a triangular service via Islay and Campbeltown back to Oban where it would connect with services to both Inverness and Skye. It would make Oban the air hub for the Inner Islands as well as the maritime hub, and would offer day return facilities to Tiree, Coll, Colonsay and Islay, as well as regular links to Campbeltown and Skye.

106. The Jetstream operation would provide six departures a day, or 108 seats for the 9,000 residents of Lorn, or one seat for each 83 residents. If half of the seats on the morning and evening services were reserved for passengers flying between Glasgow and Tiree, it reduces to 72 seats, or a ratio of 1:126.

107. Until such time as the current Tiree PSO operation has run its course, and the proposed daylight-only operation at Oban Airport is converted to one that allows night landings, it has been assumed that only the midday operation from Glasgow to Inverness via Oban is operated.

Tiree

108. The current daily Twin Otter to Glasgow would be replaced by two Jetstream 32 aircraft operating via Oban. Travellers to the island are able to spend ten hours on Tiree, while visitors to the mainland have up to six hours in Glasgow and eight hours in Oban. Residents of Coll and Colonsay would be given similar opportunities, although only on alternate days.

109. The two daily departures would offer Tiree's 940 residents (including 170 on Coll) 36 seats a day, or one seat for each 26 residents. However, the flights will be fuller on the Oban – Glasgow sectors.

110. It is assumed that the current PSO operation would be maintained for the full three years to 2007, and then would be replaced by the proposed operation.

Islay

111. Currently there are two Saab 340 flights a day to Glasgow. This would be increased to three flights. Visitors to Glasgow will have up to eight hours available on the mainland, while visitors to Islay will have up to ten hours.

112. It is also proposed that the Argyll Islander operation night-stops in Islay. This could offer three flights a day to Oban, once via Colonsay, once non-stop, and once via Campbeltown. This would offer links on to Skye, Inverness, Tiree and Coll.

113. The Saab operation would provide 99 seats a day for the 3,700 residents of Islay and Jura, or one seat for each 37 residents, a slight over provision. However, two flights a day is considered to be an underprovision. This is a 50% increase in seats compared to that provided in 2001. There could be a further 27 seats a day offered by the Islander operation.

Campbeltown

114. The current twice-daily Twin Otter operation to Glasgow would be replaced by a thrice-daily Jetstream 32. The time available in Glasgow would be extended slightly to eight hours, with up to ten hours on Kintyre. There would be a significant increase in the interlining opportunities available at Glasgow.

115. The Islander operation could also offer a twice-daily service to Oban, once via Islay, providing daily connections to Inverness, Skye, Islay, and the Inner Islands. The Inverness link would enable residents of Kintyre to access Aberdeen and all parts of the Highlands and Islands on a daily basis.

116. The 54 seats a day by Jetstream for the 11,000 residents of Kintyre represent one seat for each 203 residents, which is considered sufficient for an area with surface links to the rest of the mainland. It represents a 50% increase on seat provision in 2001. The extra 36 seats a day by Islander would reduce this ratio to one seat for each 122 residents.

117. It is assumed that the current PSO operation to Campbeltown would continue through to 2007, when it would become part of the Bundle D PSO operation.

Inverness

118. The routes to each of the outlying airports of the Highlands and Islands are covered in the foregoing paragraphs.

119. In addition, the three flights a day operated, until recently, to Glasgow are increased to four, all by Saab 340. Although there are currently three services a day between Inverness and Edinburgh, two operate very close together. The new schedule allows for three flights a day, evenly spread. Apart from the midday hub services, the other five flights a day to the Central Belt are well spread across the day. Inverness originating traffic is offered a 13 hour day over Glasgow, while passengers from Edinburgh have up to 12 hours in Inverness.

120. In addition, there is a once daily service to Aberdeen in the early afternoon. This service is unlikely to carry much local traffic between the two cities – instead, Aberdeen-based traffic will use it to access the Western Isles and Argyll, while Inverness-based traffic will fly to Aberdeen as an alternative middle-day interline hub for points in England and Europe.

121. It is also important to give more information about the proposed Inverness hub operation. Many of the routes operated throughout the Highlands and Islands are satisfied with a twice daily operation, morning and evening. A few routes require a higher level of frequency, and there is no difficulty in justifying additional middle-day services on routes such as Stornoway to Glasgow. Of the eighteen operational aircraft, it has been possible to find work for six throughout the day, for a further nine to access the Inverness mid day hub, leaving three as cover aircraft.

122. The solution proposed is for each of the nine under-utilised aircraft to fly into Inverness between 1330 and 1400, returning to their origin around an hour later. Although the level of demand for Inverness itself is expected to be light at this time

of day, a variety of onward connections would be offered by the other eight aircraft. Calculations of demand show that the total number of passengers on board these middle-day services is expected to result in attractive load factors. Operationally, it will put pressure on Inverness Airport to perform, with six Saabs and three Jetstreams scheduled to arrive, or depart, in a 20 minute period; but connecting times for passengers are believed to be 'comfortable' at an average of 55 minutes.

123. The hub operation allows passengers to travel daily between all the widespread communities of the Highlands and Islands, apart from Tiree, Islay and Campbeltown – however, these communities do have the ability to access other peripheral destinations over the existing Glasgow hub.

124. A side benefit of setting up such a once-a-day hub is that other airlines based outside of Scotland might well find it beneficial to schedule in a daily Inverness operation as it would connect with all the nine other destinations. Daily services from points such as Belfast, Dublin, Newcastle and Bristol begin to make sense if they can feed immediately into a wider network. Again, this might put great pressure on the tarmac at Inverness in the early afternoon.

Parameters met or missed.

125. ***Appendix Thirteen*** shows how far it has been possible to meet the parameters laid down by HITRANS for each of the key routes. It shows that in general almost all of the parameters have been met, albeit on occasion by adding together routes to Glasgow with routes to Edinburgh.

I. Assessment of Costs and Revenues on the Proposed Operation at Proposed Yields

126. ***Appendix Fourteen*** is a summary of the predicted costs of operating the proposed schedules for a period of twelve months, calculated with the aid of the modified cost model. As before, 2002 cost levels have been assumed. The Dash 8-100 aircraft is assumed to have similar overall operating costs to that of the Saab 340.

127. The revised network now amounts to some thirty-three route sectors.

128. Three of the sectors (LSI-ABZ, KOI-INV, and WIC-INV) are operated using two different aircraft types.

129. The model calculates that the cost of operating this network empty – with zero passengers – was £46.4 million in 2002. The utilisation rates by aircraft type are based on the actual utilisations predicted for the nineteen aircraft employed on this route network – fifteen fully-utilised, two partly utilized, and two cover units. It should be remembered that many of these aircraft are also available to operate additional night mail, parcels and newspaper flights, but the utilisations taken do not include any such benefit.

130. The appendix also shows that the revised operating programme provides some 1.50 million seats a year.

131. ***Appendix Fifteen*** shows how the costs of operation vary by distance. The first chart shows the costs of operating an empty Saab 340 on 23 varied routes, on the assumption of achieving an average annual utilisation of some 2,250 hours per aircraft. The total aircraft cost has been divided by 18.1, the average number of passengers on this 33 seat aircraft at the predicted 55% passenger load factor. This demonstrates that the cost per passenger of the empty aircraft approximates to a fixed cost of £60.27 per round trip, plus £0.22 for each nautical mile flown. Thus the cost per passenger of flying the 521 nm round trip between Glasgow and Sumburgh at £174.89 is only marginally more than twice the cost of flying the 100 nm round trip between Glasgow and Campbeltown, costing some £82.27. This emphasises the difficulty of providing low-cost air travel over the short distances to island communities.

132. In addition, the second chart shows the marginal costs of carrying each passenger on a flight in the region. The most significant variances are caused by airport charges per person, which vary between BAA Scotland and HIAL and – in the case of HIAL – vary by length of journey. The most expensive charge is caused for routes between two HIAL airports more than 180 km apart, such as Inverness – Sumburgh. Other major costs incurred include catering, commission on ticket sales, and administration charges per passenger by the airlines.

133. Overall, such costs on intra-Scottish routes average a fixed charge of around £23.40 per round trip, plus £0.05 per nautical mile.

134. This gives a total cost for air transport per passenger of £83.67 per round trip passenger, plus £0.27 per nautical mile.

135. It is against the background of such costs that it is proposed to base the target average fare received at £35.00 per round trip plus £0.30 per nautical mile. The net effect would be to subsidise the average round trip journey of some 250 nm by about £41.00, or just over £20 per sector.

136. ***Appendix Sixteen*** provides details of the number of passengers expected on each of these routes had they been operated in 2001 – thus no growth has been allowed for between then and now. The first six columns are a repeat of the data shown in Appendix Nine, showing how the new lower fares are expected to lead to a 28% increase in passenger numbers per year, from 383,000 to 493,140.

137. The next group of five columns shows the predicted further increases in demand because of the improved schedules, broken into business, leisure and interlining traffic. Overall, the doubling of frequencies is expected to lead to a further 44% increase in demand, up to an annual level of 718,587 passengers. [Where these passengers take connecting flights, as over the mid-day Inverness hub, they are counted twice, and are recorded as 780,650 passengers in total]. These percentages vary considerably by route – as little as an extra 2% on ABZ-WIC, where no significant improvement to schedules has been designed; up to 70% on INV-KOI where the existing two flights a day are poorly timed and are part of multi-sector routes with high load factors and high turnaway; and a doubling on the Edinburgh – Stornoway route compared to the single flight on offer in 2001.

138. In addition, there are nine new sectors which have been forecast, and fifteen new route opportunities afforded by the mid-day Inverness hub.

139. The third section of Appendix Sixteen shows whether the passengers are forecast to fly on non-stop direct routes, on one-stop direct routes, or making connections between flights at either Wick or Inverness.

140. The seats provided in 2001 are taken from Appendix Fourteen. The passengers shown alongside are 780,650 compared to the 718,587 shown earlier. The difference of 62,063 is accounted for by passengers on two-sector flights such as GLA-KOI-LSI being counted twice, and by passengers interlining over Wick or Inverness being counted on each of the two sectors.

141. This enables a calculation to be made of the average annual passenger load factor of 52%. The maximum load factor in year one is on the daily Inverness – Benbecula service, which is forecast to achieve a 66% load factor.

142. If any one route achieves load factors in excess of 75% on aircraft of this size, it can be assumed that there will be increasing levels of turnaway, or of people being forced to take their second choice flight or route.

143. The figures have been projected forward to the year 2005 [which is likely to be the earliest that such an operation could be mounted] and to 2008, using market growth rates of 2.5% a year between 2001 and 2005, and 3.5% a year from 2005 to 2008 and thereafter.

144. This leads to system load factors of around 57% in 2005 and 64% in 2008. It is unlikely that a system load factor of more than 66% can be achieved without

causing significant levels of turnaway on certain routes. It will be noticed that, even as early as 2008, six routes are expecting to experience in excess of an annual 75% load factor. However, with further fine-tuning of schedules, and the changing of aircraft types between routes, it may be possible to reduce the high load factors on some of these routes, and to increase load factors on others.

145. The results for year one are summarised by airport in the graph at ***Appendix Seventeen***. It shows the percentage growths at each airport compared to the current (2001) passenger levels, according to the impact of new reduced fare levels, and reaction to the improved schedules. Apart from the currently under-served Wick and Benbecula markets, which are expected to more than double their passenger levels, most airports are expected to show growths of between sixty and eighty per cent.

146. The data at the base of the graph compares the current level of passenger journeys and the new proposed levels with the population totals for each of the peripheral areas to show the forecast annual number of flights per head of population. For each airport, the population (in 1991) is shown for the following catchment areas:

- Sumburgh – Shetland Isles
- Kirkwall – Orkney Isles
- Wick – Caithness
- Stornoway – Lewis and Harris
- Benbecula – the Uists and Eriskay
- Barra – Barra and Vatersay
- Tiree – Tiree and Coll
- Islay – Islay and Jura
- Campbeltown – Kintyre District
- Oban – Lorn District
- Skye – Skye plus Lochalsh District (estimated)

147. The resultant forecast propensities to fly are considered reasonable, both for the island communities and for the remote mainland communities.

148. ***Appendix Eighteen*** then takes these passenger numbers and calculates the expected revenues. The average fares have been calculated at the proposed rate of £35 per round trip plus £0.30 per nautical mile. The average fare paid is assessed at £114.43. From this average fare quoted, the round trip per passenger costs (averaging £32.69) have been subtracted, leaving a net contribution to the airline operating costs of some £81.74 per Round Trip.

149. This gives an annual net revenue of £29.37 million for 2001. Taking the expected market growths, the revenues increase to £32.42 million in 2005 and £35.94 million in 2008.

150. ***Appendix Nineteen*** takes these figures for annual revenue, compares them with the expected 'empty' cost figure of £46.36 million, and shows that the system could theoretically just break even by 2015, by which time revenues could have grown to some £45.73 million.

151. It shows that the subsidy required is expected to be some £13.4 million a year in 2005, reducing to around £9.9 million in 2008. Beyond 2009, the average load factors are considered to be unachievable. Over the long term, it would be expected that this network would average annual losses of around £9-11 million a year, or around £10-15 per single journey, or £20-30 per round trip.

J. Sensitivity Analysis

Costs

Exchange Rate of £ and $

152. The Study assumed an exchange rate of £1 = $1.60, the rate prevailing at the time of the study in December 2002.

153. If instead an exchange rate of £1 = $1.50 is used, the empty aircraft costs would rise by some 1.5 % from £46.36 mn to around £47.06 mn, or some £0.7 mn a year.

154. Similarly, changing the exchange rate to $1.70, $1.80 or $1.90 reduces the annual cost by £0.7, £1.4 and £2.1 mn a year. The current exchange rate is around £1 = $1.87, suggesting an annual saving of some £1.9 mn a year.

Fuel Costs

155. Raising fuel costs by 10% increases the total cost by some 1.25 % from £46.36 mn to around £46.94 mn, or some £0.6 mn a year.

Crew Utilisation

156. Decreasing annual flight crew utilisation by 100 hours from 700 to 600 would increase the total cost by some 2.1% from £46.36 mn to £47.33 mn, or some £1.0 mn a year.

Aircraft Utilisation

157. Decreasing annual aircraft utilisation by 100 hours from 2,200 to 2,100 across all fleets would increase the total cost by 1.4% from £46.36 mn to £47.00 mn, or some £0.65 mn a year.

Compound Changes

158. As an example, increasing fuel costs by 10%, decreasing average crew utilisations by 100 hours a year, and decreasing aircraft utilisations by 100 hours a year, at the same time as changing the exchange rate to £1 = $1.87 results in the total costs moving from £46.36 mn a year to some £46.70 mn, an increase of £0.35 mn a year or 0.7%.

Revenues

Passenger Revenue

159. The total passenger revenue forecast is some £32.42 mn in 2005. Increasing or decreasing passenger numbers or average passenger yields by each 1% is worth £0.32 mn.

Freight and Mail Revenue

160. For ease of modelling, no allowance has been made for any incidental airline revenues such as freight and mail, or the costs of handling such commodities. Based on returns to the CAA by British Regional, CityFlyer Express and other regional airlines, an allowance of 0.5% of annual passenger revenue could be made, or some £0.16 mn.

K. Assessment of Additional Subsidy Needed

161. The study suggests that a continuing annual subsidy in the region of £9 - £11 mn is required to support this network.

162. However, the Scottish Executive already subsidises the routes from Glasgow to Barra, Tiree and Campbeltown by around £1.0 million a year.

163. Secondly, the number of passengers travelling to, from or through HIAL's ten airports is expected to increase from some 410,000 in 2001 to around 929,600 in 2005, on the assumption that HIAL does not take over the running of Skye and Oban airfields.

164. An assessment has been made that this will generate an additional £4.15 mn in aircraft and passenger revenues at HIAL's airports annually by 2005, on the assumption of airlines paying the published tariff and no start-up discounts being given. By comparison, A&TC has estimated that the additional costs of extending opening hours at nine of its airports will cost some £2.13 mn annually; this suggests that the subsidy paid to HIAL could reduce by some £2 mn annually.

165. Finally, a significant proportion of the travellers benefiting from the lower fares and the more convenient schedules will be having their costs met by various arms of Government, notably the Health Services and Local Government. It is estimated that around 20% of the current passengers have their fares paid for by Government, amounting to some £5.1 million in 2001. A reduction of fares by some 30% on average will lead to Government savings of some £1.5 million a year, before allowance is made of the savings in staffing, hotel and accommodation costs necessitated by the current infrequent schedules – this could increase the savings to around £2.5 million a year.

166. A detailed analysis of the resultant impacts on social costs is being calculated for HITRANS by another consultancy.

167. In net terms, the average subsidy of £10 million required each year from 2005 onwards can thus be expected to be reduced by:

- £1.0 million existing subsidy
- £2.0 million a year reduction in HIAL subsidy
- £2.5 million a year saving in Government travel expenditure

168. The net impact of these proposals in terms of additional subsidy might thus be no more than £4.5 million a year.

169. In addition, there are various other ways in which the necessity for funding might be less than that suggested.

170. The costs used in the model are for 'average' airlines paying market rates. In some areas, there will be potential for bulk purchase savings, notably in fuel costs, and for savings in engineering overheads and other overheads as fleet sizes expand considerably. Each additional aircraft employed should bring down the average costs of operation. Independent assessments of the model calculations have been

made by a number of suitable airlines, and generally the figures used have been termed ‘conservative’.

171. Alternatively, HIAL airport charges may be able to be reduced as numbers increase to economically attractive levels.

172. Finally, no allowance has been made for any additional, marginally-costed night-time flying of the aircraft for mail, parcels and newspapers. Such extra flying would help to bring down the overall cost per hour.

L. Additional Capital and Revenue Funding Required

173. It is recognised that such an expanded operation will require additional expenditure on capital and revenue funding.

174. HITRANS requested A&TC to list the additional areas of expenditure forecast in the original study, and this later study seeks to both prioritise and assess the general levels of cost involved.

Priority One – Essential by April 2005

Inverness Airport – Apron Area

175. HIAL is already committed to extending the apron area at Inverness to cope with significant scheduled service growth. The extra apron required to handle the mid-day peak of nine Saab and Jetstream aircraft is assessed as being of the order of £1.0 mn.

Oban Airport to Obtain CAA Licence

176. Argyll and Bute Council have arranged financing for the upgrade of Oban Airport to CAA Licence standards, but not to provide lighting. This is sufficient for HITRANS' needs until such time as the Tiree PSO runs out in 2007.

Priority Two - Highly Desirable by April 2005

Sumburgh Airport – Lengthening of Runway 09/27 to 1,199 metres

177. In order to provide full payloads for the ATP and the Saab340, particularly in wet weather, the existing instrument runway needs to be lengthened beyond the current TORAs of 1,090 [09] and 1,123 metres [27], ideally to 1,199 metres. Until this has been completed, many flights will be compromised. However, none of the requirements placed upon Sumburgh Airport by the proposed HITRANS network is greater than those imposed today, so it has been assumed that it will not be called upon to assist in paying for the estimated £10 mn cost of the lengthening.

178. Studies into replacing the 66-seat ATP with the 50-seat Saab 2000 or the Dash 8-100 appear to indicate that some alternative aircraft could operate with full payloads to and from the existing runway.

Priority Three – Essential by April 2007 or as soon as possible

Broadford Airport, Skye to Obtain CAA Licence

179. Plans to upgrade Broadford by West Highland Air Transport [WHAT] are in an advanced stage. It is believed that the full cost of providing the necessary terminal and taxiway, with perhaps a modest lengthening of the runway will cost some £5 to £6 mn. It is not known whether or not these costs include an upgrade of the current emergency lighting system. It is suspected that HITRANS might eventually accept responsibility for around half these costs – or say £3.5 mn – to ensure that the

planned operation can take place. The proposed service would commence with Dash 8-100 aircraft as soon as practicable.

Oban Airport – Provision of Lighting

180. In order to operate the full programme of flights planned once HITRANS takes over responsibility for the Tiree PSO, it will be necessary to have approach and ground lighting at Oban. The cost of this has been assessed at around £2.0 mn.

Tiree Airport – Upgrade of Lighting

181. Similarly, in order to operate the proposed HITRANS programme at Tiree, it may be necessary to upgrade the current emergency lighting. An allowance of around £1.0 mn should be made.

Barra Airport – Surfaced Runway of 1,199 metres with Lighting

182. The HITRANS network assumes the 18-seat Jetstream 32 aircraft operating throughout the day at Barra, requiring the full 1,199 metres and lighting. A site on the Traigh Mhòr isthmus close to the current terminal has been located. Full costings have not been prepared or a timescale offered. A&TC suggests that it will cost around £3.5 to £5.5 mn to construct a basic 799 metre runway without lighting; a further £2.0 mn to extend it to 1,199 metres; and a further £1.5 mn to provide the necessary lighting. The maximum cost would therefore be of the order of £7.0 to £9.0 mn, but it is recommended that a full engineering feasibility and costing be undertaken.

183. Although the Dash 8-100 could operate from the smaller runway, it will be twice as large as the market needs and will have significantly higher operating costs.

Summary of Capital Costs Attributable to HITRANS

184. The total costs of the projects listed above are[in £ millions]:

	£ mn
Priority One – Essential by April 2005	
Inverness Airport – Apron Area	1.0
Priority Three - Essential by April 2007 or as soon as possible	
Broadford Airport, Skye to receive a CAA Licence	3.5
Oban Airport – Provision of Lighting	2.0
Tiree Airport – Upgrade of Lighting	1.0
Barra Airport – Surfaced Runway of 1,199 metres with Lighting	7.0 – 9.0
Total	14.5 – 16.5

185. In addition, assessments have been made of the extra cost required to extend the operating hours at nine of the HIAL airports plus Oban and Broadford beyond that required by other expected operations.

186. ***Appendix Twenty*** compares the current opening hours of all twelve airports with what will be required to operated the proposed schedules.

187. Detailed analysis of HIAL's cost structure by airport, with reference to the increase in operating hours, suggests that in 2005, the seven non-PSO airports would incur additional operating costs of some £1.57 mn annually at 2002 costs. By contrast, it is calculated to recoup £3.73 mn extra revenue in 2005 [again at 2002 tariff levels], giving it a net annual benefit in excess of £2 mn.

188. In 2008, when expensive extra staffing costs are also incurred at the three PSO airports of Barra, Campbeltown and Tiree, the costs increase by a further £560,000 but the associated revenue rises by only £87,500. However, by that time, the surplus at the seven other airports has risen to some £2.8 mn, giving an annual benefit of around £2.3 mn for all ten airports.

189. There is therefore no need for HITRANS to contribute to the increased running costs of HIAL.

190. With respect to operations at Oban, Argyll and Bute have accepted the need to provide basic manning for its own local air services between 08:00 and 16:00 which will meet the needs of the interim HITRANS service between 2005 and 2007. From 2008 onwards, HITRANS will require the airport to be open until 20:00. The additional cost of this, based on Argyll and Bute's estimate of the original labour and station costs, is estimated at £0.23 mn, but this will be offset by additional revenue of some £0.20 mn, suggesting a need for HITRANS to subsidise the airport by around £0.03 mn a year.

191. Similarly at Broadford, the planned opening times of WHAT will meet the requirements of the proposed HITRANS operation without requiring further manning. However, it is recommended that HITRANS assume a worst case of being responsible for a proportion of the costs – a figure of £0.30 is assumed – being offset by around £0.18 mn of extra airport revenue. This suggests a continuing need for HITRANS to subsidise the airport by around £0.12 mn a year.

M. Conclusions

192. The study estimates that the total cost of operating a significantly expanded network of air services in the Highlands and Islands is likely to cost around £46 million a year, up from the current levels of around £25 million.

193. The network is currently assessed as being profitable, although there are several routes that are believed to make significant losses.

194. By reducing fare levels by an average of one third, by improving the schedules, increasing the frequency and offering new routes and connections, air traffic within the region is forecast to increase by some 87%.

195. The overall network loss is forecast to be around £13.4 million in 2005, reducing to around £9.9 million by 2008. Long-term losses are estimated to be in the region of £9 – 11 million annually.

196. The net impact upon continuing subsidy requirements is likely to be only half this level, after allowing for existing PSO payments, the improvement in HIAL's operating results and the decrease in Government-funded air travel costs throughout the region.

197. In addition, extra capital costs necessitated by the expansion are asessed as being around £1 mn in 2005 at Inverness, with a further £13.5 - £15.5 mn in 2007 to upgrade some of the smaller airports. Continuing revenue support at Oban and Skye airports is assessed at £0.15 mn a year from 2007 onwards.