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Economic Intelligence Unit
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Economic Impact Analysis of Airports in Peripheral Areas

Advice on Methodology

By

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ECONOMIC IMPACT ANALYSIS OF AIRPORTS IN PERIPHERAL AREAS

ADVICE ON METHODOLOGY

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ECONOMIC IMPACT ANALYSIS OF AIRPORTS IN PERIPHERAL AREAS

ADVICE ON METHODOLOGY

1. INTRODUCTION

SPARA 2020

- 1.1. SPARA 2020 is a 3 Year €2.4m Project co-funded by the Northern Periphery and Arctic Programme 2014-2020 (supported by the European Regional Development Fund), designed to address some of the challenges facing remote and peripheral airports.
- 1.2. The project has a number of key themes, including introducing new and innovative technologies to improve airport performance and reduce costs; sustainable energy use to reduce carbon footprint; maximisation of non-aeronautical activity to diversify income; the socio cultural role of airports; transnational airport performance benchmarking; and advising on the methodology for estimating the economic impacts of smaller airports.
- 1.3. Academic partners in the programme are the University of the Highlands and Islands (Scotland), Robert Gordon University (Scotland), the University of Sydney (Australia), and Molde University College (Norway). Also involved are transport organisations HITRANS (operating in the Highlands and Islands of Scotland) and Trafikverket (the Swedish Transport Administration), the Northern & Western Regional Assembly (operating in the north and west of Ireland), a municipality (Storuman), and a small, regional airport (Sundsvall–Timrå Airport in Sweden).

Assessing the Economic Impact of Small Airports in the SPARA 2020 Project

- 1.4. The Economic Intelligence Unit at the University of the Highlands and Islands (UHI) led on this methodology for estimating the economic impact of smaller airports. This methodological toolkit has been designed to help airport managements and other parties without a background or experience in economics and conducting economic impact assessments to understand how an impact assessment might be carried out – making economic impact assessments more accessible to small airports, especially when operating under a tight budget and not being able to afford expensive consultants.
- 1.5. A case study of Wick John O’Groats airport has also been completed through the SPARA project, and is an additional resource available to those looking to conduct their own economic impact assessment.
- 1.6. Sample questionnaires from the Wick Airport study that were used to obtain information from airport users and local businesses are appended to this report. These could be adapted for analysis of other small airports.

Economic Analysis – What it is and why it might be needed

- 1.7. Put simply, economic impact analysis of an airport generally entails quantifying impacts (usually measured in terms of employment, income from this employment and value added), and comparing these to the situation in the impact area(s) under consideration were the airport not there (i.e. were it to close) – although impacts could be assessed ex ante or ex post before and after a particular positive or negative development. Impacts can be measured in terms of direct impacts (impacts due to the operation of the airport), indirect impacts (supplies to the airport and its services), induced impacts (impacts that are generated by staff spending their income and supporting other jobs in the economy), capital spend impacts (impacts from construction projects related to the airport), and wider and catalytic impacts (impacts in the area under consideration from tourists who use the airport, businesses that wouldn't be in the area if not for the airport or whose trade is strengthened, air freight benefits, etc).
- 1.8. Wider and catalytic impacts are the hardest to quantify, and often economic impact assessments use very rough methodologies to estimate these impacts – although they can be the dominant generators of impact. The different categories of impacts and how they can be calculated are examined in greater detail in Section 2.
- 1.9. It can be very useful to airports to have economic evidence of their importance to the local community, often in order to persuade policy makers of the case for continued/increased financial support for the operation of the airport and/or of the routes that are served by the airport. Evidence can be used to demonstrate to the local community the benefits the airport brings, the potential benefits of future expansion plans, etc.
- 1.10. A quantified impact analysis might be limited to the buildings and other property that make up an airport plus the flights and other services that it or associated services such as car hire offers; or might be wider to include employers on an airport business park, an airport hotel (which might serve a wider audience than people using the airport), and any other activities and services close to the airport that might not be in the area were it not for the airport. Should an airport close, the space and buildings that would become available could be used for a variety of other purposes – but such analysis would normally only be undertaken where there is a real threat of closure.
- 1.11. As much data as possible should be obtained to ensure robust impact analysis. From the airport, this would include detailed data on staff numbers, payroll, purchases, suppliers, capital investment programmes, future plans and viability; with other data such as customised or previously conducted passenger and local business surveys desirable.

Reasons why an economic impact assessment of an airport might be considered

- Threat of closure. Airports require, or need access to, staff with a variety of different skills (security, air traffic control, fire fighters, etc), and therefore running costs can be quite high relative to the number of flights per day, with implications for the long term sustainability of the airport.
- Justification for higher levels of public support for the airport.
- Supporting evidence for subsidising air services.

- To review a recently opened airport.
- To assess the potential benefits of expansion by the airport.
- To estimate the impact that a closed airport might have should it re-open.
- To predict the potential impacts of a new airport in an area lacking air access (which would require a modified methodology to that set out in this report).

1.12. As illustrated in the Wick John O’Groats Airport Case Study, an impact study of an airport can provide useful information (through passenger and business surveys) on patterns of usage and how passengers might be better catered for as well as simply quantifying economic impact.

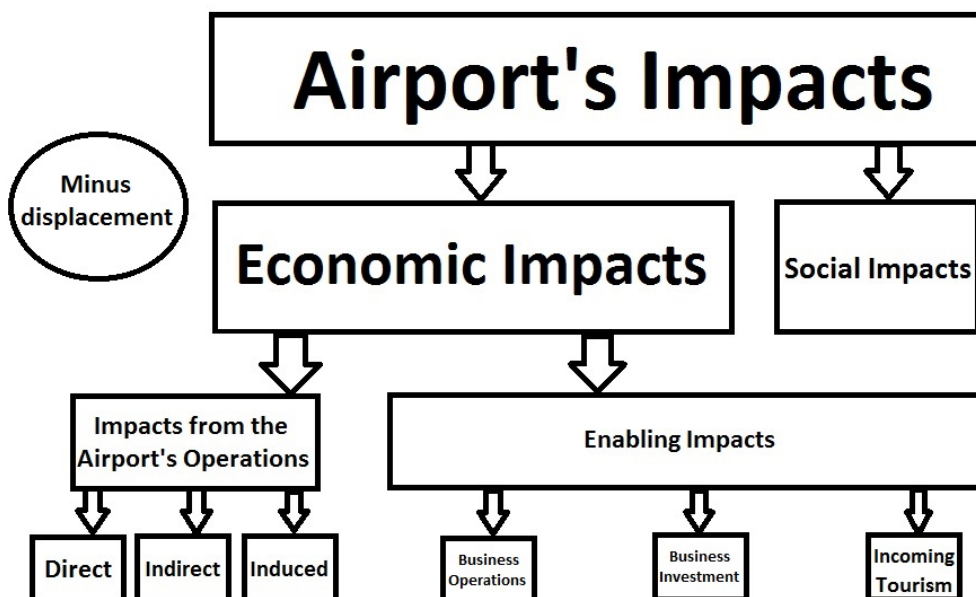
Who this methodology advice is aimed at

1.13. People who might be wishing to conduct economic impact assessments of airports include:

- Economists without previous experience of economic impact assessments of airports.
- Other consultants and professionals (e.g. with a planning rather than economic background).
- Public bodies or agencies that provide funding to airports or support them in other ways.
- Airport management (although this could potentially create conflicts of interest as well as raising issues of impartiality and independence).
- The people carrying out an impact analysis might thus have very different previous knowledge and experience, and will need different levels of support and background information in order to conduct robust analysis. The guidance contained within this report is aimed at supporting those with a background in economic analysis, as well as those with less experience. Those with limited experience should, nevertheless, consider obtaining practical guidance from someone with a relevant economic background to help ensure that their findings are robust.

Categories of Economic Impact

1.14. The components of an airport’s impacts can be summarised as follows:



- 1.15. Impacts might be examined for a single airport, a group of airports, or an airport in conjunction with other means of transport to, from and within an area.

Social Impacts

- 1.16. An economic impact analysis of an airport might be carried out in conjunction with a social impact analysis, which might cover the principal or more detailed benefits of an airport to the local public not picked up in the economic analysis or not possible meaningfully to put into economic terms. Aspects of social impact might include:
- The convenience of being able to travel to a destination more quickly than otherwise possible.
 - Access to particular medical facilities or lifeline services not available locally.
 - Increased choice of holiday destinations or other leisure trips (including visiting friends and relatives).
 - Use of the airport as a meeting place or activity venue.
 - Access to pilot training.
 - Ability to locate a private plane, glider, etc at the airport.
 - The most convenient access to retail and/or catering provision for people who live close to the airport.
 - A place to watch flights coming and going.
 - Meeting people (at the airport before departure or on a flight) that someone already knows or would be a new acquaintance.
- 1.17. An ***environmental impact analysis*** of an airport might also be carried out in conjunction with an economic impact analysis where there might be plans for a new, re-opened or expanded airport; or where new or expanded services might increase noise or have other negative implications for a local area.

Displacement

- 1.18. In impact analysis, it is always important to consider market displacement and quantify this (even where difficult) in order to derive net from gross impacts. In relation to an airport's economic activity, displacement might include:
- Reduced flights to and from other airports – potentially affecting their overall viability.
 - Reduced use of alternative public transport by road, rail or ferry.
 - Catering, retail or other trade that would otherwise be captured by non-airport based businesses.
 - Reduced business for other employers in the impact area where businesses located at or close to the airport are included in the economic impact analysis of an airport.
 - Tourist visitors by air who would otherwise have used other transport to access the area.
 - Evidence of the nature and magnitude of displacement can be obtained through the survey mechanisms that might be used in the process of assessing an airport's economic impact – subject to available budgets for obtaining sufficiently representative data.
- 1.19. In assessing economic impacts, ***deadweight*** should always be taken into account fully as well as displacement. This means that direct, indirect or associated impacts attributed to an airport should be ***additional*** to the economic activity that would exist in an area without the airport.

For example, a car hire service located at an airport might otherwise have been in a local town – albeit with reduced trade.

Previous Economic Impact Assessments of Small Airports

- 1.20. A wide array of economic impact assessments and other research into the economic benefits of airlines is available, although the number that relate to small, regional and peripheral airports is limited.
- 1.21. Studies tend either to comprise a cost benefit analysis, or focus on the direct, indirect, induced and catalytic impacts of the airport. In this report, we have concentrated on the latter option. Methods for calculating the direct, indirect and induced impacts are well established in economic analysis and were therefore not covered by the literature review undertaken for this methodology toolkit. However, the methodology for establishing catalytic impacts is less well established and this is therefore covered by a literature review in Section 9 below.

Defining the Airport and Catchment Area

- 1.22. When setting up an economic impact assessment, it is important to define the airport for the purpose. This could be simply the direct operations of the airport (e.g. staff employed directly by the airport) or it could include (as noted above) restaurants, shops, airlines, and other businesses that are located on the airport's premises. This could be increased to include nearby business parks if applicable and relevant to the study. Air services, though, should always be included as core impacts – although flight staff might or might not live locally.
- 1.23. For the purposes of providing context and background data as well as focussing the analysis, it is also important to define the catchment area of the airport. This will involve looking at the population living within reasonable driving time of the airport, the routes served by the airport, and alternative methods of public transport (including other airports) available. For more information on defining the catchment area, see Section 5 below.

2. COMPONENTS OF IMPACT

- 2.1. The following economic concepts and how to measure them are discussed in greater depth in Section 7, and are summarised here.

Direct

- 2.2. Direct impacts are defined as the activities required for providing and supporting air transport services. These impacts are generated directly from the airport's activities (and surrounding business parks, if applicable). These include airport employees (including handling, security, management and administration, fire services air traffic control, etc), employees of airlines and air freight services that use the airport, and those in related non-airside activities, such as shops, restaurants and car rental.
- 2.3. A 2006 "Inquiry into the Link Between Air Transport and Employment in Norway" identified five sub-activities that together make up direct air transport activities:
- Government Activities (customs, police, airport security)
 - Land and Air Transport (airlines, fuel, transport to and from the airport)
 - Private Services (parking, car rental, travel agencies, cleaning)
 - Hotels and Restaurants (hotels, cafes, trade, catering)
 - Post and Telecoms (cargo handling and air freight)

Indirect

- 2.4. Supply chain impacts are generated by spending on goods and services by the airport and associated employers. These might include retail goods, food and beverages supplied to shops and restaurants in the airport (as well as any catering services provided to the airlines), support services, fuel, maintenance, equipment, office supplies, etc.

Induced

- 2.5. Induced impacts arise through the additional spending of direct and indirect workers from their additional income. Their spending on goods and services supports or generates other employment in the impact areas covered by the analysis.

Capital Investment

- 2.6. These impacts arise from capital spending associated with the airport, which can include construction projects, redevelopment of areas of the airport or terminal building, significant purchases of new equipment, etc. These expenditures can vary considerably year-by-year, and therefore an average of the past five years might be taken to provide a representative picture of average annual capital investment.

Wider and Catalytic Impacts

- 2.7. A small regional airport facilitates or encourages the growth of economic activity in the local area through providing fast access times to larger population centres, which can boost

tourism, other import and export trade, investment and business productivity. This is known as the catalytic impact, and is harder to quantify than the other categories of impact – though it can outweigh all other impacts from the perspective of a local or sub-regional area.

3. CATEGORIES OF IMPACT

Employment

- 3.1. Employment is a key measure of economic impact which provides an easy to understand headline figure about the impact of the airport. In economic impact assessment, employment is measured in full-time equivalents (ftes), which translates to paid employment of around 35 hours per week. Part time and seasonal staff members can be expressed in ftes – for example a part time member of staff working 17.5 hours per week would be 0.5 fte, a seasonal member of staff working 35 hours per week for 3 months would be 0.25 fte, etc.
- 3.2. Some impact studies exclude employment impacts where the people employed live outside the area of impact as defined – which is known as “leakage”. Other studies focus on the location of work rather than the normal place of residence of employees – which is more straightforward; although temporary residence during a period complicates analysis and will tend to reduce induced impacts (e.g. where overseas residents who are employed for varying periods send income home).

Income

- 3.3. Income from employment is not included in all economic impact assessments (normally due to a lack of data), but it can provide another easily understood headline figure about the impact of the airport. Income is normally measured in terms of gross pay before tax (excluding employer national insurance and pensions contributions) – although pension payments by an employer give people potential future income, and this can be incorporated as an impact where Local Value Added is estimated (see 3.7 below).

Gross Value Added

- 3.4. Gross Value Added (GVA) is not always included in economic impact assessments as it can be difficult to estimate and the concept is harder to understand at a local or regional level than employment and earnings. Value added is essentially output minus intermediate consumption.
- 3.5. With access to the profit and loss accounts of a business, GVA can be calculated for the business as this is defined as operational profits plus gross earnings, plus employment costs, plus depreciation and business rates added back. However, if the operations of the company are not “stand alone,” (i.e. the airport is part of a group of airports or the company is part of a wider operation), then this option becomes more complex.
- 3.6. Another way of calculating or estimating GVA is through making use of generic national statistics, which can include figures for GVA per employee for different types of industries, which can be multiplied by the number of those working in that industry. Most national statistics tend to be per employee as opposed to per FTE, however, and need to be adjusted where the staffing of a business might not be representative of the industry as a whole. For example, if a company has only part time staff, then it wouldn't be advisable to use the industry ratio where across the industry as a whole there would likely be a greater proportion

of full-time staff. In that case, applying the industry ratio between income (usually found in the same statistical publication as GVA) and GVA may be a more robust method of estimating GVA.

- 3.7. Although GVA is often used in localised as well as national impact analysis, and quoted to illustrate the impact of a business or sector, it is essentially a national measure. More valid for sub-national analysis would be Local Value Added or Regional Value Added, where only earnings and pension entitlements accruing to people living in an area, profits accruing to businesses owned in the area, rentals of land, buildings, plant & equipment owned by people from the area, business rates that accrue to an area's Local Authority, etc are taken into account in estimating direct plus indirect value added impacts.

4. THE AIRPORT AND ITS LOCAL CONTEXT

- 4.1. Before starting on the specific sections of the report given below, it is important to get to know the airport that is being assessed. This could be achieved through a face-to-face meeting with the airport manager or other airport staff, a tour of the airport to see the companies that are associated with the airport, discussions on the air services and destinations served by the airport, understanding the clientele and business community that use these services, etc.
- 4.2. The people who work in the airport, together with management who might be based in a head or regional office elsewhere, will know about current trends, categories of passenger, and the importance of the airport to certain sectors of the local economy (tourism and energy, for example). This knowledge will help shape the study and tailor the information to be collated – for example through a passenger study and business survey.
- 4.3. Examples of questions to ask airport management might include:
 - What businesses are directly dependent on the airport for their survival (e.g. flight school, car rental, cargo companies)?
 - What sectors of the economy of the airport's catchment area are most dependent on air travel?
 - Who would be able to provide information on the scheduled flights to and from the airport, and any plans there might be for these to change?
 - I see helicopters here – do they go to offshore platforms, and are these flights included in the airport's overall aircraft movement figures?
 - Have there been any major capital investments in the airport over the past five years?
 - What are the airport's future plans?
 - What up-to-date or historical studies about the airport can be accessed (previous economic impact assessments, passenger surveys, business plans, etc)?
- 4.4. Following the initial meeting with airport staff, a more detailed data request to the airport (or its head office where applicable) can be made, with data requirements clearly set out.

5. THE INTRODUCTORY CHAPTERS OF AN IMPACT REPORT

(1) Introduction to the Report

5.1. The introductory chapter should include:

- **What the study report contains and its purpose(s)** – A brief introduction to the study, why it was conducted and what is being analysed.
- **Short history/background of the airport** – A short history will help readers to understand the context of the airport – e.g. whether it was set up or later expanded to provide a lifeline service and promote economic development in the area.
- **Destinations served and summary passenger numbers** – Again this is useful for context and viewing longer term trends in passenger numbers through the airport.
- **Other usages of the airport** – This might include air freight, flying training, buildings other than those belonging to the airport, etc.
- **Policy context** – Is the airport serving any Public Service Obligation (PSO) routes or does it receive subsidies of any type? Does the government of the country support air travel as a means of supporting rural communities? Are there any aviation policy documents that demonstrate government support?

(2) Background Socio-economic Analysis

(a) The Airport's Catchment Area

- 5.2. It is important to put the airport into the context of the local area in order to understand its economic impact. The economic impact of a small, regional airport will generally be lower in absolute terms than one close to a larger town or city, but, in a remote area where the population is relatively small and employment options are limited, all jobs will have a larger significance.
- 5.3. In most cases, the local impact area will be the catchment area of the airport (i.e. covering places with quicker access to the airport than to another airport), where the majority of its passengers live. Passenger surveys can provide information on residence which can be mapped so see where the majority of passengers reside. Alternatively, overall travel times and costs of using the airport or not using the airport can be calculated to determine if residents of an area would be more likely to use the airport or travel directly (e.g. by car) to their destination. For example, the time spent driving to the airport, waiting in the airport, flight time, and then travelling to the centre of the destination settlement would be compared against the time spent travelling to the destination directly by car (taking into account ferry journeys where applicable) or public transport, and the different costs involved. For some people, the cost of air travel can be a disincentive for relatively short journeys and time savings can be relatively unimportant for them.

- 5.4. Thus, the local market for an airport will tend to be more focussed on people living or working reasonably nearby, even though its catchment area could be much larger.
- 5.5. National statistics will vary from country to country. However, it should be possible to build up the catchment area from existing small areas for which data are available, i.e. travel to work areas, wards, datazone areas (in Scotland), etc. If possible, data should be accessed that is published regularly for these building blocks (more regularly than the ten year Census, for example).
- 5.6. These building blocks should be an approximate match for the airport's catchment area, which will then allow analysis of basic economic data in the categories discussed below. Comparisons with national figures should be made to put demographic and economic figures for an airport's catchment area into context.
- 5.7. For some small airports, their impacts might be useful to examine in larger areas beyond their catchment areas rather than or in addition to these catchment areas, e.g. within the Local Authority area in which they are located. This might be particularly applicable where the impacts of more than one airport within a region area being assessed.

(b) Demographic Analysis

- 5.8. Demographic analysis would cover the total population of an area, its age structure and population projections.
- 5.9. The total population of the catchment area is important as local residents and businesses will normally make up a large proportion of the overall airport users (with high inward tourism potentially creating an exception). The changing population of an area over time is also important, and past trends and population projections should be looked at in determining the role the airport has played/could play in facilitating population growth or preventing population decline. Age structure is less important, although if the area has a significantly older population than the country or region as a whole then the case can be made for increased support to the airport, as increased connectivity can help attract young people and make the area more sustainable.

(c) Economic Activity/Unemployment

- 5.10. Employment and unemployment rates give an indication of the overall economic health of an area, although it is important to note that if the local area is lacking employment opportunities, people will often choose to leave the area and search for employment elsewhere, and therefore will not be picked up in statistics on local unemployment.
- 5.11. Probably the most important part of the background socio-economic analysis of the main impact area is identifying the economic structure of the area. This quantifies the number of those employed in different sectors of the economy, enabling comparison between the local area and the country and region that the airport is in. In particular, it is useful to identify the sectors that provide the most employment, and the individual businesses to which the airport is most important. This helps to identify the most important (or representative) businesses to

cover in a business survey of airport users, or potential users (e.g. of new or enhanced services).

6. SURVEY WORK

- 6.1. Depending on the budget and timescale available for the study, surveys can add significant depth and detail to a study, and should inform the quantification of catalytic and wider impacts. Survey work could involve a passenger survey at the airport, and telephone/face-to-face interviews with members of the business community. In addition to the kinds of surveys where findings are grossed up, more in-depth contact with key businesses and public agency representatives is also recommended.

(a) Passenger Survey(s)

- 6.2. A passenger survey can be an important way to identify key benefits and issues facing those using the airport.
- 6.3. Surveys tend to focus on departing passengers, as these travellers are generally a captive audience, having checked in for their flight and with time to complete a short survey while waiting to board. Incoming passengers, on the other hand, are generally keen to leave the airport as soon as possible and don't tend to spend much time waiting around. Many departing passengers will either be making a return journey having travelled by air to the local area, or have made incoming journeys by air to the airport in the past. A survey of outgoing passengers can, therefore, include questions about incoming flights that might previously have been made as well as about their current and other outgoing flights.
- 6.4. Ideally, a passenger survey should be phased over a year, to cover the effects of seasonality.

Resourcing

- 6.5. Resourcing such a survey can be expensive in assistant time, and the most cost effective way is to involve airport staff already at the airport to assist in handing out and collecting surveys, or in going over surveys with passengers. Staff hired to conduct surveys, depending on the budget available, could be local students or pupils through to people with specialised experience. Respondents could be asked to fill out a survey online – although the response rate would be likely to be lower, and with such self-selection, passengers with complaints and issues can be more likely to respond.

Survey Design

- 6.6. The survey should capture issues specific to the airport, and therefore should be designed after initial scoping work has been carried out.
- 6.7. Although this advice document is primarily focussed on economic impacts, customer service issues can also be covered by surveys as passengers will be keen to discuss certain issues, and it will be useful for the airport to hear these views.
- 6.8. It is best to ask different categories of airport users tailored questions, and therefore ideally there should be different versions of the surveys distributed to these different groups.

6.9. Key points to bear in mind in survey design:

- Make the questions easy to understand at first glance.
- Open questions can be useful as they can pick up on a wide range of issues; although it can be time consuming to analyse those responses, and it is therefore best to limit the survey to just a few open ended questions.
- Be sure to ask respondents to consider other means of transport. For example, “would it be more important to the local area to invest in the roads, rail network or local airport and route development” might be a question. This puts the current service provided by the airport into the context of the overall local transport infrastructure.
- Provide an opportunity for respondents to leave their contact details if they would like to discuss issues further (especially where passengers are part of the business community).

6.10. See Appendix 1 for four sample questionnaires used for the Wick Airport impact study which are aimed at different categories of travellers.

(b) Business Survey(s)

6.11. Conducting a survey of key businesses is useful in probing more deeply into some of the issues facing an airport and its airlines and trying to quantify the airport’s impact on the local business community and other organisations that might be important employers. A survey can be carried out face-to-face, by telephone, and/or by email/online. Face-to-face or telephone interviews allow for probing and further prompting to help understand the most relevant issues; and can be focused on the most important employers in the area.

Identifying a Target List of Businesses and Airport User Organisations to Survey

- 6.12. Through discussions with airport staff, local public sector agencies, Chambers of Commerce and other representative bodies, it should be possible to draw together a comprehensive list of key contacts in local businesses that use (or might use) the airport.
- 6.13. This should cover a range of sectors, especially those identified as being most important to the local economy in the socio-economic study. Ideally, at least twenty local businesses should be interviewed in order to get a feel for the opinions of the local business community – although the number will depend on the study budget and the scale of airport usage.

Survey Design

6.14. Although interviews are likely to be less structured than the passenger survey, it can help to have a framework of questions to base the discussion around and ensure that no valuable points are missed. In some cases, respondents might not be able to find the time for a face-to-face or telephone interview, and therefore having a copy of the survey that can be emailed to them, or an online version to complete when it suits them, may be the best way of obtaining the relevant information from them.

6.15. Key points in survey design include:

- Although it is beneficial to include some multiple choice/rating questions, the main goal of the business survey is to obtain information that expresses, and ideally quantifies, the importance of the airport on the local business community (and can be quoted in the study report).
- Comments such as “my business wouldn’t be based in the area if the airport wasn’t here,” should be probed further.

6.16. It is important to appreciate that business (and, indeed, agency) respondents might tend to focus on the positives of an airport and its air services if they think that closure or reduced services might be options.

6.17. For surveys of relevant organisations, questions should be more general than in the business survey – for example, “in what ways do you think the airport is a catalyst for economic development in the area?”

6.18. See Appendix 2 for a sample questionnaire for a business survey.

7. OPERATIONAL IMPACTS

- 7.1. As summarised in Section 1 above, these impacts are categorised as direct, indirect, induced, capital investment spend-related, and catalytic and wider impacts; with these categories aggregated to give overall economic impact.
- 7.2. It is important initially to establish a base year for which actual statistical information is available or could be obtained (normally the previous calendar or financial year). Discussions with those providing data can help establish the best year to use.

(a) Direct Impacts

- 7.3. These are the impacts related to those employed directly by the airport, or operations that depend entirely on the airport's presence – including locally resident staff of flight operators who use the airport and flight schools, helicopter operators, etc. Restaurants and cafés at the airport that aren't run directly by the airport would normally also come under this category, as would car rental services based at the airport.
- 7.4. The employment provided by a hotel at the airport or a business that is located at the airport (or on an adjacent business park) because of its reliance on air services is normally regarded as catalytic rather than direct impact – although some studies bring such employment into their coverage as direct (explicitly or implicitly).
- 7.5. Where impacts are being assessed regionally or nationally as well as locally, head office staff (where applicable) based in another area and airline staff related to flights to and from the airport who live in other areas would also be included as direct.

Employment

- 7.6. The airport and dependent companies can be approached directly to establish total employment numbers in full time equivalents. As discussed above, a full time employee normally works around 35-40 hours per week, and a part time employee working 18 hours per week would be 0.5 FTE. If companies are reluctant to share employment data or how much employees are paid, they can be reassured that the number working for the company won't be released publicly, and will be aggregated with other direct employment to give an overall total.
- 7.7. Where employees normally live can be useful to know, especially where airport workers or vacation students from other areas might be employed seasonally or temporarily.
- 7.8. Although FTEs are the most appropriate measure for impact analysis where different categories of employment are added together, it can also be useful in impact reports to show direct employment broken down by full time, part time, seasonal, casual, etc.

Income from Employment

- 7.9. This measure relates to the gross earnings of all the full-time equivalent employees directly employed by or dependent on the airport, as identified above. Again, companies should be approached directly to provide the data, and given assurance that the way the figures will be used wouldn't allow the identification of individual or company salaries – only the overall direct earnings figures might be given in the report. For some businesses or organisations,

annual accounts can provide data on earnings (although not always related employment numbers).

- 7.10. Data on labour costs obtained from employers and from some official sources might include, but not specify, associated employer's NI and pension payments; and estimation of their value (e.g. 15% of gross earnings taken together), or clarification from employers, can be required.

GVA

- 7.11. Once the number of direct FTEs is established, direct GVA per head can be estimated using the methods set out at 3.4 -3.7 above.

Displacement

- 7.12. Usually it is best to assess displacement (and deadweight) associated with direct employment prior to assessing indirect and induced impacts. Knowledge of the local area and questions asked in business and passenger surveys, together with wider knowledge of displacements associated with airports, passenger and freight transport, and related businesses would be drawn on. The key estimate needed in adjusting impacts from gross to net of displacement for each item of customer expenditure is how people would otherwise have spent this money and the alternative impact that this would have had.

(b) Indirect Impacts

- 7.13. These are the impacts created by the net additional purchases of the airport and other companies that are directly dependent on the airport, as identified above.
- 7.14. Suppliers would represent the "first round" of indirect impacts, with their own purchases and the purchases of their suppliers giving the second and subsequent rounds of indirect impacts through the overall supply chain. In practice, where first round impacts can be assessed from survey evidence, subsequent rounds of indirect impacts would be estimated from Input-Output tables (see below); whilst if resources are not available for this additional research, the Input-Output tables would be used for all rounds of the indirect multiplier. Judgement needs to be used where interpreting the figures from national Input-Output tables in a local area – although Input-Output tables have been produced for some local areas. These might cover wider areas than the impact areas for the airport impact study, but nevertheless generally are more useful for estimating local indirect impacts than national tables – provided that sample sizes have been sufficient and that findings have not been over-influenced by a major employer whose purchase patterns might not be representative¹.
- 7.15. If data from a comprehensive business survey or other comprehensive data on the business composition of an area are used, it is important to avoid double-counting – i.e. to appreciate that data for some businesses will relate to their own direct employment that might also be attributed as indirect employment supported by other local businesses' direct employment.

¹ This difficulty is the main reason why localised Input-Output analysis is not often commissioned.

7.16. There are two ways of calculating or estimating the first round of indirect impacts:

1) Purchases Data

- 7.17. Ideally, the airport (and other employers that generate direct impacts) would provide a list of all their annual purchases, which can be grouped together by category of purchase. The most important of those suppliers would then be approached and asked how many FTE jobs are supported from the purchases made by the airport.
- 7.18. The largest suppliers approached directly (with permission from the airport or company that supplied the purchases figures) can be asked to provide overall turnover and employment figures, again assuring them of the confidentiality of their responses. For example, a cleaning company with 4 FTE employees that has 50% of its turnover providing services to the airport will have 2 FTE employees allocated as a first round indirect impact to the airport. In terms of income associated with particular jobs, national statistics and local knowledge/job adverts can give an indication of how much these jobs are paid (if the company isn't forthcoming about providing the salary information), and GVA can be estimated using the method described at 3.4 - 3.7 above. As noted above, second and subsequent rounds of indirect multiplier effects in impact areas should be estimated from information provided by suppliers, judgement, or Input-Output tables. In the example of the cleaning company, their purchases are likely to be mainly cleaning supplies not manufactured in the local area and therefore other local impacts are likely to be limited.
- 7.19. Many categories of purchase will not be from one particular supplier, and contacting all suppliers will not be practical. In these cases, using national Input-Output tables is the most applicable method of estimating impacts.
- 7.20. National Input-Output tables and the categories used in these vary from country to country, and therefore judgement must be applied when reviewing different categories and methods. There can also be concerns regarding the robustness of data; although Input-Output is often the most consistent method to use.
- 7.21. The following is an example of a table with particular purchases in Scotland by a business generating direct impacts categorised:

Table 1: Purchases

| Category of expenditure | Expenditure in base year in Scotland (net of VAT) |
|-------------------------|---|
| Electricity | £20,000 |
| Repairs and maintenance | £40,000 |
| Café supplies | £80,000 |

7.22. These categories correspond with the following SIC codes for Scotland:

Table 2: SIC Codes

| Category of expenditure | Standard Industrial Classification (SIC) code (2007) |
|--------------------------------|---|
| Electricity | 35.1 Electricity; generation, transmission, distribution and trade |
| Repairs and maintenance | 33. Repair & maintenance |
| Café supplies | 10.7 Bakery and farinaceous products 10.8 Other food products 11.07 Soft drinks |

7.23. As is shown for the category “café supplies”, SIC codes might not accurately reflect a category of expenditure which can’t be broken down further. In this case, it is possible to choose the category that is most likely to reflect the majority of the purchases in the category, or use the figures from the Input-Output tables to inform an estimated indirect impact.

Employment in Scotland

7.24. The next stage is to work out how many FTE jobs are supported by the expenditure. This is achieved by using Type 1 multipliers – in particular the “employment effect” category. In this example, multipliers from the Scottish Input-Output tables have been used. Type 1 multipliers apply to indirect impacts only, whilst Type 2 multipliers also include induced effects (see further below).

7.25. The employment effect in an Input-Output table shows how many FTE indirect jobs (and other supply chain) jobs are supported by turnover in the sector of £1m. Smaller figures (such as 3.9 for electricity) show less labour intensive sectors, whilst higher figures (such as 12.0 for bakery and other farinaceous products) show more labour intensity.

Table 3: Type 1 Multipliers

| Category of expenditure | SIC Code | Employment Effect ² | Calculation | Indirect Employment (FTEs) |
|--------------------------------|-----------------------|--------------------------------|--|----------------------------|
| Electricity | 35.1 | 3.9 | $(£20,000/£1,000,000) \times 3.9$ | 0.08 |
| Repairs and maintenance | 33 | 10.5 | $(£40,000/£1,000,000) \times 10.5$ | 0.42 |
| Café supplies | 10.7 10.8 11.07 | 12.0 11.2 7.5 | $(£80,000/£1,000,000) \times 11.5^{\dagger}$ | 0.92 |

Note: † In this case it was decided to use 11.5 as the employment effect due to the relatively labour intensive nature of the products being sold at the café.

7.26. The above table shows that a total of 0.92 indirect FTEs in Scotland would be supported by total expenditure of £140,000 in the three example categories.

² Whilst figures from Input-Output tables used here are rounded to 1 decimal place for simplicity, full numbers should be used to obtain the most accurate results

- 7.27. Most Input-Output tables also include Type 2 multipliers, which include induced effects as well as indirect effects. Table 4 below shows the same calculations as Table 3 above, but uses Type 2 employment effects – i.e. it includes induced impacts.

Table 4: Type 2 Multipliers

| Category of expenditure | SIC Code | Employment Effect | Calculation | Indirect plus Induced Employment (FTEs) |
|--------------------------------|----------|-------------------|--|---|
| Electricity | 35.1 | 4.8 | $(£20,000/£1,000,000) \times 4.8$ | 0.10 |
| Repairs and maintenance | 33 | 12.6 | $(£40,000/£1,000,000) \times 12.6$ | 0.50 |
| Café supplies | 10.7 | 14.0 | $(£80,000/£1,000,000) \times 13.5^\dagger$ | 1.08 |
| | 10.8 | 13.1 | | |
| | 11.07 | 9.6 | | |

Note: † In this case it was decided to use 13.5 as the employment effect due to the relatively labour intensive nature of the products being sold at the café.

- 7.28. There were therefore an estimated total of 1.68 indirect plus induced FTEs in Scotland created by the total expenditure of £140,000 in the three example categories.

Employment in the Local Area

- 7.29. Assessing indirect impacts is usually more important in the airport's catchment area. When making a data request to the airport and other direct employers associated with the airport, it is important to ask them to give supplier addresses. With this information, it is important, however, not to overstate the economic benefit that will accrue in the local area – i.e. for products, the main economic benefit might be generated in the place where the product is made, as opposed to the local sales point.
- 7.30. To continue the above example categories, electricity is assumed to be billed to an address outside the local area, repair and maintenance is carried out by local companies, and half of café supplies are provided by local suppliers. First round expenditure on supplies in the local area is shown below.

Table 5: Expenditure in the Local Area

| Category of expenditure | Expenditure in base year in local area |
|--------------------------------|--|
| Electricity | negligible |
| Repairs and maintenance | £40,000 |
| Café supplies | £40,000 |

- 7.31. As the above Input-Output tables capture employment and multiplier effects in Scotland, they must be adjusted before applying to the local area.
- 7.32. The employment effect will not usually be as large in a local area as in Scotland since, even where there are local companies supplying the product, their supply chains will tend to be mainly or partly outside the local area.

- 7.33. Also, if capturing induced impacts (and using Type 2 multipliers), and employees are likely to spend a good proportion of their income outside the local area, induced effects (employment supported by employee spending) will also be lower.
- 7.34. There are no hard and fast rules about adjusting multipliers to local areas, and therefore judgement is required, and preferably knowledge of the local supply chain. If the defined local area is large with many suppliers then the adjustment to the multipliers can be relatively small; whereas if the local area is smaller with fewer businesses then there is likely to be greater leakage of impacts.
- 7.35. In our example area, we have assumed a relatively small local area with few local businesses. We have therefore adjusted the multipliers (Type 2) as shown below:

Table 6: Adjusted Type 2 Multipliers

| Category of expenditure | SIC Code | Employment Effect | Calculation | Indirect plus Induced Employment (FTEs) |
|-------------------------|-----------------------|-------------------|----------------------------------|---|
| Repairs and maintenance | 33 | 10 | $(£40,000/£1,000,000) \times 10$ | 0.4 |
| Café supplies | 10.7 10.8 11.07 | 10 | $(£40,000/£1,000,000) \times 10$ | 0.4 |

- 7.36. The two categories of expenditure are therefore calculated to support 0.8 indirect plus induced FTEs in the local area.

2) Using Input-Output Tables as the Principal Mechanism for Estimating Impacts

- 7.37. Where purchases figures are not available (or where the companies involved and their purchases are so small that indirect impacts will be low), Input-Output tables can be used without other data to estimate indirect impacts.
- 7.38. Rather than using the employment effects column in the Input-Output tables, employment multipliers can be used.
- 7.39. This involves multiplying direct employment by the employment multiplier to derive direct and indirect employment (plus induced if Type 2 multipliers are used).

Table 7: Employment Multipliers

| Direct employment | SIC Code | Employment multiplier | Direct plus Indirect Employment in Scotland | Indirect Employment in Scotland |
|-------------------------------|---------------------------------------|-----------------------|---|---------------------------------|
| 15 FTE airport staff | 51 Air Transport Services | 2.0 | 15 x 2.0 = 30 FTEs | 15 FTEs |
| 3 FTE car rental staff | 77 Rental and Leasing Services | 1.4 | 3 x 1.4 = 4.2 FTEs | 1.2 FTEs |
| 4 FTE café staff | 56 Food and Beverage Serving Services | 1.1 | 4 x 1.1 = 4.4 FTEs | 0.4 FTEs |

7.40. In this example, 22 FTE direct employees working at the airport would support a further 16.6 indirect FTEs in the rest of Scotland.

7.41. Again, these indirect impacts would need to be adjusted to the local area using supply chain knowledge. See below for a worked example:

Table 8: Supply Chain Adjustment

| Direct employment | SIC Code | Employment multiplier | Direct and Indirect Employment in the local area | Indirect Employment in the local area |
|-------------------------------|---------------------------------------|-----------------------|--|---------------------------------------|
| 15 FTE airport staff | 51 Air Transport Services | 1.5 | 15 x 1.5 = 22.5 FTEs | 7.5 FTEs |
| 3 FTE car rental staff | 77 Rental and Leasing Services | 1.2 | 3 x 1.2 = 3.6 FTEs | 0.6 FTEs |
| 4 FTE café staff | 56 Food and Beverage Serving Services | 1.05 | 4 x 1.05 = 4.2 FTEs | 0.2 FTEs |

7.42. There would therefore be 8.3 indirect FTE jobs supported in the local area by the purchases of the airport.

7.43. If no data on purchases are provided and overall national multipliers and SIC codes are instead applied, getting as much raw data as possible means that local impact estimates will be more robust. For example, the figures for the SIC code for Air Transport Services will be derived from different air transport services across Scotland, the majority of which will relate to large airports (as employment in the sector will be dominated by large airports), and therefore might not be representative of smaller, regional airports where the services provided will be different. Using relevant data provided by the airport and speaking to major suppliers directly will thus help in the estimation process.

Earnings

- 7.44. Indirect income from employment is calculated in the same way as employment, using the income effect and income multiplier columns of the Input-Output table, where other data are not available or to supplement this.

1) Using Purchases Data

- 7.45. With accurate purchases data, again these can be categorised by SIC code and the income effects from the multipliers can be applied in the same way as for the employment effects, adjusting for local impacts where applicable. As a sense check, it is advisable to calculate the income per FTE (by dividing the total income derived here by the total FTEs derived as above) and check that it is approximately in line with what a worker in that sector might be paid.

2) Using Input-Output Tables

- 7.46. As above, where detailed purchases figures are not available, it is possible to multiply the total direct income by the relevant income multiplier for the sector (e.g. Air Transport Services). Again, sense checking that income per FTE is broadly in line with expectations is advisable through dividing total indirect income by total indirect FTEs.

GVA Impacts

- 7.47. Again, methods for calculating indirect GVA are similar to the above methods of calculating indirect employment and earnings.

1) Using Purchases Data

- 7.48. As above, the GVA effects can be applied to the categorised purchases data to obtain estimates of indirect GVA.

2) Using Input-Output Tables

- 7.49. GVA multipliers can be applied to direct GVA by SIC code to obtain indirect GVA estimates.

(c) Induced Impacts

- 7.50. These are impacts that are generated by the spending of net additional direct and indirect FTEs. It is not feasible to monitor the spending of all direct and indirect workers to calculate the impacts generated, and it is therefore necessary to use national Input-Output tables and judgement to determine induced impacts.
- 7.51. Type 2 multipliers, where published, can be a good tool for working out induced effects. However, not all national or regional statistics agencies publish Type 2 multipliers and therefore judgement and experience are required.

How to Work Out Induced Multipliers from Type 1 and Type 2 Multipliers

- 7.52. For countries where both Type 1 and Type 2 multipliers are available, induced multipliers can be calculated/estimated from these.
- 7.53. Where Type 2 multipliers are available, indirect and induced multipliers can be calculated together from direct impacts.
- 7.54. Induced multipliers are calculated by dividing Type 2 multipliers (which include indirect and induced impacts) by Type 1 multipliers (which relate to indirect and other supply chain impacts) and subtracting 1 (the direct FTE).
- 7.55. This method is the same for employment multipliers, income multipliers and GVA multipliers. For example:

Table 9: Induced Multiplier

| SIC code category | Type 1 Multiplier | Type 2 Multiplier | Induced multiplier |
|----------------------------------|-------------------|-------------------|------------------------|
| 51 Air Transport Services | 2.0 FTEs | 2.5 FTEs | $(2.5/2.0) - 1 = 0.25$ |

- 7.56. Therefore, for each direct FTE in Air Transport Services, there is an additional 0.25 induced FTE in the country.
- 7.57. Induced impacts in a local area are likely to be significantly lower than in the country overall due to the amount of leakage, as people spend their earnings outside the local area. Again, judgement needs to be used to make this adjustment, with local area induced employment multipliers normally in the range of 0.1-0.15 per direct FTE.

How to Determine Induced Multipliers When Type 2 Multipliers are not Available

- 7.58. If there are no national statistics available, estimating induced multipliers is difficult (although they are less significant than indirect multipliers in most areas). Methods include:
- Identifying previous studies that have been undertaken for the local area and using similar induced multipliers. Similarly paid occupations will tend to have similar induced multipliers (higher paid workers will spend more money overall than lower paid workers).
 - Liaising with local professionals working in this field (local enterprise agencies, economic consultants, local councils, etc).
 - Using judgement and knowledge of the local economy – i.e. determining whether there are many options for spending money locally or if the majority of income will leave the area (including taking into account possible remittance of earnings to their home countries by migrant workers).

- Taking into account that earnings for induced workers are normally lower than overall average private sector earnings. This is because induced workers tend to be employed in lower paid sectors (such as retail and food and beverage services).

8. IMPACTS FROM CAPITAL INVESTMENT SPEND

- 8.1. Airport-related and associated capital investment projects can bring significant economic benefits to local construction firms during particular periods where large amounts of money are spent. These projects may last for a relatively short time, and might therefore miss the window for being included in an economic impact assessment. Therefore, it is good practice to average capital investment spend over a longer period, such as three or five years.
- 8.2. Once the annual average has been calculated, it is possible to work out direct, indirect and induced impacts as for annual operational impacts above using the relevant categories of expenditure.
- 8.3. Conventionally, FTE job years are converted into annualised FTEs by dividing them by ten – i.e. it is approximately assumed that annual FTEs last for ten years.

9. CATALYTIC AND WIDER IMPACTS

- 9.1. Catalytic and wider impacts are those net additional impacts that are generated by having an airport in an area beyond the impacts derived from the airport's operations. These can significantly outweigh the other categories of impact, but are very difficult to quantify because it is not easy to isolate the impact of an airport from other factors that influence an area's economic health (Halpern and Bråthen, 2010)³.
- 9.2. Catalytic impacts can be defined as: "The net economic effects (eg on employment, incomes, government finances etc) resulting from the contribution of air transport to tourism and trade (demand-side effects) and the long-run contribution to productivity and GDP of growth in air transport usage (the supply-side performance of the economy)" (Eurocontrol, 2005)⁴.
- 9.3. Catalytic impacts can arise through travel time savings for businesses and through speedy import or export of perishable produce, as well as through the more general efficiency improvements that air connectivity can give to businesses and organisations, both through travel by their own staff and by the staff of their suppliers or business associates.
- 9.4. It is acknowledged that there is generally a strong link between economic development in an airport's catchment area and regional air services, although this is backed up by very little empirical evidence due to difficulties in obtaining long term data on air traffic movements and local economic performance. A 2015 study by Baker, Merkert and Kamruzzaman examined this issue for remote and rural airports in Australia⁵ and found that there were strong short and long run causalities between regional air transport and local economies. The empirical analysis was conducted using annual data on total airport passenger movements, and real aggregate taxable income for the period 1985/86–2010/11.
- 9.5. Having established that there is likely to be a strong link between regional air transport and the local economy, the challenge is to quantify it. Regional economies are diverse, and different industries have different propensities to use air transport (passengers and freight), and all available economic and demographic data should be used to help in this impact quantification; whilst the proportions of tourists who use air travel to access an area can also be very variable. Information gathered through surveys and consultation with businesses (as above) will help inform the process of estimating catalytic impacts.
- 9.6. Where catalytic impacts are calculated/estimated in terms of FTE employment, income from employment, and Value Added, these should be inclusive of indirect and induced impacts (avoiding double-counting across businesses) and adjusted for displacement and deadweight within the impact area/areas under consideration. They should exclude the impacts attributed to the airport and its associated operators (as covered in Section 7 above), and could then be added to those to give total net impacts from the existence of the airport (or changes in this over time).

Tourism Impacts in an area can be quantified either:

- (i) By estimating net additional visitor days within the area attributable to an airport and its scheduled flights (plus any relevant private flights); estimating the spend that this

³ Catalytic impact of airports in Norway

⁴ The Economic Catalytic Effects of Air Transport in Europe

⁵ Regional aviation and economic growth: co integration and causality analysis in Australia

might generate in the area; and using an appropriate average visitor spend to FTE employment ratio (e.g. £60,000 average visitor spend, inclusive of VAT, supporting 1 FTE, inclusive of the multiplier) to estimate employment impacts; and then calculating related earnings and value added impacts; or

- (ii) Including principal tourism-related businesses in a more general business survey, which will pick up both tourism-related employment and employment related to business visits and local or day tripper spend; and then estimating impacts to add to this from smaller businesses in the area that benefit from visitor trade but will not have been surveyed.

- 9.7. Care will need to be taken not to double-count impacts if a combination of methods (i) and (ii) above is used.
- 9.8. In some cases, tourist visitors arriving by air might spend a significant amount of time in areas other than the impact area(s) under consideration, and might arrive and depart using different airports (or, for example, arrive by air and leave by ferry).

Studies that Have Attempted to Quantify Catalytic Impacts

Worldwide

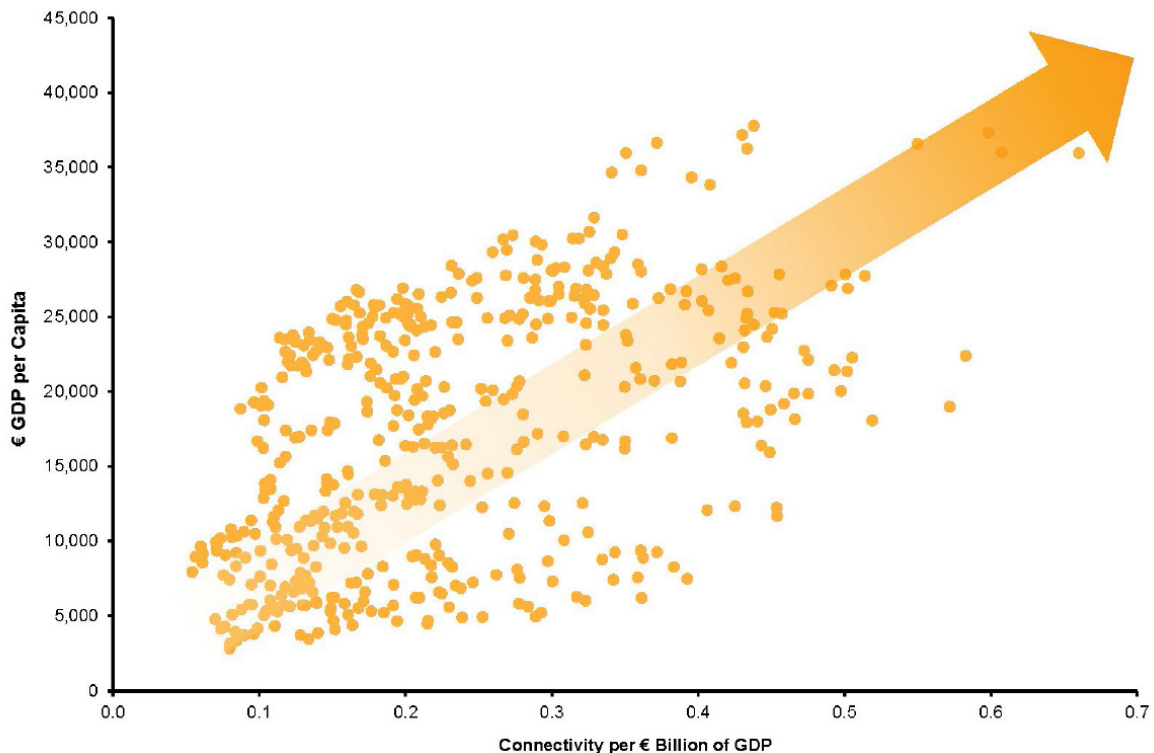
- 9.9. A 2005 study for ATAG (Air Transport Action Group) looked at the economic and social benefits of air travel at a global level⁶. The study estimated that the air transport industry generated a total of 29 million jobs globally, 5 million of which were direct, 5.8 million indirect, 2.7 million induced and 15.5 million catalytic. The global multiplier for catalytic impacts was calculated as 2.1 (total jobs divided by direct, indirect and induced jobs), and the European multiplier was calculated as 1.8.
- 9.10. Key catalytic benefits of air transport were identified as follows:
 - Air transport facilitates world trade
 - Air transport is indispensable for tourism
 - Air transport boosts productivity across the global economy
 - Air transport improves the efficiency of the supply chain
 - Air transport is an enabler of investment both into and out of countries and regions
 - Air transport can act as a spur to innovation
 - Air transport provides consumer welfare benefits to individuals
- 9.11. The values of the catalytic multiplier varied considerably, with more developed regions having a lower multiplier (such as 1.1 in North America and 1.8 in Europe) than less developed regions (3.9 in Latin America and the Caribbean and 6.6 in Africa). Therefore, less developed regions seem to benefit most from air transport – findings that may be applicable proportionately to more remote areas served by smaller airports, as they tend to be more export or tourism dependent.

⁶ The Economic & Social Benefits of Air Transport

European Countries

- 9.12. A 2015 study by InterVISTAS quantified the catalytic impacts of aviation at the national level for aviation in Europe⁷. It found that a 10% increase in connectivity (relative to GDP) increases GDP per capita by 0.5%. The methodology consisted of analysing the relationship between air connectivity (as measured by the IATA connectivity index) divided by GDP (to control for the size of economy effects) and economic growth (GDP per capita) for 40 European countries. Data was gathered on the period 2000 to 2012 and the results are shown in Chart 1 below.

Chart 1: The Relationship between Air Connectivity and GDP per Capita in Europe, 2000-2012



- 9.13. The chart clearly shows a positive relationship between air connectivity and GDP per capita. There is considerable scattering of observations, which is not surprising given that there are a large number of other factors that affect economic growth.
- 9.14. Further econometric analysis showed that a 10% increase in connectivity (relative to GDP) increases GDP per capita by 0.5% and that the relationship is two-way (i.e. air connectivity contributes to economic growth and economic growth contributes to increased air connectivity). However, air transport is not merely following economic growth but also acting as a catalyst for growth.
- 9.15. It is estimated that the catalytic impacts of European airports facilitated 7.9 million jobs, €209.5 million in income and €426.7 billion in GDP (this was 2.6% of the total GDP of Europe in 2013).

⁷ The Economic Impact of European Airports – A Critical Catalyst to Economic Growth, commissioned by ACI Europe

- 9.16. This analysis was carried out at country level, and therefore isn't entirely applicable to individual small, peripheral airports. However, the study also looked at different factors affecting catalytic impacts, which is applicable to the analysis of remote rural airports. Of the countries analysed, the catalytic impact varied greatly from country to country, from 1.1% in Hungary to 7.1% in Cyprus. Countries with relatively large tourism sectors tended to have larger catalytic impacts, as well as more remote or island nations. Other factors affecting the catalytic impacts were the relative size of the aviation sector and overall economy (a small aviation sector in a large economy is likely to have a smaller catalytic impact), the structure of the economy (whether the economy has large proportions of industries that are dependent on air connectivity), and the historical growth in air connectivity.

Country and Airport Specific Studies

- 9.17. Many economic impact assessments or studies of catalytic impacts have been carried out, although few have provided quantitative jobs/income/GVA figures with sound methodology. Some studies provide qualitative analysis of catalytic impacts through findings from passenger/business surveys, and some have used the European figure for catalytic impacts of 1.8, as identified in the 2005 ATAG study referenced above.
- 9.18. Some studies, though, have attempted to quantify catalytic impacts by other means; including assessing by surveys of businesses the proportion of their turnover that is reliant on the airport under consideration.
- 9.19. Although a final employment figure for catalytic impacts wasn't provided, the report into the catalytic impacts of airports in Norway (Halpern and Bråthen, 2010)⁸ found through a survey of 356 businesses in the two case study areas of Sør-Helgeland and Sunnmøre that 61.1% of businesses surveyed responded that at least 1% of their turnover was dependent on air services at their local airport. Almost a quarter of businesses (23.0%) responded that at least 21% of their turnover was dependent on the airport, 12.8% that at least 41% of their turnover was dependent on the airport, 4.4% that at least 61% of their turnover was dependent on the airport, and 2.9% that at least 81% of their turnover was dependent on the airport.
- 9.20. An inquiry into the link between air transport and employment in Norway (Bråthen et al)⁹ found that the catalytic multiplier could be significantly higher than the European average of 1.8. The study included a case study into Molde Airport. Molde is a city of around 25,000 inhabitants located on the north western coast of Norway. A survey was sent to members of the trade associations in the catchment area, and 78 responses were received. Firms were asked how much of their sales were dependent on the transport services at Molde Airport, and among the 48 firms who answered that their sales were dependent on the air services, catalytic sales constituted 24% of total sales. In total, the catalytic sales among the respondents amounted to 1.2 billion Norwegian kroner; although it was notable that three larger firms were responsible for three quarters of the total.
- 9.21. The catchment area of the airport had approximately 29,000 FTEs. Firms that responded to the question on turnover employed around 3,500 FTEs, of whom 850 FTEs were reported as catalytic employment.

⁸ Catalytic impact of airports in Norway

⁹ Catalytic impact of airports in Norway

- 9.22. Due to limitations in the data (with a small sample not weighted to the industrial sectors of the area), it was not possible to allow for any statistical generalisation. However, 850 catalytic FTEs (from just the companies surveyed) compared to direct employment of 107 FTEs suggests that the true catalytic multiplier would have been significantly higher than the estimated European average of 1.8. The firms surveyed accounted for 22% of the employment in the area; and therefore it is estimated that the total catalytic impacts could be two or three times higher, amounting to around 3.5 billion Norwegian kroner and around 9% of the region's employment. Norway has a high reliance on air transport due to its geography, and therefore impacts might not be so high in other areas.

The Structure of an Economy and the Propensity to Fly

- 9.23. Proximity to an airport is more important to businesses in sectors that are often referred to in literature as being air-intensive such as hospitality and related services, finance and insurance, energy, real estate and business, and transport and warehousing. Proximity to an airport is also found to be more important for businesses with offices, departments or sister companies in other regions or abroad compared to businesses that have offices, departments or sister companies in the same region.

Population-related Impacts

- 9.24. These can be regarded as a category of catalytic impact from having an airport in an area in that population growth can be necessary for the labour supply required for economic growth in the area, and that population growth increases local demand for locally provided goods and services. In the modern economy, the lack of an airport in an area can be an important disincentive to reside locally – especially by young people used to air travel. Holidays by air for example, can be quite speedy where a peripheral airport connects with a larger airport that has flights to a range of holiday destinations. Advance bookings when flights are cheaper both between smaller and larger airports and between larger airports and ultimate destinations can give travellers cost effective travel for holidays (or visiting friends and relatives).

APPENDIX 1: PASSENGER SURVEY EXAMPLE

Tourists and Leisure Visitors



Economic Intelligence Unit
Aonad Tuigse Eaconamach



If you have used Wick John O’Groats Airport as a tourist or leisure visitor to the Northern Highlands we would be very grateful if you could complete this form to help us to understand the current importance of the airport and how this might be enhanced through improved airport or airline services.

Please tick or circle the appropriate response

1 How many people are in your group (*including yourself*)?

2(a) Is your flight today

| | |
|--------------|----------------|
| To Aberdeen | From Aberdeen |
| To Edinburgh | From Edinburgh |

2(b) Is your flight a single or a return?

| | |
|--------|--------|
| Single | Return |
|--------|--------|

3. Have you used Wick John O’Groats Airport before this current visit?

| | | | |
|----|-----------|---------------------------|------------------------|
| No | Yes, once | Yes, twice or a few times | Yes, on many occasions |
|----|-----------|---------------------------|------------------------|

4. Where is your normal place of residence?

5. What was the main purpose of your visit?

6. How many nights have you spent (or expect to spend) in the northern Highlands on this trip by place of stay and type of accommodation?

| Number of nights | Type of accommodation | Locality |
|------------------|-----------------------|----------|
| | | |
| | | |

7(a) If Wick John O’Groats Airport did not exist as the only mainland airport north of Inverness, would you have made much the same visit using other means of transport to and from the northern Highlands?

Yes, spending the same number of nights in the area

| |
|---|
| Yes, but reduced to ____ nights (please indicate the number of nights you would be staying in the local area) |
| No |

7(b) If yes, how would you otherwise have arrived in and left the area?.....

8. If you are travelling on by air (or arrived by air) from Aberdeen or Edinburgh, please detail your full air journey.....

9. What positive and negative factors influenced your itinerary decision, or will influence future decisions to use Wick John O’Groats Airport?

| | Strongly positive | Moderately positive | Moderately negative | Strongly negative |
|---|--------------------------|----------------------------|----------------------------|--------------------------|
| Access time compared with road or rail | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Convenience of flight times | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Cost of flights | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| The availability of onward flights from Aberdeen or Edinburgh | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Please comment or mention other positive and negative factors

.....

10. What would most influence whether or how often you might use Wick John O’Groats Airport in the future?.....

11. Any other comments on airport services, flight availability, etc.....

Thank you for your participation in this survey



Northern Periphery and Arctic Programme
 2014–2020



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Business Visitors not Normally Based in the Catchment Area of the Airport



University of the
Highlands and Islands
Oilthigh na Gàidhealtachd
agus nan Eilean

Economic Intelligence Unit
Aonad Tuigse Eaconamach



We would be very grateful if you could complete this form to help us to understand the current importance of the airport and how this might be enhanced through improved airport or airline services.

Please tick or circle the appropriate response

1 How many people are in your group (*including yourself*)?

2(a) Is your flight today

| | |
|--------------|----------------|
| To Aberdeen | From Aberdeen |
| To Edinburgh | From Edinburgh |

2(b) Is your flight a single or a return?

| | |
|--------|--------|
| Single | Return |
|--------|--------|

3. Have you used Wick John O'Groats Airport before this current visit?

| | | | |
|----|-----------|---------------------------|------------------------|
| No | Yes, once | Yes, twice or a few times | Yes, on many occasions |
|----|-----------|---------------------------|------------------------|

4. Where is your normal place of residence?

5. What was the main purpose of your visit?

6. How many nights have you spent (or expect to spend) in the northern Highlands on this trip by place of stay and type of accommodation?

| Number of nights | Type of accommodation | Locality |
|------------------|-----------------------|----------|
| | | |
| | | |
| | | |
| | | |

7(a) If Wick John O'Groats Airport did not exist as the only mainland airport north of Inverness, would you have made much the same visit using other means of transport to and from the northern Highlands?

| |
|--|
| Yes, spending the same number of nights in the area |
| Yes, but reduced to ____ nights (<i>please indicate the number of nights you would be staying in the local area</i>) |
| No |

7(b) If yes, how would you otherwise have arrived in and left the area?.....
.....

8. If you are travelling on by air (or arrived by air) from Aberdeen or Edinburgh, please detail your full air journey.....
.....

9. What positive and negative factors influenced your itinerary decision, or will influence future decisions to use Wick John O’Groats Airport?

| | Strongly positive | Moderately positive | Moderately negative | Strongly negative |
|---|--------------------------|----------------------------|----------------------------|--------------------------|
| Access time compared with road or rail | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Convenience of flight times | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Cost of flights | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| The availability of onward flights from Aberdeen or Edinburgh | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

9(b) Please comment or mention other positive and negative factors.....
.....
.....
.....

10. What would most influence whether or how often you might use Wick John O’Groats Airport in the future?.....
.....
.....

11. Any other comments from the perspective of your business colleagues not flying with you today
.....
.....
.....

Thank you for your participation in this survey



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People Living Within the Catchment Area of the Airport



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Economic Intelligence Unit
Aonad Tuigse Eaconamach



We would be very grateful if you could complete this form to help us to understand the current importance of the airport and how this might be enhanced through improved airport or airline services.

Please tick or circle the appropriate response

1 How many people are in your group (*including yourself*)?

2(a) Is your flight today

| | |
|--------------|----------------|
| To Aberdeen | From Aberdeen |
| To Edinburgh | From Edinburgh |

2(b) Is your flight a single or a return?

| | |
|--------|--------|
| Single | Return |
|--------|--------|

3. Where is your normal place of residence?

4. What is the main purpose of your flight (e.g. to visit a particular destination, business, etc)?
.....
.....

5. Approximately how many times have you personally used Wick John O'Groats Airport for outbound flights (including today) in the past 12 months?

| | |
|---|-------|
| For holiday travel | |
| For other personal travel | |
| For essential travel (e.g. for medical reasons) | |
| For business travel | |

6. If Wick John O'Groats Airport did not exist as the only mainland airport north of Inverness, would you have made the same journey today using other means of transport to or from the northern Highlands?

| | |
|-----|----|
| Yes | No |
|-----|----|

If Yes, would this have been...

| |
|-----------------------------------|
| Via Inverness Airport |
| Via Another Airport (please name) |

| |
|-------------------------|
| Entirely by Road |
| Mainly by Rail |
| Other (please describe) |

7(a) What positive and negative factors influenced your itinerary decision, or will influence future decisions to use Wick John O’Groats Airport?

| | Strongly positive | Moderately positive | Moderately negative | Strongly negative |
|---|--------------------------|--------------------------|--------------------------|--------------------------|
| Access time compared with road or rail | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Convenience of flight times | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Cost of flights | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| The availability of onward flights from Aberdeen or Edinburgh | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

7(b) Please comment or mention other positive and negative factors.....

8. What would most influence whether or how often you might use Wick John O’Groats Airport in the future?.....

9. Any other comments on airport services, flight availability, etc from your perspective?.....

10. Any other comments on airport services, flight availability, flight costs, etc from the perspective of your family or people who visit you?.....

Thank you for your participation in this survey



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Local Business Owners and Employees making a Business-Related Journey



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agus nan Eilean

Economic Intelligence Unit
Aonad Tuigse Eaconamach



We would be very grateful if you could complete this form to help us to understand the current importance of the airport and how this might be enhanced through improved airport or airline services.

Please answer the questions below from your personal perspective or from the perspective of your business or organisation as appropriate.

Please tick or circle the appropriate response

1 How many people are in your group (including yourself)?

2(a) Is your flight today

| | |
|--------------|----------------|
| To Aberdeen | From Aberdeen |
| To Edinburgh | From Edinburgh |

2(b) Is your flight a single or a return?

| | |
|--------|--------|
| Single | Return |
|--------|--------|

2. Where is your normal place of residence?

3. What is the name, activity and location of your business or organisation?

4. Approximately how many people does it employ in the catchment area of the airport?

5. What is the main purpose of your flight (e.g. a sales visit to another business)?

6. Approximately how many times have you personally used Wick John O'Groats Airport for outbound flights (including today) in the past 12 months?

| | |
|---|-------|
| For holiday travel | |
| For other personal travel | |
| For essential travel (e.g. for medical reasons) | |
| For business travel | |

7. If Wick John O'Groats Airport did not exist as the only mainland airport north of Inverness, would you have made the same journey today using other means of transport to or from the northern Highlands?

| | |
|-----|----|
| Yes | No |
|-----|----|

If Yes, would this have been...

Via Inverness Airport

| |
|-----------------------------------|
| Via Another Airport (please name) |
| Entirely by Road |
| Mainly by Rail |
| Other (please describe) |

8. What positive and negative factors influenced your itinerary decision, or will influence future decisions to use Wick John O’Groats Airport?

| | Strongly positive | Moderately positive | Moderately negative | Strongly negative |
|---|--------------------------|--------------------------|--------------------------|--------------------------|
| Access time compared with road or rail | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Convenience of flight times | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Cost of flights | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| The availability of onward flights from Aberdeen or Edinburgh | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

- 8 (b) Please comment or mention other positive and negative factors.....

9. What would most influence whether or how often you might use Wick John O’Groats Airport in the future?.....

10. Any other comments on airport services, flight availability, etc from your perspective or that of your business suppliers or your services to customers?.....

11. Any other comments on airport services, flight availability, flight costs, etc from the perspective of your business colleagues not flying with you today?.....

12. Were the northern Highlands not to have an airport, what difference do you think this would make to your business or organisation? (mark all that apply)

| | Additional Comments |
|---|---------------------|
| No difference | |
| Some inconvenience but little difference | |
| It might not be based in the area | |
| More difficult to recruit and retain staff | |
| Less efficient operation | |
| Fewer visitors to your business or organisation | |

13. Any other comments?.....
.....
.....

Please provide contact details if you have any other points that you would like to discuss with us

.....
.....
.....



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APPENDIX 2: BUSINESS SURVEY EXAMPLE



Economic Intelligence Unit
Aonad Tuigse Eaconamach



Wick John O'Groats Airport Impact Assessment

As part of the SPARA 2020 project, the Economic Intelligence Unit at the University of the Highlands and Islands is conducting an economic impact assessment of Wick John O'Groats Airport. As part of this assessment, we are keen to speak to local businesses and organisations that use the airport to determine the importance and impact of the airport's presence and air services.

SPARA 2020 is a €2.4m Project co-funded by the Northern Periphery and Arctic Programme designed to address some of the challenges facing peripheral and remote airports.

Any employment or other figures you provide will be aggregated with other evidence in our report. Please indicate at the end, however, whether any data or quotes can be attributed to your company, whether you would like them to remain anonymous, or whether we should first check with you.

| | |
|--|--|
| 1. Name of Company/Organisation | |
| 2. Contact Name and Role | |
| 3. Contact Number | |
| 4. Contact Email | |
| 5. Type of Business | |
| 6. Average number of Full-Time Employees in Caithness and North Sutherland | |
| 7. Average number of Part-Time Employees in Caithness and North Sutherland | |

- 8a. Approximately how many times over the past 12 months have you or other employees travelled via Wick John O'Groats Airport?

To Edinburgh Airport

To Aberdeen Airport.....

- 8b. Of which, approximately, how many were for onward flights

From Edinburgh Airport

From Aberdeen Airport.....

9. Approximately how many times over the past 12 months have your business visitors travelled via Wick John O'Groats Airport?

From or via Edinburgh Airport.....

From or via Aberdeen Airport.....

10. If you are a tourism-related business, could you estimate how many of your visitors travelled to Caithness and Sutherland via Wick John O'Groats Airport over the past twelve months?

.....

11. On a scale of 1 to 10, how important is the presence of the airport to your business/organisation?
(please mark your answer in bold)

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|----|

Not Important at all

Extremely Important

12. How strongly do you agree or disagree with the following statements? (please mark your answer in bold)

- 12a. The airport is a catalyst for economic development in the area.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|----|

Strongly Disagree

Strongly Agree

- 12b. The role the airport plays in the connectivity of Caithness and North Sutherland is essential to the sustainability of the area

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|----|

Strongly Disagree

Strongly Agree

- 12c. Do you have any comments relating to 12a or 12b.

.....

.....

.....

- 13a. Were the northern Highlands not to have an airport, what difference do you think this would make to your business or organisation? (put in bold all that apply)

| | Comments |
|---|----------|
| No difference | |
| Some inconvenience but little difference | |
| It might not be located in the area | |
| More difficult to recruit and retain staff | |
| Less efficient operation | |
| Fewer visitors to your business or organisation | |
| Fewer tourist visitors | |

- 13b. Additional comments on 13a above.....

.....

.....

.....

.....

14. Do you or your visitors use the airport for private or charter flights (by plane or helicopter)? If so, please give details.

.....

.....

.....

- 15a. What positive and negative factors influence your decision, or the decisions of other staff, to use Wick John O’Groats Airport? *(please mark your answer with a checked box ■)*

| | Strongly positive | Moderately positive | Moderately negative | Strongly negative |
|---|--------------------------|--------------------------|--------------------------|--------------------------|
| Access time compared with road or rail | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Convenience of flight times | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Cost of flights | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| The availability of onward flights from Aberdeen or Edinburgh | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

- 15b. Please comment or mention other positive and negative factors

.....

.....

.....

16. Do you have any other comments on airport services, flight availability, taxi or hire car availability, etc, from your perspective, that of your business suppliers, that of your tourist visitors (if applicable), or your services to customers – taking into account any future business plans or opportunities?

.....

.....

.....

17. Do you have any other comments about the economic or social importance of the airport to the northern Highlands?

.....

.....

18. Which service in the local area would you most want to see improved (rank 1-3)

- air services
- road services
- rail services

19. Are you happy for the above comments to be attributed to your company or organisation in our report? *(delete as appropriate)*

- Yes, data and quotes may be attributed to my company
- Yes, quotes may be attributed to my company
- I would like my answers to remain anonymous
- Check with my company first

Thank you for your participation in this survey



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