

APPENDIX A: UIST IMPACT ASSESSMENT SUPPORTING INFORMATION

A.1 AIR SERVICES AT BENBECULA AIRPORT

A.1.1 Activity

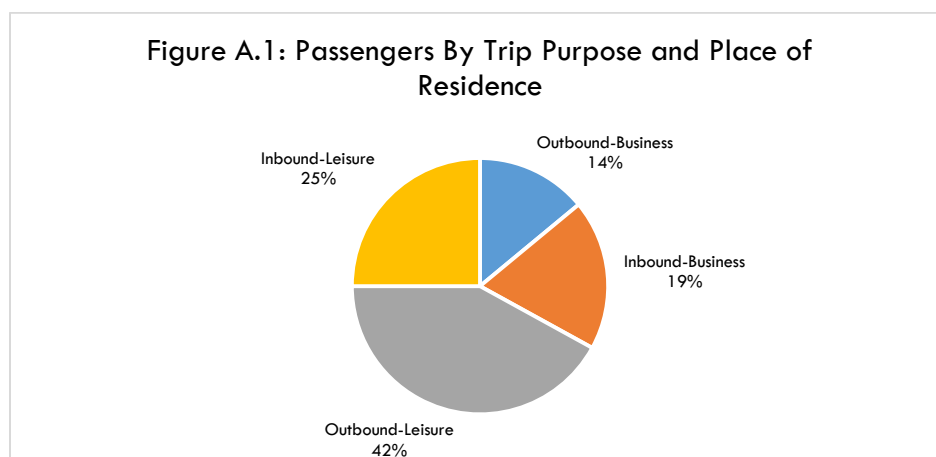
Scheduled Flights

Between April 2019 and March 2020 there was a total of 1,839 scheduled aircraft movements at Benbecula Airport.

A total of around 35,000 passengers used the two scheduled services (Glasgow and Stornoway) in 2019. The following analysis is based on passenger surveys undertaken in 2016 and 2018.

Most (56%) of the flights were outbound-i.e. made by local residents. The other 44% were inbound-i.e. made by those who live outside Uist.

Most (two thirds) trips were made for leisure purposes. The other third were for business purposes. A more detailed breakdown is shown at **Figure A.1**.



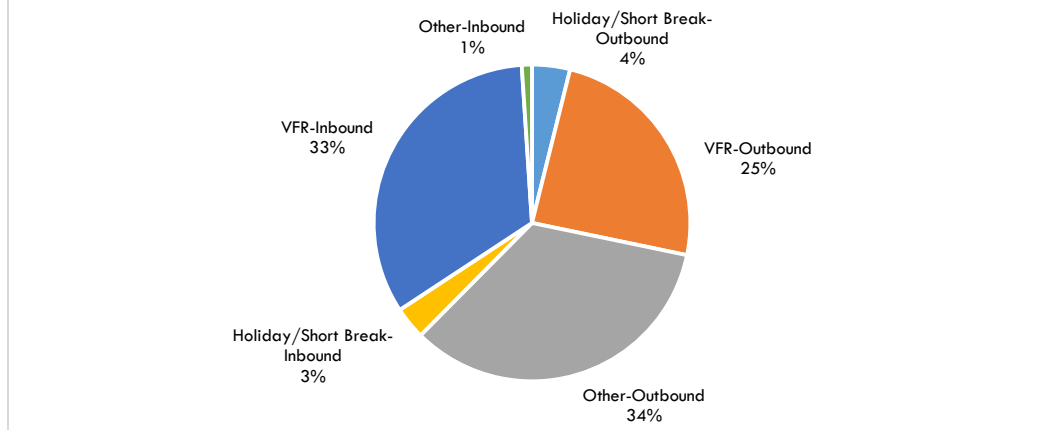
Outbound Leisure is the largest segment, accounting for more than 40% of all passengers. The chart also shows that most business trips are inbound.

More than half of all leisure passengers (58%) were travelling for Visiting Friends and Relatives (VFR) purposes. Most of the rest (35% of all leisure passengers) were making “Other Leisure” trips. These will include Uist residents making trips for health-related purposes. Very few (7%) leisure passengers were using the flight for a holiday or short break.

Figure A.2, over, provides some further detail on leisure passengers. It shows that:

- Most VFR trips are inbound to Uist-i.e. made by those who live elsewhere.
- Almost all Other Leisure trips are made by Uist residents.

Figure A.2: Leisure Passengers By Detailed Trip Purpose and Place of Residence



Non-Scheduled Flights

Between April 2019 and March 2020 there was a total of 1,437 non-scheduled movements (excluding circuits) at Benbecula Airport. The most frequent categories of movement were:

- Freight/Cargo: 43% of all non-scheduled movements.
- Air Taxi: 20%.
- Air Ambulance: 20%.

Compared to the other six HIAL airports included in ATMS Benbecula specialises in Freight/Cargo, Air Taxi and Military flights.

A.1.2 Role and Distinctive Contribution of Air Services

Role

Community consultees mentioned a wide range of types of flights using Benbecula Airport. First, scheduled passenger services which were generally described as “lifeline” services. Passenger trip purposes on these services were:

- Commercial/work related including commuting by a “significant” number of offshore workers.
- Study related travel-to access further and higher education institutions elsewhere.
- Leisure.
- Health-related-notably travel by Uist residents for treatment elsewhere.

References were also made to other types of air services/uses:

- Cargoes-e.g. mail, newspapers and medical supplies.
- Air ambulance for emergency patient transfer.

- Coastguard Search and Rescue Services.
- Military training flights.
- Northern Lighthouse Board helicopters.
- Non-scheduled passenger flights.
- Scottish Fisheries Protection Agency patrol aircraft.
- Helicopters for business use e.g. involved in tasks on fish farms.

Distinctive Contribution

Community consultees saw one of the main differences between air and ferry as the former being more reliable during bad weather. The speed and thus the shorter journey times of air were also highlighted. It offers rapid movement of patients on the air ambulance and also day return trips for business travel on some air routes.

A.2 LOCAL ECONOMY

In 2018 there was a total of 2,000 jobs in Uist. This number was unchanged since 2015. In contrast, employment numbers increased in both Scotland (by 2%) and the Highlands and Islands (1%) in the same period.

The 2018 share of jobs in Uist which are part time (38%) is very similar to that for the Highlands and Islands (39%). However, part time employment is more prevalent than in Scotland (where the figure is 34%).

Table A.1, over, describes the structure of employment in Uist in 2018 and also provides a comparison with the Highlands and Islands economy.

The four industries in Uist with the largest employment levels were:

- Wholesale and retail trade, etc: 14% of total employment.
- Human health and social work activities: 13%.
- Accommodation and food service activities: 12%.
- Education: 10%.

Collectively they accounted for almost half the total employment.

The data in the Table shaded in yellow denote industries with a share of total employment that is at least two percentage points greater than the corresponding share of Highlands and Islands employment. For example, Transport and storage accounts for 8% of employment in Uist compared to only 5% across the Highlands and Islands.

These industries include Accommodation and food service activities and Professional, scientific and technical activities. This points to the relative importance of tourism and the MOD Hebrides Range operated by QinetiQ, respectively.

TABLE A.1: UIST EMPLOYMENT STRUCTURE: 2018

Industry	Share of Total Employment	
	Uist	Highlands and Islands
Agriculture, forestry and fishing	9%	12%
Mining and quarrying	1%	<1%
Manufacturing	2%	7%
Electricity, gas, steam and air conditioning supply	1%	1%
Water supply, sewerage, waste management and remediation activities	1%	1%
Construction	7%	6%
Wholesale and retail trade; repair of motor vehicles and motor cycles	14%	13%
Transport and storage	8%	5%
Accommodation and food service activities	12%	10%
Information and communication	<1%	1%
Financial and insurance activities	1%	1%
Real estate activities	2%	1%
Professional, scientific and technical activities	7%	4%
Administrative and support service activities	3%	5%
Public administration and defence; compulsory social security	4%	7%
Education	10%	7%
Human health and social work activities	13%	15%
Arts, entertainment and recreation	5%	3%
Other service activities	1%	2%
TOTAL	100%	100%

A number of industries (shaded in blue) are underrepresented in Uist: Manufacturing in particular and also Agriculture, forestry and fishing-recognising that the latter's share of 9% does not include the self-employed. However, within this Uist has a relatively high share of employment in fishing and aquaculture.

In addition, Uist's share of employment in public sector activities (i.e. Public administration and defence; compulsory social security/Education/Human health and social work activities) is below that seen in the Highlands and Islands.

Data on wages are only available at the Outer Hebrides level. In 2019, the average (median) gross wage for a full time job was £26,772. That is over £3,000 (11%) less than the figure for Scotland (£30,000). Further, it could be that the average for Uist is lower than that for the Outer Hebrides as a whole given its employment structure-including a relatively low level of employment in public sector administrative activities.

These wage rates are in a context where a minimum acceptable standard of living in the Outer Hebrides requires between 20% and 42% more household spending than in urban parts of the UK.

In recent times the Outer Hebrides unemployment rate has been slightly above that in the Highlands and Islands. Between May 2019 and March 2020, the monthly figure varied between 2.2% and 3.0%, compared to between 2.2% and 2.6% at the regional level.

In contrast, Outer Hebrides unemployment was below that seen in Scotland as a whole. There the rate was between 3.1% and 3.3% over the period.

All parts of Uist are classified by HIE as Fragile Areas. As another proxy measure of socio-economic challenges/deprivation, some 29% of pupils in the Outer Hebrides are registered for free school meals. That is below the level in both the Highlands and Islands (32%) and Scotland (37%).

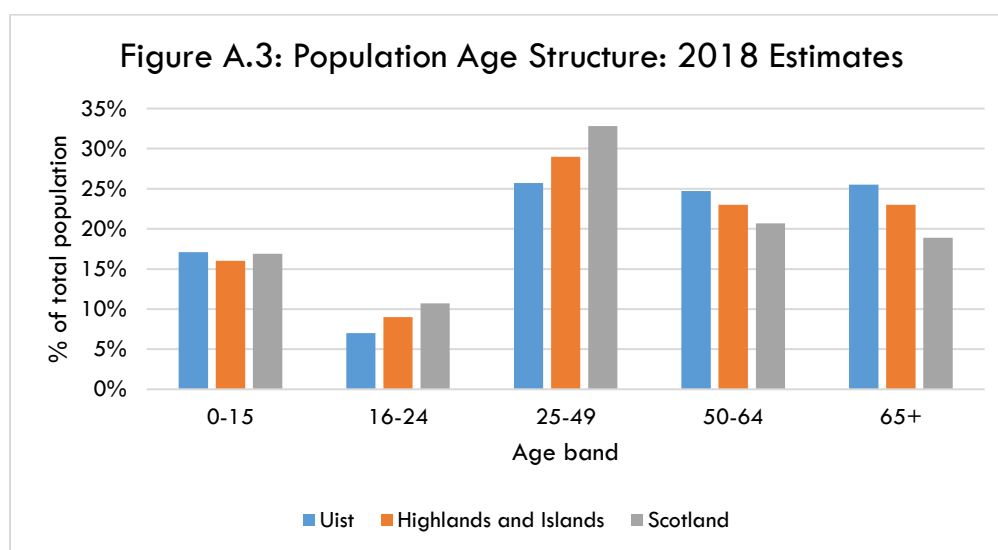
Summary:

- Employment levels in Uist were flat between 2015 and 2018 compared to growth in both the Highlands and Islands and Scotland.
- Four industries are responsible for around 50% of total employment.
- Distinctive features include the relatively high levels of employment supported by tourism and the MOD Hebrides Range and relatively low public sector employment.
- Wages in full time jobs in Uist appear to be more than 10% below the Scottish average, and are likely lower than the Outer Hebrides average.
- All parts of Uist are in HIE designated Fragile Areas.

A.3 DEMOGRAPHIC PROFILE

The estimated 2018 population in Uist was 4,647.

Figure A.3 below describes the age structure of Uist's population. It also compares this to the structure in the Highlands and Islands and Scotland.



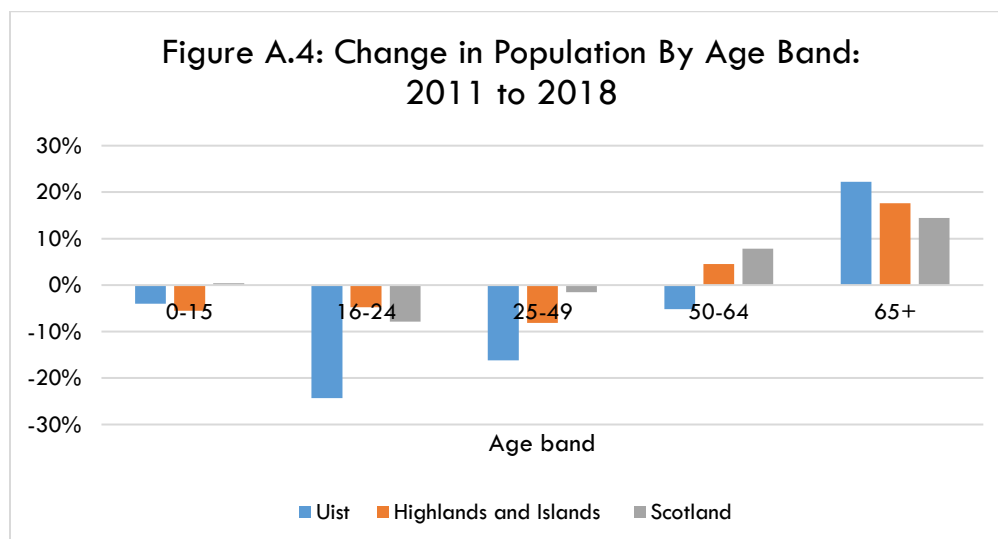
A distinctive feature in Uist is that around half of the population is aged 50 years or above, with over 25% aged 65+ and thus the least likely to still be economically active. Around a further quarter are aged between 25 and 49 years. This is an age bracket which is mostly

likely to contain people in work and who are also raising families. The remaining quarter of the Uist population are split between those aged 0-15, and those aged 16-24.

The graph also shows that Uist is a much more aged population than in the Highlands and Islands and Scotland. As noted above more half are 50 years or over, clearly higher than in the Highlands and Islands (46%) and Scotland (40%). As a result, Uist has relatively lower proportions of its population in both the 16-24 and 25-49 age groups.

The estimated population of Uist in 2018 was some 215 people lower than the estimated 2011 level (4,862). That represented a decrease of 4.4% over the seven year period. That was in contrast to estimated population *growth* in both the Highlands and Islands (0.4%) and Scotland (2.6%) during that time.

Figure A.4 describes how the change in Uist's population was spread across different age bands and compares this with the Highlands and Islands and Scotland.



Some of the general trends are similar in the three geographies. In particular, the *decrease* seen in the 16-24 and 25-24 age bands and the *increase* in the numbers aged 65 years and above.

However, there is a much greater level of change in Uist. For example, the decrease in the number of 16-24 year olds is 24%. That is much greater than the fall in the Highlands and Islands (5%) and Scotland (8%). There are trends toward a more aging population in all three geographies-but the pace of this is much greater in Uist.

Recent official population forecasts are only available at local authority level. There is a projected fall of 6.1% in the population of the Outer Hebrides between 2018 and 2028. That is much higher than the projected fall in the Highlands and Islands (1.2%) and the forecast increase in Scotland (1.8%). On this basis it might be expected that the population of Uist will continue to fall-and become more aged-in the years up to 2028.

Other research concluded that in Uist “the requirement for a net inward migration figure of around 60 persons per year to keep the population stable represents a reasonable working figure” (*Sustainable Uist: A report on the Uist Population and Migration Study 2017-18, 2019*).

Summary:

Uist has a small population-less than 5,000 people. It is estimated to have fallen by over 4% between 2011 and 2018, in contrast to growth at the regional and national levels. It also has a relatively aged population-and is aging at a faster rate than in the Highlands and Islands and Scotland.

A.4 CONSULTEES' ISSUES AND CONCERNS ABOUT CHANGE FROM ATC TO AFIS

A.4.1 Community Consultees

Community consultees' most common issues and concerns were, first, a *reduction in safety* compared to current ATC operations. That was based on pilots having to resolve conflicts between aircraft themselves rather than the current situation where ATCOs provide pilots with instructions. This was seen as particularly important given Benbecula Airport is in the vicinity of the Hebrides Range and is in a danger zone when part of the range is active.

It was stated that only way of mitigating to some degree the reduction in safety would be to use slot times. However, this was seen as leading to an *increase in flight delays and cancellations* as flights would not be able to land consecutively as is the case under ATC at present.

Second, a *lack of information and transparency about the basis of the decision to move Benbecula Airport from ATC to AFIS operations*. This includes how comparable the traffic mix (both number of flights and aircraft types) at Benbecula is to that at other HIAL airports where AFIS is in operation (notably Islay) and how far this has been analysed. This was seen as meaning that the number of potential aircraft conflicts could be higher at Benbecula than Islay.

Further, a lack of information on the timing of the production of the safety case for the change at Benbecula and, more generally, a lack of information about how AFIS would operate at the airport (including whether the airport's opening hours would change).

Third, concern was raised that there would be *reduced demand for use of Benbecula Airport* as some air operators would not use the airport if it was AFIS rather than ATC. References were made to possible reduced use by jets and economically important users-e.g. chartered flights bringing visitors to local estates. The knock on effect was seen as leading to operating income to Benbecula airport make it less viable.

It was also stated that there have been no problems with recruitment or retention of ATC staff in Benbecula. Thus, it is not a possible justification for the change to AFIS.

Another concern raised was that there was no intrinsic reason why the AFIS centre of excellence planned for Benbecula had to be located there. Thus, the Centre might be relocated to another airport in due course.

A.4.2 Stakeholder Consultees

[REDACTED] noted that Benbecula is in some ways comparable to Islay and the company have no issues with using that airport. However, they recognise that proximity to the live weapons range is a distinguishing feature at Benbecula that would need to be accounted for. Also, while all the AFISOs may at first be ex ATCOs that will change over time. ATCOs have a training and breadth of experience that AFISOs do not.

The move to AFIS is not an issue for another airline which makes occasional use of Benbecula.

The general view was that there are no issues with current air traffic management arrangements at Benbecula. The workforce has been largely stable with recruitment and training of controllers with links to island communities. There have been no problems with staffing and the airport has always remained open for delayed scheduled flights. The result is very resilient air traffic provision.

Some believe that air services will be less safe than at present. That is because there would be no controller to protect against airborne conflict. In addition, the airport's helicopter and non-scheduled operations means that Benbecula is a complex airspace to manage even if scheduled traffic is low.

It was also stated that:

- The CAA has made it clear to Prospect that flexible controlled airspace would be granted to Benbecula if it was requested. This would mean that ATC operations could continue at the airport.
- There is no clear information on what the proposed centre of excellence would comprise.

A.5 **PROFILE OF AFFECTED STAFF AND HOUSEHOLDS**

A.5.1 Staff Profile

The profile of the affected seven staff currently employed at Benbecula is as follows:

- [REDACTED] are male.
- Almost all (seven) are in ATCO-related roles.
- [REDACTED] live in Benbecula with the others in various locations elsewhere in Uist.
- Most of the staff are aged 44 year or less. The median age is 44 years.
- There is a broadly even split between those with up to 10 years' experience in air traffic service, and those with 11 years or more.

A.5.2 Household Profile

The following information is from the staff survey to which there were ≤ 10 respondents.

The [REDACTED] households have a total of 20 members-although it appears that a number of them do not live in Uist all the time. There was a broadly even split between those aged up to 15 years and those who are 16 years or above. The former were mostly attending primary school, with smaller numbers either at nursery or secondary school. (Other information we received from a consultee suggests there are 18 people living permanently in the affected households-11 adults and seven children).

Almost all [REDACTED] of the staff members have other family members who live elsewhere in their community/area. In every case they support these other family members. That is through either caring for elderly relatives or providing childcare.

None of the respondents to the survey undertakes any paid employment in addition to their air traffic management job with HIAL.

In addition to the survey respondents, across the [REDACTED] households a further six members were in work. [REDACTED] were working full rather than part time. Their employers included NHS, third sector, public sector and primary activities. Some posts were in middle management.

Most of the households participate and/or contribute to the running of local community, voluntary and other organisations. In some households that was both the HIAL staff member and their spouse/partner, with some involved in three or more organisations.

The organisations were wide ranging-including sports, community groups and volunteering. Roles included chair, coach, secretary and treasurer.

A.6 **POTENTIAL IMPACTS**

A.6.1 Economic Impacts

Changes in Direct Employment and Salary Payments at Benbecula Airport: AFIS/Centre of Excellence Compared to The Existing Position

Table A.2 shows the estimated change in direct employment and gross salary payments as a result of the move from ATC to AFIS/centre of excellence. As explained at **Chapter 2**, the actual employment and salary levels will depend on the final content of the proposed centre of excellence.

TABLE A.2: NET CHANGE IN AIR TRAFFIC MANAGEMENT STAFF AND SALARIES: COMPARISON OF AFIS/CENTRE OF EXCELLENCE AND EXISTING POSITION	
Number of Full Time Equivalent Posts	Net Loss in Total Annual Salary Payments
0	>£65,000<£75,000

This shows no change from the current number of FTE posts and a loss of >£65,000<£75,000 in gross salaries. The average salary per FTE would fall from around [REDACTED] to around £42,000 which would still be considerably above the likely average for employment in Uist.

The reduction of >£65,000<£75,000 in direct gross salary payments will lead to reduced wage expenditures in Uist businesses (shops, etc.). We estimate that this will reduce employment by 0.4 FTE posts in Uist.

This may appear small in relation to a reduction of >£65,000<£75,000 in gross direct salary payments. However, it is the case that:

- Calculating the induced impacts requires deducting income tax and national insurance payments from the gross salary figure (i.e. it based on the net salary total).
- Some of the wages previously received would have been spent with businesses based outside Uist-e.g. internet purchases, some large purchases and holidays.
- Some of the spend will include VAT which does not generate income and employment in businesses where the wages are spent.

Table A.3 shows the total quantified impacts from the change.

TABLE A.3: TOTAL NET CHANGE IN EMPLOYMENT AND SALARIES: COMPARISON OF AFIS/CENTRE OF EXCELLENCE AND EXISTING POSITION		
Impact	Number of Full Time Equivalent Posts	Net Loss In Total Annual Gross Salary Payments
Direct	0	>£65,000<£75,000
Induced	0.4	£9,000
Total	0.4	>£74,000<£84,000

Among *community consultees*, the most commonly mentioned impact was the *loss of good quality, high paying and hitherto secure jobs*. This was viewed in a context where there are few such jobs in Uist and the local economy is not strong.

Stakeholder consultees also see the main potential impact as *reduction in employment levels and related salary payments* at Benbecula Airport, with average salaries in the AFIS jobs viewed as significantly below those currently paid. This in turn would have the negative wider impact of less money being spent in shops and other businesses in Uist.

Again, this was framed in a context of there being very few well paid jobs in Uist. Only a few working in professional roles would be on a salary commensurate to that of the Benbecula ATCOs. The availability of the ATCO jobs had attracted a number of them to move back home to Uist. Looking forward the result of the move to AFIS is seen as meaning fewer skilled professional opportunities for residents in the future.

Some also referred to, more widely, to a simple lack of jobs in Uist in a context where the local economy was already becoming smaller.

Wider Impacts

Among community consultees, a potential reduction in flights using Benbecula airport was seen as having leading to reduced economic activity in Uist-e.g. loss of ad hoc tourism charter flights. Further, the potential for increased flight delays and cancellations was seen as having negative impact on the potential economic growth in Uist because the islands' transport connectivity would be poorer than at present. Thus, the islands would become a less competitive destination.

Reference was also made to the *potential loss of economic activity of spouses/partners* of the current air traffic staff at Benbecula. That would be if their households moved away from Uist and their current jobs were not filled or their economic activity (e.g. if self-employed) was not replaced.

Stakeholder consultees also referred to the fact that *a number of the affected staff have partners who work*. If they were to leave the area then it is possible that some of their posts would not be filled or quickly filled due to a shortage of suitable replacements in Uist. This would further reduce the amount of spend in local shops and other businesses.

The second form of negative impacts was seen as arising from *a lower number of flights using Benbecula airport*. That would be due to a perception of reduced safety and/or increased delays and cancellations for air operators. This could lead to:

- Risking the sustainability of the range and QinetiQ's presence as a major employer in Uist.
- A negative impact on the prospects of the proposed horizontal space launch site in North Uist.
- Reduced general aviation activity.
- Lower inbound passenger numbers and thus reduced spend with local taxis, car hire and hospitality businesses.

Changes in Direct Employment and Salary Payments at Benbecula Airport: AFIS/Centre of Excellence Compared to The Inclusion of Benbecula In CSC

Table A.4 shows the difference in employment and salaries of AFIS/Centre of Excellence Compared to what would occur if Benbecula had been included in the CSC.

TABLE A.4: NET CHANGE IN AIR TRAFFIC MANAGEMENT STAFF AND SALARIES: AFIS/CENTRE OF EXCELLENCE COMPARED TO BENBECULA BEING INCLUDED IN CSC	
Net Increase In Number of Full Time Equivalent Posts	Net Increase In Total Annual Salary Payments
6	£250,000

In addition, AFIS would retain the current five part-time AFISO posts at Benbecula. These posts would no longer exist if Benbecula had been included in the CSC.

Table A.5 shows the total quantified impacts.

TABLE A.5: TOTAL NET CHANGE IN EMPLOYMENT AND SALARIES: AFIS/CENTRE OF EXCELLENCE COMPARED TO BENBECULA BEING INCLUDED IN CSC		
Impact	Net Increase in Full Time Equivalent Posts	Net Increase In Total Annual Gross Salary Payments
Direct	6	£250,000
Induced	1.5	£33,000
Total	7.5	£283,000

A.6.2 Community Impacts

Population

Community consultees noted that the households of the affected staff have a total of 19 members including seven children [REDACTED]. The *potential loss of most or all of these people from Uist* was viewed in a context of previous strongly negative population forecasts, and where Uist requires a net inward migration of 60 people a year to remain sustainable.

Among the *stakeholder* consultees the main concern is the *potential reduction in population levels* if the affected staff and their household members leave Uist.

This was placed in a context of:

- Existing fragility of Uist.
- High existing proportion of elderly people.
- Previous forecasts of a significant decline in Uist's population.

Loss of families would in turn would affect reduce individual school's rolls and exacerbate what are seen as difficulties in attracting teachers to work in schools with low pupil numbers.

Community Activity

Community consultees referred to a *limited number of residents who participate in local groups and committees*. If the pool of participants became smaller then this would place a further burden on the remaining individuals.

Stakeholder consultees made a similar point seeing that a *loss of population would mean local groups would suffer* as ATCOs and their families (both spouses and children) are involved in many activities. Examples included athletics club, basketball club, a village hall and an agricultural society. The loss of families would reduce the number of adults to organise and run activities and the number of children participating in them.

APPENDIX B: LEWIS IMPACT ASSESSMENT SUPPORTING INFORMATION

B.1 AIR SERVICES AT STORNOWAY AIRPORT

B.1.1 Activity

Scheduled Flights

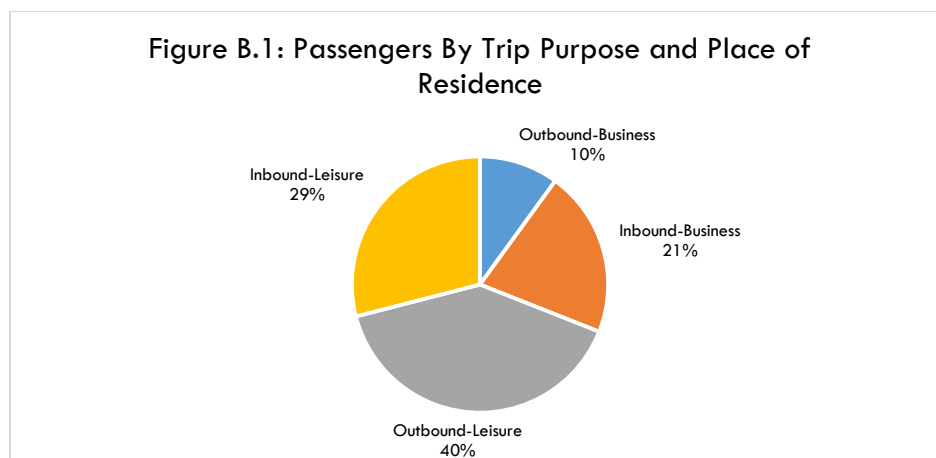
Between April 2019 and March 2020 there was a total of 5,431 scheduled aircraft movements at Stornoway Airport.

Based on CAA data in 2019 around 133,000 passengers used scheduled services at Stornoway. These were services to Benbecula, Edinburgh, Glasgow, Inverness and Manchester.

The following analysis is of passengers using these flights in 2018. (A service to Aberdeen also operated in 2018. However it ceased during that year so is not included in the analysis below).

The number of flights was split evenly between residents of Lewis and Harris and those who live elsewhere.

A majority of passengers (69%) were travelling for leisure purposes with the other 31% on business. A more detailed breakdown is shown at **Figure B.1**.

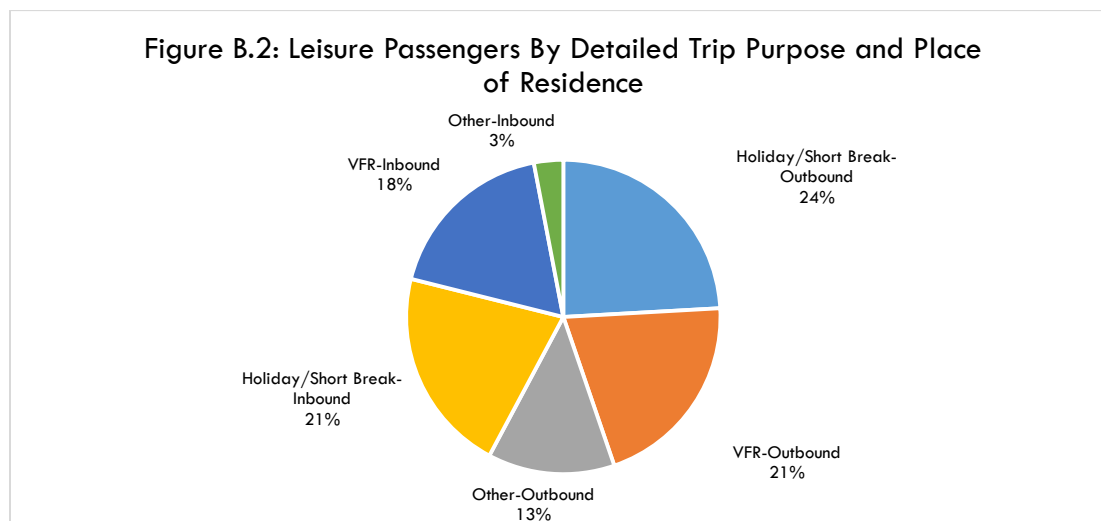


Outbound leisure (i.e. trip made by residents of Lewis and Harris) is the largest market segment (40%) of all passengers, followed by inbound leisure trips made by those living elsewhere (29%). The chart also shows that most (two thirds) of business trips are made by non-residents.

Most (45%) leisure passengers were travelling for a Holiday or Short Break. purposes for purposes. The share of Visiting Friends and Relatives (VFR) trips was slightly less at 39% of all passengers. The remaining 16% were travelling for Other Leisure purposes.

Figure B.2, over, provides further detail on leisure passengers.

It shows that both Holiday/Short Break traffic and VFR were split broadly evenly between inbound and outbound passengers. In contrast the vast majority of Other Leisure trips-which will include those for health-related purposes-were made by local residents.



Non-Scheduled Flights

Between April 2019 and March 2020 there was a total of 3,831 non-scheduled movements (excluding circuits) at Stornoway Airport. The most frequent categories of movement were:

- Freight/Cargo: 31% of all non-scheduled movements.
- Air Ambulance: 21%.
- Training: 19%.

Compared to the other six HIAL airports included in ATMS Stornoway specialises in Military, Air Ambulance and Freight/Cargo flights.

B.1.2 Role and Distinctive Contribution of Air Services

Role

Community consultees mentioned a wide range of types of flights using Stornoway Airport. First, scheduled passenger services which were generally described as “lifeline” services. Passenger trip purposes on these services were:

- Commercial/work related including commuting by a “significant” number of offshore workers.
- Study related travel-to access further and higher education institutions elsewhere.
- Leisure.
- Health-related.

References were also made to other types of air services/uses:

- Cargoes including mail, newspapers and medical supplies.
- Air ambulance for emergency patient transfer.
- Coastguard Search and Rescue Services.
- Military training flights.
- Northern Lighthouse Board helicopters.
- Non-scheduled passenger flights.
- Scottish Fisheries Protection Agency patrol aircraft.

Distinctive Contribution

Community consultees saw one of the main differences between air and ferry as the former being more reliable during bad weather. The speed and thus the shorter journey times of air were also highlighted. They provide rapid movement of patients on the air ambulance and also day return trips for business travel on some air routes.

B.2 LOCAL ECONOMY

In 2018 there was a total of 8,500 jobs in Lewis. This was an increase of around 6% (500 jobs) since 2015. This was above the increase in employment in both Scotland (2%) and the Highlands and Islands (1%) over the same period.

The 2018 share of jobs in Lewis which are part time (39%) is the same as in the Highlands and Islands (39%). However, part time employment is more prevalent than in Scotland (where the figure is 34%).

Table B.1, over, describes the structure of employment in Lewis in 2018 and also provides a comparison with the Highlands and Islands economy.

The four industries in Lewis with the largest employment levels were:

- Human health and social work activities: 20% of total employment.
- Public administration and defence; compulsory social security: 14%.
- Wholesale and retail trade; repair of motor vehicles and motor cycles: 12%.
- Education: 9%.

Collectively they accounted for more than half (55%) of the total employment in the area.

The data in **Table B.1** shaded in yellow denote industries with a share of total employment that is at least two percentage points greater than the corresponding share of Highlands and Islands employment. For example, Education accounts for 9% of employment in Lewis compared to only 7% across the Highlands and Islands.

TABLE B.1: LEWIS EMPLOYMENT STRUCTURE: 2018

Industry	Share of Total Employment	
	Lewis	Highlands and Islands
Agriculture, forestry and fishing	2%	12%
Mining and quarrying	<1%	<1%
Manufacturing	7%	7%
Electricity, gas, steam and air conditioning supply	<1%	1%
Water supply, sewerage, waste management and remediation activities	<1%	1%
Construction	7%	6%
Wholesale and retail trade; repair of motor vehicles and motor cycles	12%	13%
Transport and storage	5%	5%
Accommodation and food service activities	6%	10%
Information and communication	3%	1%
Financial and insurance activities	1%	1%
Real estate activities	2%	1%
Professional, scientific and technical activities	3%	4%
Administrative and support service activities	6%	5%
Public administration and defence; compulsory social security	14%	7%
Education	9%	7%
Human health and social work activities	20%	15%
Arts, entertainment and recreation	2%	3%
Other service activities	2%	2%
TOTAL	100%	100%

Note: Column data do not sum to 100% due to rounding

These industries include Human health and social work activities, Public administration and defence; compulsory social security and Education. Together they account for 43% of employment in Lewis compared to 27% in the Highlands and Islands. This indicates a relatively high reliance on public sector employment.

The relatively high proportion of employment in Information and communication will reflect, in part, the presence of MG Alba in Stornoway plus a number of independent television and film production companies.

A number of industries (shaded in blue) are underrepresented. These include both Agriculture, forestry and fishing and Accommodation and food service activities. However, these industries are still important, especially given that the data in **Table B.1** do not include self-employment.

Employment in Manufacturing in Lewis is on a par with that in the Highlands and Islands, although there are specific specialisms in food (including fish processing) and textiles (specifically Harris Tweed).

Data on wages are only available at the Outer Hebrides level-although Lewis will account for the vast majority of employment in the islands. In 2019, the average (median) gross wage for a full time job was £26,772. That is over £3,000 (11%) below the figure for Scotland (£30,000).

These wage rates are in a context where a minimum acceptable standard of living in the Outer Hebrides requires between 20% and 42% more household spending than in urban parts of the UK.

In recent times the Outer Hebrides unemployment rate has been slightly above that for the Highlands and Islands. Between May 2019 and March 2020, the monthly figure varied between 2.2% and 3.0%, compared to between 2.2% and 2.6% at the regional level. In contrast, Outer Hebrides unemployment was below that seen in Scotland as a whole. There the rate was between 3.1% and 3.3% between May 2019 and March 2020.

Some 40% of data zones in Lewis fall within HIE designated Fragile Areas. As another proxy measure of deprivation/socio-economic challenges, some 29% of pupils in the Outer Hebrides are registered for free school meals. That is below the level in both the Highlands and Islands (32%) and Scotland (37%).

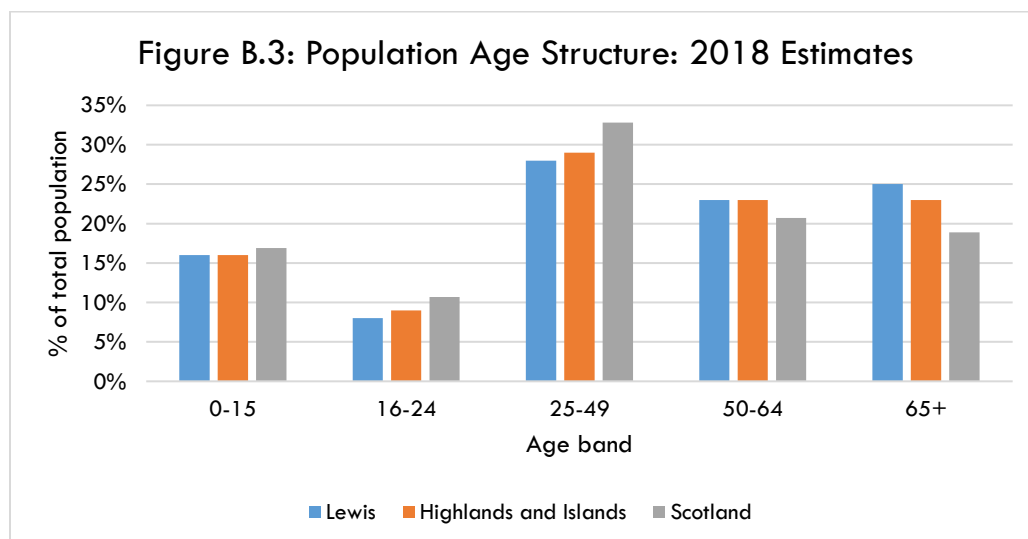
Summary:

- Employment levels grew between 2015 and 2018 and at higher rate than in either the Highlands and Islands and Scotland.
- Four industries are responsible for more than half (55%) of employment.
- Distinctive features include a relatively high proportion of employment in public sector jobs, and specialisms in Information and communication activities and parts of Manufacturing.
- Wages in full time jobs are over 10% less than the Scottish average.
- A significant proportion of Lewis is covered by HIE Fragile Area designations.

B.3 DEMOGRAPHIC PROFILE

The estimated 2018 population of Lewis was 19,072.

Figure B.3 describes the age structure of Lewis' 2018 population. It also compares this to the structure in the Highlands and Islands and Scotland.



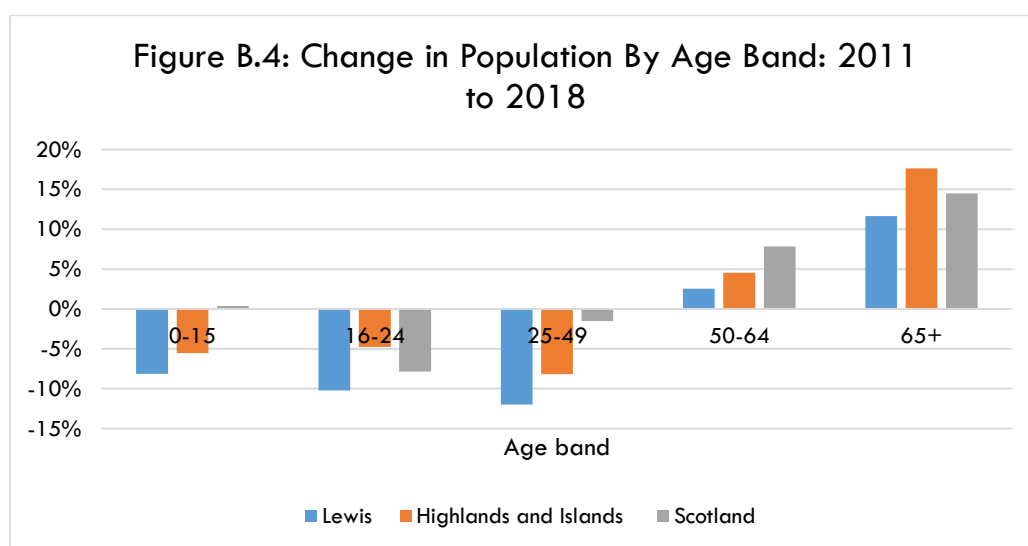
This shows that the population structure of Lewis is quite similar to that of the Highlands and Islands. Those aged 50+ account for approaching half of the total population, while those in the 25-49 age band constitute around 30%, while those aged between 0 and 24 years account for c25% of the population.

However, Lewis' population is generally older than that of Scotland. Those 50+ years of age account for 48% of the total, compared to just 40% at the national level.

As a result, Lewis has a lower share of younger age groups. In particular, there is five percentage points fewer 25-49 year olds than in Scotland.

The estimated 2018 population of Lewis was 582 (3.0%) lower than in 2011 (19,654). In contrast, the populations of both the Highlands and Islands and Scotland *increased* over that period: by 0.4% and 2.6%, respectively.

Figure B.4 describes how the change in Lewis's population was spread across different age bands and compares this with the trends in the Highlands and Islands and Scotland.



The population of Lewis fell in the three youngest age bands, with the largest decrease (of over 10%) among those aged 25-49. A similar trend was observed in the Highlands and Islands and Scotland but the size of decrease in Lewis was greater than in the other two geographies.

The number of people aged 50+ increased in all three geographies. Here, however, the higher growth rates were in Highlands and Islands and Scotland rather than in Lewis.

Recent population forecasts are only available at the Outer Hebrides level-although Lewis will account for the vast majority of the islands population. There is a projected fall of 6.1% between 2018 and 2028. That is much higher than the projected fall in the Highlands and Islands (1.2%), with a forecast *increase* in Scotland (1.8%).

Summary:

The population structure of Lewis is similar to that of the Highlands and Islands but more aged than in Scotland. Population levels are estimated to have fallen by 3% between 2011 and 2018, in contrast to growth at the regional and national levels. The decline among those aged up to 49 years was more pronounced than in either the Highlands and Islands or Scotland. The population of the Outer Hebrides as a whole is forecast to fall significantly (by more than 6%) between 2018 and 2028.

B.4 CONSULTEES' ISSUES AND CONCERNS**B.4.1 Community Consultees**

The concerns centred on *the feasibility and resilience of the ATMS programme in delivering remote air traffic management for Stornoway airport*. That was on the basis that:

- ATMS was the most difficult and risky option to implement.
- Staff buy-in was well below optimal.
- Early adopters of new technology like HIAL not only face a risk of functionality but also that the technology is quickly superseded.

Also, the scoping study (i.e. the Helios research) that HIAL had used to identify ATMS as their preferred option took place before the Covid pandemic. Thus, it could not take into account any potential impact of the pandemic on the aviation industry as a whole.

That piece of research had also identified the following risks/areas of concern:

- Breakdown of data transmission systems.
- Cyber-security.
- Weather assessment.
- Managing the need for ratings for more than one tower in a single shift.

Consultees also made the points that:

- There is no guarantee that existing staff will relocate or commute to work at the CSC.
- Inverness has still to achieve controlled airspace following a protracted wait.
- It is questionable to place reliance for ATC on a single CSC.

One consultee had consulted air traffic controllers. They were found to favour the modernisation of ATC infrastructure and the implementation of approach surveillance and controlled airspace, if it was undertaken through, for example, surveillance technology installed in the existing tower at Stornoway. The controllers see this as less costly and less risky than ATMS, while using proven technologies.

The view was put forward that *there is no problem with staff recruitment or retention at Stornoway airport*. Staff who have moved to the Outer Hebrides to work at Stornoway have

stayed in post long term. It was also stated that the downturn in air travel as a result of Covid pandemic meant that there was a larger pool of qualified ATCOs now available.

The fact that some aspects of ATMS are still being developed means that there remain “*known unknowns*” around *what the final remote tower solution will look like*. For example, the specification and likely resilience of ICT links between the CSC and the five airports.

B.4.2 Stakeholder Consultees

The benefits for Stornoway of surveillance technology could be realised by *deploying digital towers locally*, with staff doing both radar and tower at the same time. The required number of staff could be achieved by recruiting individuals who would be happy to remain/stay in the local area. Local knowledge of airspace/geography would also be retained.

This would use existing off the shelf technology rather than the new approach of remote towers with an attendant risk of unforeseen extra costs. One consultee argued that the technology for remote towers is in its infancy and cannot yet match the current local tower system. Another stated that while remote towers have their place any decision to introduce them should be after the technology and links to the islands airports are tested and proven.

It was stated that *the air traffic unit at Stornoway is currently at all full strength*. Any previous issues with staff recruitment and retention had been due to local management issues. This was contrasted with what was seen as Inverness having suffered from staff shortages more than any of the other main HIAL airports recently.

One *airline* reported some ongoing issues of delays to getting into Stornoway. However, another *airline* reported no issues, with previous airport closures due to staff shortages having been addressed through staff recruitment.

It was also argued that *the CSC could face staffing issues* because:

- There was no interest among existing Stornoway staff in transferring to the Centre; and
- Over time the CSC would compete for the same staff as Glasgow, Edinburgh and English airports.

A number of consultees also believe that *ATMS will not produce a more resilient air service than at present. Rather, it would decrease* because of:

- Increased risk with remote tower operations.
- Reduced safety because local knowledge (e.g. weather/climate) of Stornoway based tower staff would be lost.

This was seen as possibly producing *a loss of confidence in air traffic control services, with more delayed and cancelled flights*.

B.5 PROFILE OF AFFECTED STAFF AND HOUSEHOLDS

B.5.1 Staff Profile

The profile of the affected 11 staff (excluding the part-time AFISOs) currently employed at Stornoway is as follows:

- [REDACTED] are male.
- Seven are in ATCO-related roles, with four being ATSOAs.
- Most live outside Stornoway, spread between a number of rural parts of Lewis.
- The numbers are broadly evenly split between those aged 44 years or less, and those who are 45 years plus. The median age is 49 years.
- There is a broadly even split between those with up to 7 years' experience in air traffic service, and those with 16 years or more.

Eleven staff members answered the survey question about what action they would be most likely to consider in response to the proposed changes under ATMS, as follows:

- Not continuing to work at current airport of employment or at the new Surveillance Centre: 5 responses. As a result some of them would retire while others would remain in the area and look for a new job or to start a business.
- Don't know/unsure at this time: [REDACTED].

One respondent each answered the following:

- [REDACTED]

B.5.2 Household Profile

The following information is from the staff survey. This had 11 responses from a mix of ATCs, ATSOAs and AFISOs.

[REDACTED] have a spouse or partner living in their household.

Ten respondents provided information on the individuals in their household. These totalled 25.

Eight of the respondents then provided information on the ages of household members, as follows:

- 0-15 years: [REDACTED] household members.
- 16-24: [REDACTED]
- 25-54: 13.

[REDACTED] children were identified as attending school: [REDACTED] at a primary, [REDACTED] at a secondary.

[REDACTED] respondents have other family members who live elsewhere in their community/area. [REDACTED] they support these other family members. That is:

- Caring for elderly relatives and undertaking tasks for them (e.g. shopping, DIY) and/or
- Providing childcare.

None of the respondents to the survey undertakes any paid employment in addition to their employment with HIAL.

[REDACTED] of the households had other members who also work. There were a total of 16 who do so, split evenly between spouse/partners and other household members. Most (10) work full-time rather than part-time (six).

Spouse/partner jobs were mostly with either the Comhairle or the third sector, with others in professional services and the NHS. We estimate that around three of the posts might be hard to fill if the current person left.

Other household members' jobs were with a range of organisations including NHS, the Comhairle, manufacturing and media. We estimate that around three or four posts might be hard to fill if the current person left.

[REDACTED] of the households participate and/or contribute to the running of local community, voluntary and other organisations. That encompassed 20 individual household members. The organisations included:

- Local area based groups-e.g. community trusts, associations.
- Coastguard.
- Sports-e.g. diving, sailing, karate.
- Army cadets.
- Pipe bands.

A number of the individuals undertake an organisational role-e.g. Chair, Director, secretary, officer.

B.6 POTENTIAL IMPACTS

B.6.1 Economic Impacts

Changes in Direct Employment and Salary Payments at Stornoway Airport: ATMS Versus the Current Position

Table B.2 shows the change in direct employment and gross salary payments as a result of the movement of air traffic management from Stornoway Airport to the CSC.

TABLE B.2: ATMS: REDUCTION IN AIR TRAFFIC MANAGEMENT STAFF AND SALARIES AT STORNOWAY AIRPORT		
Number of Full Time Equivalent Posts (non-AFISO)	Number of Part Time Posts- AFISO	Total Annual Salary Payments
11	4	£509,000

The reduction of £509,000 in direct gross salary payments will lead to reduced wage expenditures in Lewis businesses (shops, etc.). We estimate that this will reduce employment by a further 3.1 FTE posts in Lewis.

This may appear small in relation to the reduction in gross direct salary payments. However, it is the case that:

- Calculating the induced impacts requires deducting income tax and national insurance payments from the gross salary figure (i.e. it based on the net salary total).
- Some of the wages previously received would have been spent with businesses based outside Lewis -e.g. internet purchases, some large purchases and holidays.
- Some of the spend will have include VAT which does not generate income and employment in business where the wages are spent.

Table B.3 shows the total quantified impacts.

TABLE B.3: ATMS: TOTAL IMPACTS FROM CHANGES IN DIRECT EMPLOYMENT AT STORNOWAY AIRPORT		
Impact	Employment (FTE)	Total Annual Gross Salary Payments
Direct	11.2	£509,000
Induced	3.1	£70,000
Total	14.3	£579,000

Among *community consultees*, it was stated that *the scale of the direct economic impact of the job losses* is such that, for that reason alone, HIAL should be pursuing alternative options which retain staff at Stornoway. It was seen as representing a significant financial loss to the local economy. This was put in a context of economically weak communities where, in

particular, well paid high-skilled jobs which offer careers are relatively scarce compared to mainland areas.

For stakeholder consultees, the jobs that would be lost were variously described as “high paid”, “highly qualified”, “high skilled” and “professional” and ones that would no longer be available to future generations. A number saw the number of jobs being lost as “large” or “significant” as was the impact in terms of loss of wages spend in the local economy.

A number noted that ATMS could mean that some affected households would leave Lewis. This could further reduce the wages spend in the local economy as spouses or other household members may work in hard to fill professions and therefore not be replaced after they move away.

A number of consultees believe it is unlikely that there would be any significant local employment created in providing repair and maintenance of the cameras and other equipment at Stornoway airport under ATMS.

Changes in Direct Employment and Salary Payments at Stornoway Airport: Surveillance Alternative Compared To ATMS

Table B.4 shows the increase in direct employment and gross salary payments as a result of the implementation of the local surveillance alternative *rather than the CSC*. The impacts shown assume that the current part-time AFISO posts are no longer required.

TABLE B.4: LOCAL SURVEILLANCE ALTERNATIVE: INCREASE IN AIR TRAFFIC MANAGEMENT STAFF AND SALARIES AT STORNOWAY AIRPORT COMPARED TO ATMS	
Number of Full Time Equivalent Posts	Total Annual Salary Payments
27	£1,700,000

Note: Assumes no requirement for part-time AFISOs

The increase of £1.7 million in direct gross salary payments would lead to increased wage expenditures in Lewis businesses (shops, etc.). We estimate that this would increase employment in Lewis by a further 9.2 FTE jobs.

Table B.5 shows the total quantified impacts.

TABLE B.5: LOCAL SURVEILLANCE ALTERNATIVE: TOTAL IMPACTS FROM CHANGES IN DIRECT EMPLOYMENT AT STORNOWAY AIRPORT		
Impact	Employment (FTE)	Total Annual Gross Salary Payments
Direct	27	£1,700,000
Induced	9.2	£208,000
Total	36.2	£1,908,000

These impacts are based on HIAL’s estimates of direct employment and salaries. As shown at **Chapter 3** these have been challenged by Prospect who believe the figures are overstated. If that is the case then the impacts would be lower than those shown at **Table B.5**.

Wider Impacts

Community consultees stated that *if air services became less resilient as a result of ATMS then passengers would need to build in additional time to their trips to ensure they arrived at their destinations at the required time.*

A number of *stakeholder consultees* saw a decrease in resilience of air services under ATMS leading to increased flight delays and cancellations. This was seen as having a negative impact on the local economy and the possibility that some larger local employers would relocate their activities elsewhere due to poor air service reliability.

B.6.2 Community Impacts

Population

Community consultees identified *the potential loss of economically active people and their families.* This was placed in a context where the Outer Hebrides:

- Current demographic is an ageing one and youth out-migration a perennial problem; and
- Is forecast to undergo some of the most severe population falls in Scotland in the coming decades.

ATMS' removal of high-skilled jobs filled by individuals preferring to reside in the islands would only exacerbate this demographic challenge.

Among *stakeholder consultees* the most commonly mentioned impact was that *the direct job losses would lead to affected staff and family members moving away.* This was put in a context of existing depopulation and an increasingly older age profile in local communities. The loss of jobs was also seen as removing a career opportunity that would have helped to retain young people in the area in the future.

Community Activity

Community consultees referred to the:

- Adverse impact on school rolls.
- Loss of households' contribution to voluntary activities.

It was also stated that *if air services became less resilient as a result of ATMS then local residents would need to build in additional time to their trips to ensure they arrived at their destinations at the required time.*

Stakeholder consultees referred to the loss of population leading to *fewer people available to be involved in local groups, clubs and associations.* It was noted that it is not only the HIAL staff member who can be involved but also their spouse.

This was put in a context where local groups can currently struggle to recruit people. The examples of the coastguard rescue team and charities were cited.

However, it was also noted that the degree of involvement in local organisations was a pull factor to affected staff remaining in Lewis.

One consultee also noted that in some cases *households who might move away currently provide vital support networks* such as childcare for other families and caring for elderly relatives.

B.6.3 Environmental Impacts

ATMS

The estimated benefits from providing aircraft with the most efficient direct climb and descent profiles for use of Stornoway airport are shown at **Table B.6**. The figures represent a lower and upper range of impacts based on different aircraft types that were modelled.

TABLE B.6: ATMS: POTENTIAL REDUCTION IN ANNUAL AIRCRAFT FUEL BURN AND CO₂		
EMISSIONS AT STORNOWAY AIRPORT		
Based on Aircraft Type	Average Fuel Burn Reduction Per Year (tonnes)	Average CO₂ Reduction (tonnes) Per Year
Saab 340	279	877
ATR42-600	334	1,165

Source: Independent assessment of changes to CO₂ emissions as a result of changes to the arrival procedures at HIAL aerodromes associated with the implementation of the ATM strategy. Trax International Limited (September 2020)

The impact lies between 279 and 334 tonnes reduction in fuel burned, and 877 and 1,165 tonnes reduction in CO₂ emissions.

Unfortunately, the report that provided these estimates does not comment on the significance of its forecast reductions. However, available data¹ suggest that an average car produces around 2.1 tonnes of CO₂ emissions per annum. On that basis, the CO₂ reductions shown at **Table B.6** equate to the annual removal of between 414 and 555 cars from the road network.

These impacts would, of course, require that air operators actually choose to use the climb and descent profiles provided. However, one airline did not perceive the potential fuel savings as likely to be significant. Further, not all of their aircraft can fly the GPS approaches and even if they could their planes would still need to carry more fuel to allow for possible missed approaches.

¹ <https://www.gov.uk/government/statistical-data-sets/nts09-vehicle-mileage-and-occupancy> and <https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2020>

Local Surveillance Alternative

As the local surveillance alternative would potentially provide the same surveillance capability as ATMS then its environmental impacts would also be the same (i.e. as shown at **Table B.6**).

APPENDIX C: ORKNEY IMPACT ASSESSMENT SUPPORTING INFORMATION

C.1 AIR SERVICES AT KIRKWALL AIRPORT

C.1.1 Activity

Scheduled Flights

Between April 2019 and March 2020 there was a total of 10,601 scheduled aircraft movements at Kirkwall Airport.

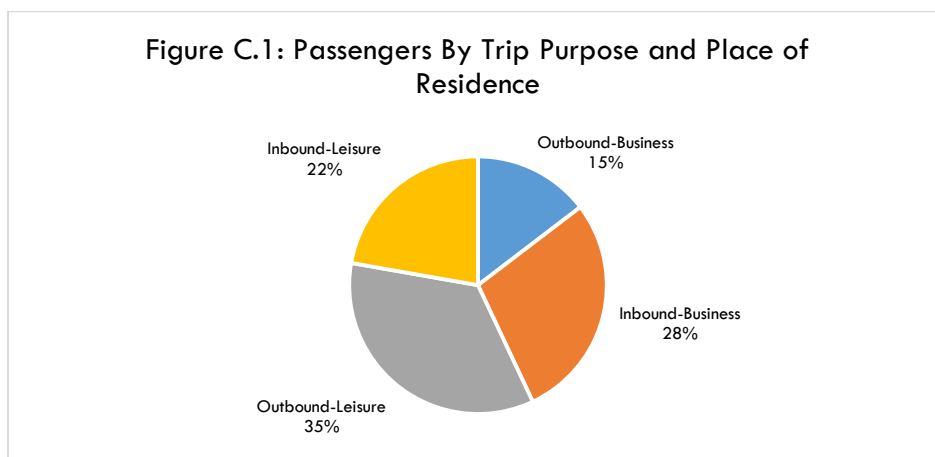
Based on CAA data in 2019 around 173,000 passengers used scheduled services at Kirkwall. Of these around 152,000 were travelling on external flights-i.e. to/from outside Orkney-with the other c21,000 on internal flights to/from Orkney's North Isles. The external flights were to: Aberdeen, Bergen, Edinburgh, Glasgow, Fair Isle, Inverness, Manchester and Sumburgh.

The following analysis is of passengers using external flights in 2018.

The flights were split evenly between outbound (i.e. made by Orkney residents) and inbound (made by those who live outside Orkney).

Most (57%) were travelling for leisure purposes with the other 43% on business.

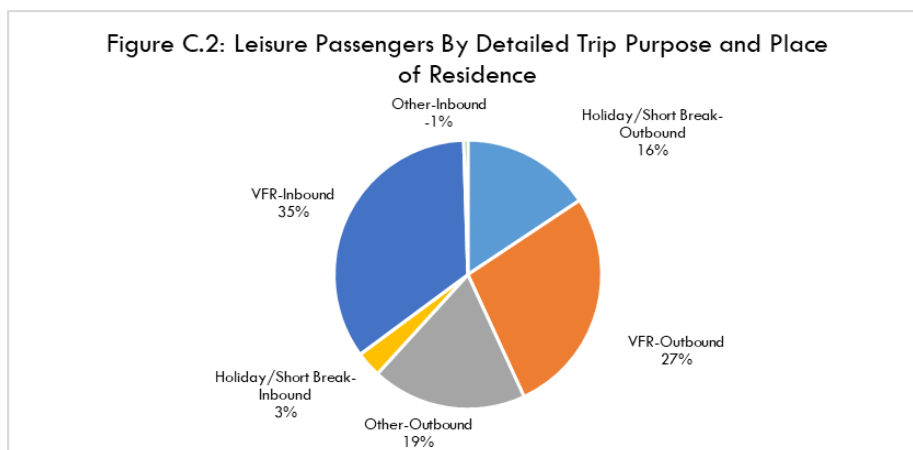
A more detailed breakdown is shown at **Figure C.1**.



Outbound Leisure trips are the largest market segment accounting for slightly more than one third (35%) of all passengers. Most business trips are made by passengers living outside Orkney, while most leisure trips are made by island residents.

Most (62%) leisure passengers were visiting Friends and Relatives (VFR). The remaining passengers were split evenly between those travelling for a Holiday or Short Break and those making Other Leisure trips.

Figure C.2, over, provides some further detail on leisure passengers. It shows that most VFR trips are made by those living outside Orkney.



In addition:

- Very few Holiday/Short Break trips are made by inbound tourists.
- Almost all Other Leisure trips are made by island residents, some of which will be for health related purposes.

Non-Scheduled Flights

Between April 2019 and March 2020 there were 3,485 non-scheduled movements (excluding circuits) at Kirkwall Airport. The most frequent categories of movement were:

- Freight/Cargo: 28% of all non-scheduled movements.
- Positioning: 24%.
- Air Ambulance: 15%.

Compared to the other six HIAL airports included in ATMS Kirkwall specialises in Freight/Cargo and Positioning flights.

C.1.2 Role and Distinctive Contribution of Air Services

Role

Community consultees view the role of Kirkwall Airport as having three elements:

For passenger flights to/from Scottish mainland airports:

- Business travellers-including/from the wider UK mainland and internationally.
- Local authorities and public servants-critical business and civic connections to Edinburgh and regional centres.
- Lifeline service for patients travelling for hospital to access health services not available in Orkney.
- Orkney residents' leisure trips-including sports teams and for holidays.
- Inbound tourists to Orkney.

Other types of air services/movements:

- Air ambulance for patient emergencies.
- Oil rig helicopter transfers.
- Freight, including export of shellfish and import of essential spare parts.
- Mail.

Critical transport to/from Orkney North Isles:

- Pupils attending school on mainland Orkney.
- Itinerant teaching staff visiting schools in the North Isles.
- Medical staff attending North Isles patients.
- Movement of freight.

Distinctive Contribution

Community consultees saw the distinctive role of their air services as follows:

- Much faster than surface transport with a key role in facilitating trips at short notice-including medical transfers. Ferry services' role is more oriented towards moving vehicles/freight on pre-planned journeys.
- Provides opportunities for trips while avoiding being away from home or place of work or study for an extended period. Examples given included Orkney residents take part in sport or cultural activities; businesses meeting clients on mainland Scotland and attending exhibitions and promotional events; young adults returning home to visit friends and family in Orkney.
- Generally more reliable than ferry for passenger travel during adverse weather.
- The main means of passenger travel for some of Orkney's North Isles which have infrequent ferry sailings with long journey times. Air also offers fast day return trips between the North Isles and Orkney mainland.
- Direct connections to Scottish airports and thus onward connections to destinations outside Scotland.
- The main freight link for time sensitive and fragile cargoes.

C.2 LOCAL ECONOMY

In 2018 there was a total of around 9,500 jobs in mainland Orkney. This was c700 jobs (8%) higher than in 2015. This increase was much higher than seen in both Scotland (2%) and the Highlands and Islands (1%) over the same period.

The 2018 some 46% of jobs in mainland Orkney were part time. That is well above the level in the Highlands and Islands (39%) and much greater than the Scottish average (34%).

Table C.1 describes the structure of employment in mainland Orkney in 2018 and also provides a comparison with the Highlands and Islands economy.

TABLE C.1: MAINLAND ORKNEY EMPLOYMENT STRUCTURE: 2018		
Industry	Share of Total Employment	
	Mainland Orkney	Highlands and Islands
Agriculture, forestry and fishing	4%	12%
Mining and quarrying	<1%	<1%
Manufacturing	4%	7%
Electricity, gas, steam and air conditioning supply	<1%	1%
Water supply, sewerage, waste management and remediation activities	<1%	1%
Construction	9%	6%
Wholesale and retail trade; repair of motor vehicles and motor cycles	15%	13%
Transport and storage	8%	5%
Accommodation and food service activities	10%	10%
Information and communication	2%	1%
Financial and insurance activities	1%	1%
Real estate activities	1%	1%
Professional, scientific and technical activities	5%	4%
Administrative and support service activities	4%	5%
Public administration and defence; compulsory social security	11%	7%
Education	8%	7%
Human health and social work activities	12%	15%
Arts, entertainment and recreation	4%	3%
Other service activities	1%	2%
TOTAL	100%	100%

Note: Column data do not sum to 100% due to rounding

The four industries in mainland Orkney with the largest employment levels were:

- Wholesale and retail trade; repair of motor vehicles and motor cycles: 15%.
- Human health and social work activities: 12%.
- Public administration and defence; compulsory social security: 11%.
- Accommodation and food service activities: 10%.

Collectively they accounted for around half (48%) of total employment in the area.

The data in the Table shaded in yellow denote industries with a share of total employment that is at least two percentage points greater than the corresponding share of Highlands and Islands employment. For example, Transport and storage accounts for 8% of employment in mainland Orkney compared to only 5% across the Highlands and Islands.

Despite a decrease in activity by 2018, construction was still a relatively strong contributor to mainland Orkney's economy. In contrast, the mainland Orkney economy is underrepresented in both Agriculture, forestry and fishing and Manufacturing compared to the Highlands and Islands.

However, these industries are still important, especially given that the data in **Table C.1** do not include self-employment and that the mainland Orkney economy has quite a high degree of specialisation in Fishing and aquaculture. Other specialisms include water transport and also renewable energy activities (which official economic statistics do not adequately capture).

Data on wages are only available at the Orkney level. In 2019, the average (median) gross wage for a full time job was £30,643. That is over £600 (c2%) above the figure for Scotland (£30,000).

These wage rates are in a context where a minimum acceptable standard of living on mainland Orkney is likely to require between 19% and 35% more household spending than in urban parts of the UK.

Between May 2019 and March 2020 Orkney's monthly unemployment rate varied between 1.2% and 1.5%. That was below the Highlands and Islands level of between 2.2% and 2.6% and the Scottish rate (between 3.1% and 3.3%).

Just two of the 25 datazones in mainland Orkney are in a HIE designated Fragile Area. As another proxy measure of deprivation/socio-economic challenges, some 29% of pupils in Orkney are registered for free school meals. That is below the level in both the Highlands and Islands (32%) and Scotland (37%).

Summary:

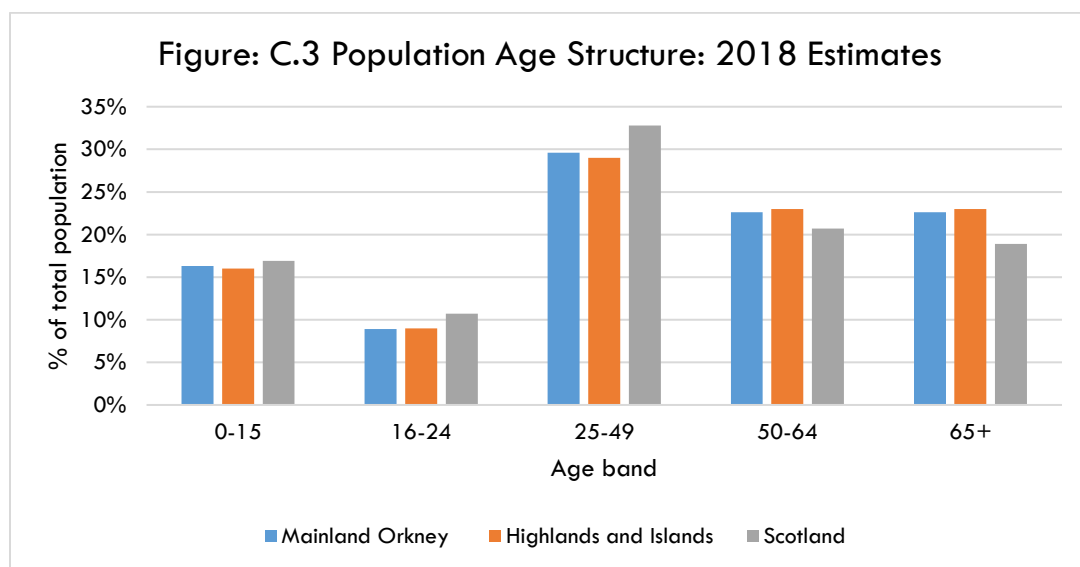
- Employment levels grew between 2015 and 2018 and at a much higher rate than in either the Highlands and Islands and Scotland.
- There is a much higher level of part-time employment than in either the Highlands and Islands and Scotland.
- Four industries are responsible for approaching half (48%) of employment.
- Distinctive features include a relatively high proportion of employment in Public administration and defence; compulsory social security; Construction; and Transport and storage. There are also particular specialisms in Fishing and aquaculture Water transport and renewable energy activities.
- The average wage in Orkney is slightly above that for Scotland, although that is in a context of a relatively high cost of living in mainland Orkney.

- Unemployment rates have been below those in the Highlands and Islands and, in particular, Scotland.
- Very few parts of mainland Orkney are within an HIE designated Fragile Area.

C.3 DEMOGRAPHIC PROFILE

The estimated 2018 population of mainland Orkney was 19,445.

Figure C.3 the age structure of the area's 2018 population. It also compares this to the structure in the Highlands and Islands and Scotland.



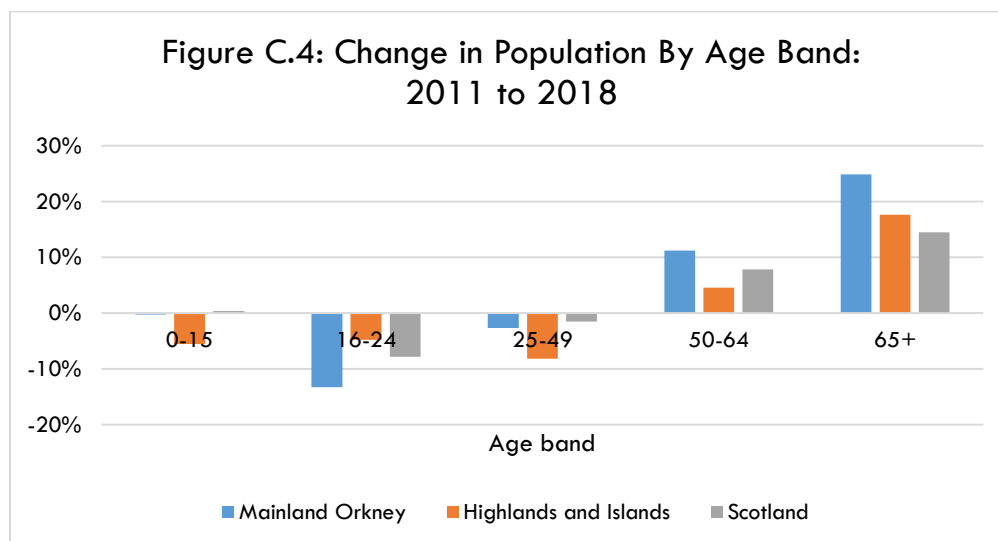
Mainland Orkney's population structure is very similar to that of the Highlands and Islands. However, it has an older age structure than Scotland. Its share of population in the 50+ age group is 45% compared to 40% at the national level. Related to this, Orkney has lower shares in the key age bands of 16-24 years and 25-49 years.

The estimated 2018 population of mainland Orkney was 888 (4.8%) above the estimated population in 2011 (18,557). That was considerably above the population growth rate in both the Highlands and Islands and Scotland over that period; by 0.4% and 2.6%, respectively.

Figure C.4, over, describes how the change in mainland Orkney's population was spread across different age bands and compares this with the trends in the Highlands and Islands and Scotland.

The population increase in mainland Orkney was driven by an increase in those aged 50+ years, and particularly among the those aged 65 and above. The latter group grew by 25%-clearly higher than in both the Highlands and Islands (18%) and in Scotland (14%).

In contrast, mainland Orkney population decreased in both the 16-24 and 25-49 age groups. The fall in the first group was more than 10% but only 3% among 25-49 year olds, which was less than the rate of decrease in the Highlands and Islands.



Recent population forecasts are only available at the local authority level. There is a projected increase of 0.5% in the population of the Orkney between 2018 and 2028. That is more favourable than the projected *fall* in the Highlands and Islands (of 1.2%) but, in contrast, is lower than the projected increase in Scotland (1.8%).

Summary:

Mainland Orkney's population structure is very similar to that of the Highlands and Islands. However, it has an older age structure than Scotland with underrepresentation of those in the 16-49 year age group.

Mainland Orkney's population has grown at a faster rate than in both the Highlands and Islands and Scotland. However, this was driven by older groups and the 65+ group in particular.

Orkney's population is forecast to grow very slightly in the years to 2028; at a lower growth rate than for Scotland. However, that is still a better outlook than the forecast fall in the Highlands and Islands.

C.4 CONSULTEES' ISSUES AND CONCERNS

C.4.1 Community Consultees

The view was advanced that *there is much greater scope to address any air traffic management staff recruitment/retention issues by greater local recruitment*. It is believed that the last meaningful effort could have been in 2013 and that there has been no HIAL presence in Orkney schools and local colleges, unlike other occupations-e.g. emergency

services. The six staff recruited in 2013 are understood still to be in post at Kirkwall Airport and thus local recruitment is seen as effective.

Some consultees contrasted this with what they see as staff recruitment and retention difficulties at Inverness Airport. In addition, others foresaw potential difficulties recruiting sufficient staff for the CSC in Inverness to viable. There may only be a small number of staff qualified to control traffic at more than one of the five airports. Further, some existing Kirkwall Airport staff may leave but take up air traffic roles at another airport rather than at the CSC.

Another common concern was *how far ATMS planning has taken into account the impacts of the Covid pandemic*. References were made to it causing pressure on public finances, very low air passenger numbers, although also facilitating the availability of ATC staff who have recently lost their jobs elsewhere. These factors were seen as weakening the case for continuation of ATMS.

The *reliance on remote monitoring on digital connectivity between the airport cameras and the CSC* was another of the more common concerns. It was stated that broadband in the Highlands and Islands was not as robust as in other areas. There was concern that this would mean poorer ATC than at present and thus increased likelihood of flight delays and disruptions.

Some consultees' concerns were exacerbated because of a *lack of information about the technical ICT solution that HIAL propose to use*. Further, no decision has yet been made on what elements of maintenance and technical support will be available on Orkney itself rather than having to be provided by staff travelling from outside. However, if maintenance, both routine and in case of failure are based, like the CSC, outwith Orkney resilience and repair timescales could be significantly affected.

These concerns about *possible unreliability of air traffic management* were in contrast to the *current position* which is seen as neither unsafe nor unreliable.

Other concerns raised by consultees were:

- A loss of local knowledge, experience and decisions based by staff based at Kirkwall airport.
- Orkney residents possibly losing confidence in travel by air when the aircraft are being controlled remotely.
- The possibility that some current Kirkwall ATC staff may leave before the airport migrates to the CSC causing staff shortages which would affect flights.
- The risk that the continuation of ATMS will trigger industrial action which could have significant impacts for Orkney's air services and its economy.

C.4.2 Stakeholder Consultees

The view was expressed that there would be a *significant increase in airport closures leading to cancelled and reduced reliability of flights with a loss of customer confidence*. This would be due to the following.

First, equipment failure/lack of robustness. That includes, first, cameras and it could include a requirement for engineers to travel from outside Orkney to fix the problems, increasing the amount of time that the airport would be closed.

Second, the ICT infrastructure is unlikely to be sufficiently reliable given the challenging geography of the Highlands and Islands and the limited reliability of its existing digital connectivity.

Third, the high degree of risk involved with ATMS. The nature of HIAL's operations and the approach undertaken through ATMS is not seen as analogous to other remote tower operations elsewhere.

There were staffing issues at Kirkwall in 2018 but these have since been addressed. Otherwise, Kirkwall has had a largely stable workforce with posts filled in a manageable way. That is by working to recruit and train controllers with links to island communities as well as ones from outside Orkney. The view was that *there are no staffing recruitment/retention issues at Kirkwall that required to be addressed through ATMS*.

The introduction of surveillance will offer benefits. However, it could be delivered locally using the current infrastructure with RIIT while maintaining the current staff complement. This would be at a lower cost and less risk than with ATMS.

The number of staff relocating from Kirkwall to work at the CSC was expected to be low or none. This would increase the need for the CSC to recruit staff from outside HIAL.

There is also a risk that current Kirkwall ATSA (Air Traffic Services Assistant) staff could leave HIAL before the airport transitions to the CSC. This would make it very challenging to maintain air traffic management at Kirkwall Airport in the interim period.

One airline had concern about not having air traffic management staff on the ground at Kirkwall. That is due to the volumes of west Shetland basin oil rig helicopter traffic in the area-some of which refuel at Kirkwall airport. However, the airline are of the view that the inclusion of surveillance and controlled airspace as likely to address this issue.

C.5 **PROFILE OF AFFECTED STAFF AND HOUSEHOLDS**

C.5.1 Staff Profile

The profile of the affected 14 staff (excluding the part-time AFISOs) currently employed at Kirkwall is as follows:

- [REDACTED] are male.

- Eight are in ATCO-related roles, with the other six being ATSOAs or ATSAs.
- Most live in Kirkwall, with the others in various areas of mainland Orkney.
- Most staff are 45 years plus and the overall median age is 53 years.
- Most have 8 or more years' experience in air traffic service, although four staff have three years or less.

Twelve staff members answered the survey question about what action they would be most likely to consider in response to the proposed changes under ATMS, as follows.

Six stated "Don't know/unsure at this time".

Five that they would not continue to work at Kirkwall airport or at the new Surveillance Centre. As to what they would then do the responses were:

- Remain in Orkney and search for a new job: [REDACTED]
- Don't know/unsure: [REDACTED]
- Relocate away from Orkney and look for a job there: [REDACTED]

[REDACTED]

C.5.2 Household Profile

The following information is from the staff survey. This had 12 responses from a mix of ATCs, ATSOAs and AFISOs. [REDACTED]

[REDACTED] had a spouse or partner living in their household.

The 12 respondents had a total of 34 people living in their households. Eleven of the respondents provided information on the ages of household members, as follows:

- 0-15 years: [REDACTED]
- 16-24: [REDACTED]
- 25-54:18.

Not all of those with children identified which schools they attended. No individual primary school was mentioned in relation to more than one child attending it.

Slightly more than half (seven) respondents have other family members who live elsewhere in their community/area. [REDACTED] mentioned that they provide care.

[REDACTED] have a spouse/partner living in their household who also works. In most cases that is full time. [REDACTED] members of respondents households' also work (most are part-time).

Spouse/partner jobs included working for Orkney Islands Council, Police Scotland, the media and self-employed. Based on the information provided we estimate that four of those jobs could be ones that might be hard to fill should the current postholder leave.

Six (half) of the households indicated that they participate and/or contribute to the running of local community, voluntary and other organisations. That encompassed 14 individual household members.

The bodies included:

- Advocacy groups.
- Sports teams-e.g. football, netball.
- Food Bank.

C.6 POTENTIAL IMPACTS

C.6.1 Economic Impacts

Changes in Direct Employment and Salary Payments at Kirkwall Airport: ATMS Compared to the Current Position

Table C.2 shows the change in direct employment and gross salary payments as a result of the movement of air traffic management from Kirkwall Airport to the CSC.

TABLE C.2: ATMS: REDUCTION IN AIR TRAFFIC MANAGEMENT STAFF AND SALARIES		
AT KIRKWALL AIRPORT		
Number of Full Time Equivalent Posts (non-AFISO)	Number of Part Time Posts-AFISO	Total Annual Salary Payments
12.5	2	£574,000

The reduction of £574,000 in direct gross salary payments will lead to reduced wage expenditures in Orkney businesses (shops, etc.). We estimate that this will reduce employment by a further 3.5 FTE posts in Orkney.

This may appear small in relation to the reduction in gross direct salary payments. However, it is the case that:

- Calculating the induced impacts requires deducting income tax and national insurance payments from the gross salary figure (i.e. it based on the net salary total).
- Some of the wages would have been spent with businesses based outside Orkney-e.g. internet purchases, some large purchases and holidays.
- Some of the spend will include VAT which does not generate income and employment in business where the wages are spent.

Table C.3, over, shows the total quantified impacts.

TABLE C.3: ATMS: TOTAL IMPACTS FROM CHANGES IN DIRECT EMPLOYMENT AT KIRKWALL AIRPORT		
Impact	Employment (FTE)	Total Annual Gross Salary Payments
Direct	12.7	£574,000
Induced	3.5	£79,000
Total	16.2	£653,000

For *community consultees*, the most commonly noted economic impact was the *loss of the jobs of the current air traffic management staff*. These were seen as likely to have a significant negative economic impact. That reflected both the number of jobs and their relatively high salary levels.

The jobs were also referred to as “professional”, “skilled” and “technical”. They are seen as contributing to diversification of employment in Orkney and would be difficult to replace with other jobs of similar skill and pay levels. They are also seen as having provided an attractive source of employment for local young people.

A number of consultees also referred to the *knock on impact of the reduced wages spend in the local economy*. This was seen as significant given the salary levels of their posts.

Further, if households moved away from Orkney as a result of the job losses this could further *reduce jobs and local wages spend if the jobs held by spouses/partners were not filled by other Orkney residents*. This was seen as possible-in part because Orkney has had relatively low levels of unemployment leading to a labour market with only a small number of individuals available to fill vacant posts.

Some consultees referred to the possibility of local job opportunities in other sectors. However, these were quite unlikely to be at the salary levels of the air traffic management jobs that are being lost.

A number of consultees were *sceptical that it would be feasible for affected staff to commute to the CSC while continuing to live in Orkney*. That was because of the financial costs of doing so and the limited number and timing of flights to Inverness.

For *stakeholder consultees*, the most commonly mentioned economic impact was the *loss of the direct jobs at Kirkwall Airport*. These are seen as significant in number and were referred to as “high-quality”, “skilled” and “well/high paid”, as well as offering a long term career for Orcadians. It was stated that there was a need for Orkney to have well paid jobs to help sustain the local economy which is already in a fragile state due to the Covid pandemic. *The knock-on effects of reduced wage spend in local businesses were also mentioned*.

A number of consultees referred to the possibility that *if the staff member’s spouse/partner left Orkney then their current jobs may not be/be easily filled if they are in hard to recruit to positions*. If these jobs were not filled then this would remove another wage from the local economy. References were made to teachers, other posts in Orkney Islands Council, Police Scotland and the NHS.

Changes in Direct Employment and Salary Payments at Kirkwall Airport: Surveillance Alternative Compared To ATMS

Table C.4, over, shows the change in direct employment and gross salary payments as a result of the implementation of the local surveillance alternative *rather than the CSC*. The impacts shown assume that the current part-time AFISO posts are no longer required.

TABLE C.4: LOCAL SURVEILLANCE ALTERNATIVE: INCREASE IN AIR TRAFFIC MANAGEMENT STAFF AND SALARIES AT KIRKWALL AIRPORT COMPARED TO ATMS	
Number of Full Time Equivalent Posts	Total Annual Salary Payments
27	£1,700,000

Note: Assumes no requirement for part-time AFISOs

The increase of £1,700,000 in direct gross salary payments will lead to increased wage expenditures in local businesses (shops, etc.). We estimate that this would increase employment by a further 9.2 FTE jobs in Orkney.

Table C.5 shows the total quantified impacts.

TABLE C.5: LOCAL SURVEILLANCE ALTERNATIVE: TOTAL IMPACTS FROM CHANGES IN DIRECT EMPLOYMENT AT KIRKWALL AIRPORT		
Impact	Employment (FTE)	Total Annual Gross Salary Payments
Direct	27	£1,700,000
Induced	9.2	£208,000
Total	36.2	£1,908,000

These impacts are based on HIAL's estimates of direct employment and salaries. As shown at **Chapter 3** these have been challenged by Prospect who believe the figures are overstated. If that is the case then the impacts would be lower than those shown at **Table C.5**.

Community consultees supported local surveillance in preference to ATMS. That included because it would create local employment and local infrastructure spend.

Wider Impacts

Among *community consultees*, the view was expressed that there would be *significant negative impacts if the flights became less reliable due to technical issues* with remote provision of ATC. That would lead to fewer flights being made by local residents, visitors and businesses. This was in a context of the importance of air travel to inbound tourism and national and international travel by Orkney businesses.

In contrast, *one consultee noted that an increased number of aircraft movements may be possible with enhanced airspace management measures.* However, they saw any such benefit

as so very long term and dependant on the state of the aviation industry that it could be considered irrelevant.

One consultee expressed concerns about safety because of what they see as only limited examples elsewhere that are close to the ATMS model. However, another consultee stated that *provided suitable resilience measures have been put in place, that aircraft movements may become safer, especially if airspace control measures are enabled.*

The nature of *surveillance to be introduced under ATMS has still to be defined. A number of consultees were concerned that the outcome could lead to planning restrictions* constraining:

- Renewables development on mainland Orkney.
- The proposed expansion of some of Orkney's harbours to facilitate the change to renewable maritime energy resources.

These activities are seen as significant sources of economic activity and jobs for Orkney. As such, any constraints on their development resulting from ATMS would damage the local economy going forward.

Concerns was also raised as to whether ATMS would be compatible with an expanding drone/micro aircraft transport system. This was seen as maybe having a detrimental effect on both passenger and freight developments constraining economic growth.

In terms of *the local surveillance alternative those stating a preference for this rather than ATMS did so because they believe it would:*

- Be viable, safe and cost less at a time when Scottish Government finances are under significant pressure.
- Have a resilience that the remote tower would lack.
- Provide a large majority of the benefits that HIAL are seeking but with far less risk.

For *stakeholder consultees*, apart from the *loss of the jobs at Kirkwall Airport itself* the other most commonly mentioned impact was the risk of ATMS resulting in *less resilient air services, leading to an increase in the number of delayed and cancelled flights*. This would in turn reduce customer confidence in air travel. Overall, this would damage Orkney's economy, affecting business-related flights in particular.

One consultee stated that, although unlikely, it is possible that *the introduction of surveillance may attract other airlines to fly to Orkney*. However, they also stated that the same outcome could be achieved if ATC continued to be based at Kirkwall airport.

C.6.2 Community Impacts

Population

Among *community consultees*, the most commonly mentioned impact was the *expected loss of working age adults and their children*. This would contribute to a more aged population, plus a reduction in school rolls.

In the longer term *younger people who could otherwise have taken up air traffic posts at Kirkwall could leave Orkney*. This would send a message that opportunities to advance are seen to reside outside the islands.

One consultee noted that if ATMS led to *less resilient air services due to disruption/technology failure this could particularly affect North Isles residents* who use the internal air service. This was seen as possibly leading to some of them to move elsewhere.

The impacts mentioned regarding *the local surveillance alternative* were that it would:

- Give Orkney's air traffic management increased resilience through recruitment of motivated staff.
- Show that Orkney is a credible place for technology to not just be implemented but also to serve the local community.

Stakeholder consultees referred to the *potential loss of population from Orkney*. This encompasses both adults and children who are of school age which would reduce school rolls.

Community Activity

Among *community consultees* the most commonly mentioned impact was the *effect on community groups and activities*. They would be adversely affected if the staff and their family members were to leave Orkney as this would reduce the numbers available to run and participate in community activities.

Stakeholder consultees highlighted the issue of *family support networks*. It was stated that many staff members and their families provide support to elderly/infirm family members and friends, while others also provide childcare to other local families. This would be removed if the household was to leave Orkney.

It was also stated that *many in the affected households are involved in organisations such as youth clubs, sports clubs and their Community Council some of which can struggle for volunteers*. Volunteering also includes retained firefighters which can be hard to recruit into positions.

Other Impacts

Possible negative environmental impacts were mentioned by *community consultees*, due to:

- Increased flights to/from Inverness by staff who elect to commute to work at the CSC.
- Aircraft possibly being more likely to be put in the hold (and thus burn more fuel) if there is uncertainty about ground conditions due to the use of remote camera monitoring.

The community would also be affected if ATMS resulted in *less resilient air services*. People would have to meet any cost associated with cancelled and delayed flights. Further, a loss reduction in confidence in air travel could lead to people making fewer flights.

C.6.3 Environmental Impacts

ATMS

The estimated benefits from providing aircraft with the most efficient direct climb and descent profiles for use of Kirkwall airport are shown at **Table C.6**. The figures include a lower and upper range of impacts based on different aircraft types that were modelled.

TABLE C.6: ATMS: POTENTIAL REDUCTION IN ANNUAL AIRCRAFT FUEL BURN AND CO₂ EMISSIONS AT KIRKWALL AIRPORT		
Based on Aircraft Type	Average Fuel Burn Reduction Per Year (tonnes)	Average CO₂ Reduction (tonnes) Per Year
Saab 340	289	911
ATR42-600	389	1,226

Source: Independent assessment of changes to CO₂ emissions as a result of changes to the arrival procedures at HIAL aerodromes associated with the implementation of the ATM strategy. Trax International Limited (September 2020)

The impact lies in a range of between 289 and 389 tonnes annual reduction in fuel burned, and 911 and 1,226 tonnes reduction in CO₂ emissions.

Unfortunately, the report that provided these estimates does not comment on the significance of its forecast reductions. However, available data² suggest that an average car produces around 2.1 tonnes of CO₂ emissions per annum. On that basis, the reductions shown at **Table C.6** equate to the annual removal of between 434 and 584 cars from the road network.

These impacts would, of course, require that air operators actually choose to use the climb and descent profiles provided. However, one airline did not perceive the potential fuel savings as likely to be significant. Further, not all of their aircraft can fly the GPS approaches and even if they could their planes would still need to carry more fuel to allow for possible missed approaches.

Local Surveillance Alternative

As the local surveillance alternative would potentially provide the same surveillance capability as ATMS then its environmental impacts would also be the same (i.e. as shown at **Table C.6**).

² <https://www.gov.uk/government/statistical-data-sets/nts09-vehicle-mileage-and-occupancy> and <https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2020>

APPENDIX D: SHETLAND IMPACT ASSESSMENT SUPPORTING INFORMATION

D.1 AIR SERVICES AT SUMBURGH AIRPORT

D.1.1 Activity

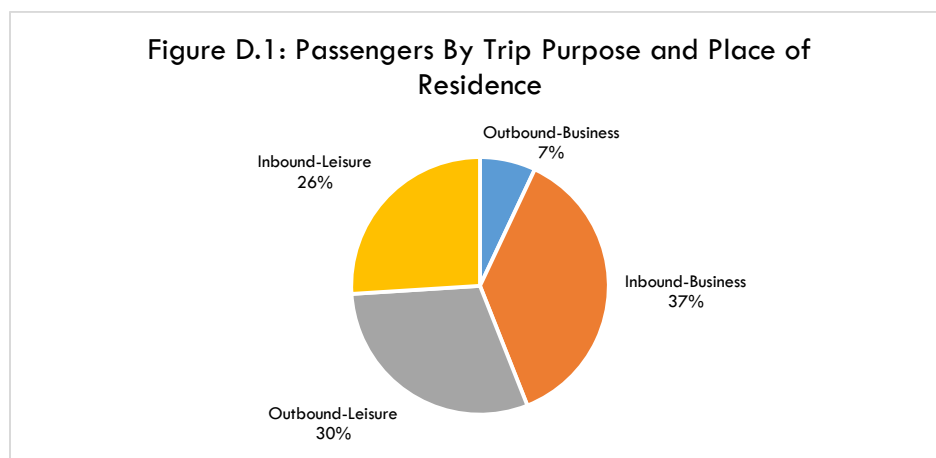
Scheduled Flights

Between April 2019 and March 2020 there was a total of 6,212 scheduled aircraft movements at Sumburgh Airport.

Based on CAA data in 2019 around 156,000 passengers used scheduled services at Sumburgh. These were to the following airports: Aberdeen, Bergen, Edinburgh, Fair Isle, Glasgow, Inverness, Kirkwall and Manchester. The following analysis is of passengers using these flights in 2018.

Most (63%) of trips were made by those who live outside Shetland. The remaining 37% of passengers were residents of Shetland.

A majority of passengers (56%) were travelling for leisure purposes with the other 44% on business. A more detailed breakdown is shown at **Figure D.1**.



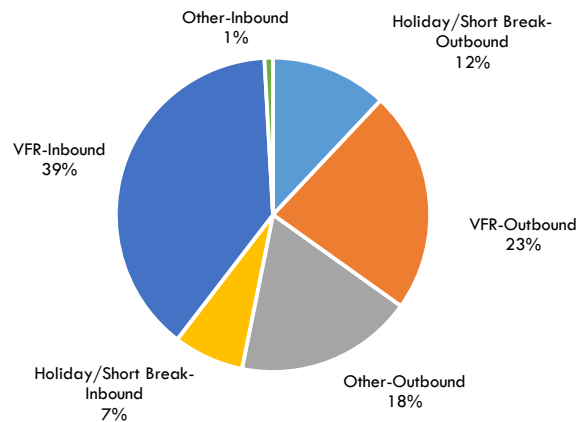
Inbound business trips were the largest market segment, accounting for more than one in three of all passengers. There were considerably more inbound business passengers than outbound passengers³. In contrast, leisure passengers were split broadly evenly between Shetland residents and those who live elsewhere.

Most (62%) leisure passengers were visiting Friends and Relatives (VFR). The remaining passengers were split evenly between those travelling for a Holiday or Short Break and those making Other Leisure trips.

Figure D.2, over, provides some further detail on leisure passengers.

³ The data on trip purpose and place of residence are based on CAA passenger surveys. In this case we believe that the 7% share of flights attributed to Outbound Business could be an underestimate

Figure D.2: Leisure Passengers By Detailed Trip Purpose and Place of Residence



It shows that:

- Most VFR trips are made by those living outside Shetland.
- Most Holiday/Short Break trips are made by island residents.
- Almost all Other Leisure trips-which will include those for health-related purposes-are made by island residents.

Non-Scheduled Flights

Between April 2019 and March 2020 there were 12,358 non-scheduled movements (excluding circuits) at Sumburgh Airport. The most frequent categories of movement were:

- Oil Charter: 57% of all non-scheduled movements.
- Refuelling: 15%.
- Positioning: 8%.

Compared to the other six HIAL airports included in ATMS Sumburgh specialises in Oil Charter and Refuelling flights.

D.1.2 Role and Distinctive Contribution of Air Services

Role

Community consultees view the main role of Sumburgh is to provide:

- The principal scheduled passenger transport link between Shetland and mainland Scotland enabling a range of trip purposes trips-business, social, visiting family and friends, education and healthcare-related travel.
- Air ambulance flights for medical emergencies.
- Movement of freight including mail, newspapers and consignments for the NHS.

- Offshore helicopter movements to/from oil and gas installations.

The main benefits of the flights are seen as:

- Providing onward connections from mainland Scotland airports to regional and international airports in the UK and thus facilitating global travel.
- Underpinning sectors of Shetland's economy, including energy, fisheries, tourism agriculture and creative industries.
- Supporting Shetland as an attractive place to live, work, study and invest.
- Allowing access to healthcare services not available in Shetland.
- An important source of jobs and income in the immediate community around Sumburgh Airport-i.e. Dunrossness.

Distinctive Contribution

Community consultees view air as addressing passenger travel needs where a short journey time is important or for a direct connection to locations other than Aberdeen (including connecting onwards from Scottish airports). Air also meets the needs of passengers who prefer to fly because of the long ferry sailing time (c14 hours) between Shetland and Aberdeen.

In contrast the ferry services cater for:

- Predominantly leisure/social/tourism needs which are less time sensitive.
- Trips where the passenger needs to accompany a vehicle.
- Passenger trips made by larger parties which can be cheaper than travelling by air.

Air freight is seen as generally very time sensitive; and much more so than freight moved on Shetland's external ferry services.

D.2 LOCAL ECONOMY

D.2.1 Mainland Shetland

In 2018 there was a total of 13,000 jobs in mainland Shetland. This was 1,000 jobs (7%) fewer than in 2015. This contrasts with an increase in employment in both Scotland (2%) and the Highlands and Islands (1%) over the same period.

The fall in job numbers in mainland Shetland will, in part, have reflected the decrease in construction activity after some major building projects came to an end.

The 2018 share of jobs in mainland Shetland which are part time (37%) is below the level in the Highlands and Islands (39%). However, it is greater than in Scotland (where the figure is 34%).

Table D.1 describes the structure of employment in mainland Shetland in 2018 and also provides a comparison with the Highlands and Islands economy.

TABLE D.1: MAINLAND SHETLAND EMPLOYMENT STRUCTURE: 2018		
Industry	Share of Total Employment	
	Mainland Shetland	Highlands and Islands
Agriculture, forestry and fishing	6%	12%
Mining and quarrying	1%	<1%
Manufacturing	7%	7%
Electricity, gas, steam and air conditioning supply	1%	1%
Water supply, sewerage, waste management and remediation activities	1%	1%
Construction	10%	6%
Wholesale and retail trade; repair of motor vehicles and motor cycles	13%	13%
Transport and storage	8%	5%
Accommodation and food service activities	8%	10%
Information and communication	2%	1%
Financial and insurance activities	<1%	1%
Real estate activities	1%	1%
Professional, scientific and technical activities	4%	4%
Administrative and support service activities	4%	5%
Public administration and defence; compulsory social security	6%	7%
Education	8%	7%
Human health and social work activities	15%	15%
Arts, entertainment and recreation	3%	3%
Other service activities	3%	2%
TOTAL	100%	100%

Note: Column data do not sum to 100% due to rounding

The four industries in Mainland Shetland with the largest employment levels were:

- Human health and social work activities: 15% of total employment.
- Wholesale and retail trade; repair of motor vehicles and motor cycles: 13%.
- Construction: 10%.
- Education: 8%.

Collectively they accounted for 46% of total employment.

The data in the Table shaded in yellow denote industries with a share of total employment that is at least two percentage points greater than the corresponding share of Highlands and Islands employment. For example, Transport and storage accounts for 8% of employment in mainland Shetland compared to only 5% across the Highlands and Islands. Despite a decrease in activity by 2018, construction was still a relatively strong contributor to mainland Shetland's economy.

A number of industries (shaded in blue) are underrepresented compared to the Highlands and Islands. These include both Agriculture, forestry and fishing and Accommodation and food service activities. However, these industries are still important, especially given that the data in **Table D.1** do not include self-employment. In fact, the mainland Shetland economy has quite a high degree of specialisation in Fishing and aquaculture.

The employment share of in Manufacturing in mainland Shetland is on a par with that in the Highlands and Islands, although there are specific specialities in food, textiles and fabricated metals.

Data on wages are only available at the Shetland level. In 2019, the average (median) gross wage for a full time job was £31,344. That is over £1,300 (c4%) above the figure for Scotland (£30,000).

These wage rates are in a context where a minimum acceptable standard of living on mainland Shetland is likely to require between 19% and 35% more household spending than in urban parts of the UK.

For many years Shetland had an unemployment rate below the regional and national averages. Between May 2019 and March 2020 the monthly figure varied between 1.4% and 1.9%. That was below the Highlands and Islands level (between 2.2% and 2.6%) and the Scottish rate (between 3.1% and 3.3%).

Just one of the 26 data zones in mainland Shetland is within an HIE designated Fragile Area. As another proxy measure of deprivation/socio-economic challenges, some 29% of pupils in Shetland are registered for free school meals. That is, below the level in both the Highlands and Islands (32%) and Scotland (37%).

Summary:

- Employment in mainland Shetland fell between 2015 and 2018 as some major construction projects came to an end. In contrast, employment levels grew in both the Highlands and Islands and Scotland.
- Four industries are responsible for 46% of total employment.
- Distinctive features included a continuing high proportion of employment in Construction as well as in Transport and storage. Specialisation is evident in Fishing and aquaculture and a number of areas of manufacturing.
- Wages in full time jobs are 4% higher than the Scottish average.
- Unemployment was consistently below the regional and national averages.
- Only a very small part of mainland Shetland is within a designated HIE Fragile Area.

D.2.2 Shetland South Mainland

As shown at **D.5** some [REDACTED] of the 15 affected HIAL staff live in Shetland south mainland. Therefore some of the impacts of ATMS could be quite concentrated in this area. Therefore, we produced an economic profile for Shetland south mainland based on available data.

In 2018 there were around 950 jobs in the area, and increase from the 850 jobs recorded in 2015.

The 2018 share of jobs in Shetland south mainland which are part time (37%) is below the level in the Highlands and Islands (39%). However, it is greater than in Scotland (where the figure is 34%).

Table D.2 describes the structure of employment in Shetland south mainland in 2018 and also provides a comparison with the Highlands and Islands economy.

TABLE D.2: SHETLAND SOUTH MAINLAND: EMPLOYMENT STRUCTURE: 2018		
Industry	Share of Total Employment	
	South Mainland Shetland	Highlands and Islands
Agriculture, forestry and fishing	2%	12%
Mining and quarrying	5%	<1%
Manufacturing	6%	7%
Electricity, gas, steam and air conditioning supply	1%	1%
Water supply, sewerage, waste management and remediation activities	1%	1%
Construction	11%	6%
Wholesale and retail trade; repair of motor vehicles and motor cycles	5%	13%
Transport and storage	19%	5%
Accommodation and food service activities	7%	10%
Information and communication	<1%	1%
Financial and insurance activities	<1%	1%
Real estate activities	1%	1%
Professional, scientific and technical activities	3%	4%
Administrative and support service activities	10%	5%
Public administration and defence; compulsory social security	5%	7%
Education	13%	7%
Human health and social work activities	9%	15%
Arts, entertainment and recreation	3%	3%
Other service activities	1%	2%
TOTAL	100%	100%

Note: Column data do not sum to 100% due to rounding

The four industries in south mainland Shetland with the largest employment levels were:

- Transport and storage, etc: 19% of total employment. This includes activity at Sumburgh Airport.
- Education: 13%.
- Construction: 11%.
- Administrative and support service activities: 10%.

Together, these four industries account for more than half (53%) of total employment in the area. Each one's share of total employment is clearly above the share of each one in the Highlands and Islands economy.

The area's economy has a number of specialisations including Air transport, Manufacture of wearing apparel and Warehousing and support activities for transportation.

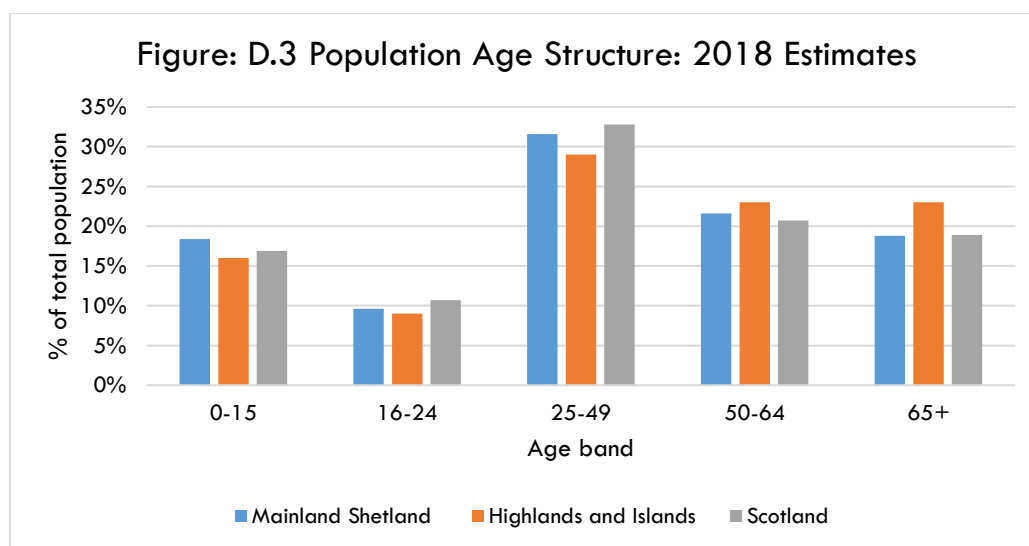
No part of south mainland Shetland is within an HIE designated Fragile Area.

D.3 DEMOGRAPHIC PROFILE

D.3.1 Mainland Shetland

The estimated 2018 population of mainland Shetland was 20,275.

Figure D.3 describes the age structure of the area's 2018 population. It also compares this to the structure in the Highlands and Islands and Scotland.

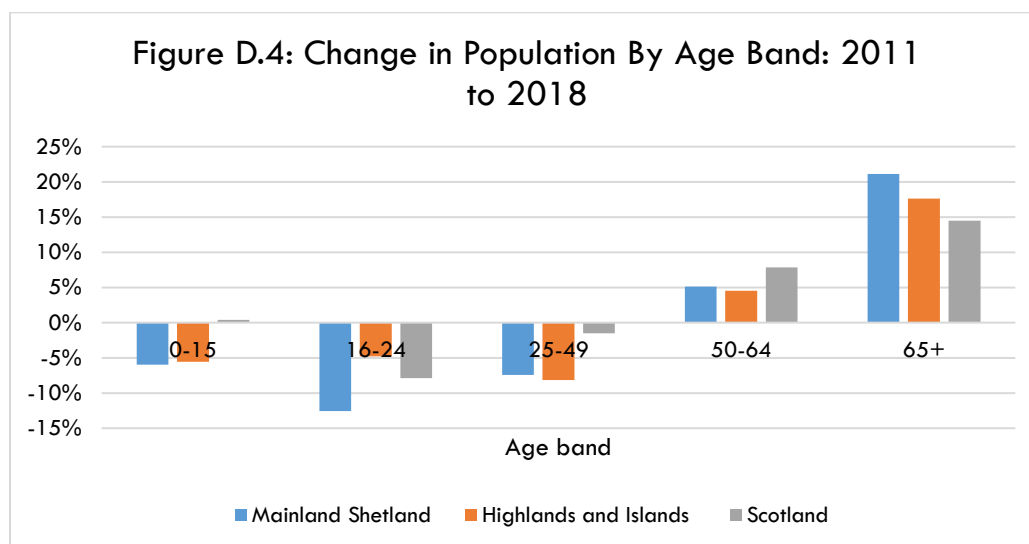


Mainland Shetland has a younger population than the Highlands and Islands. Around 60% of residents are aged 49 years or less compared to 55% at the regional level. Mainland Shetland has a higher proportion of residents in each of the three age bands between 0 and 49 years.

Its population structure is quite similar to that of Scotland, although it has a lower proportion of 25-49 year olds.

The estimated 2018 population of mainland Shetland was 152 (0.7%) lower than the population in 2011 (20,427). In contrast, the populations of both the Highlands and Islands and Scotland *increased* over that period, by 0.4% and 2.6%, respectively.

Figure D.4 describes how the change in mainland Shetland's population was spread across different age bands and compares this with the trends in the Highlands and Islands and Scotland.



The population of mainland Shetland fell in the three youngest age bands, with the largest decrease (of over 10%) among those aged 16-24. A similar general trend was observed in the Highlands and Islands and Scotland. However, the scale of the decrease in mainland Shetland was consistently greater than in Scotland.

The number of people aged 50+ increased in all three geographies. However, mainland Shetland saw a large rise (of over 20%) in those aged 65+, above the levels seen in the Highlands and Islands and Scotland.

Recent population forecasts are only available at the local authority level. There is a projected fall of 0.7% in the population of mainland Shetland between 2018 and 2028. That is below the projected fall in the Highlands and Islands (1.2%) but is in contrast to the forecast increase in Scotland (1.8%).

Summary:

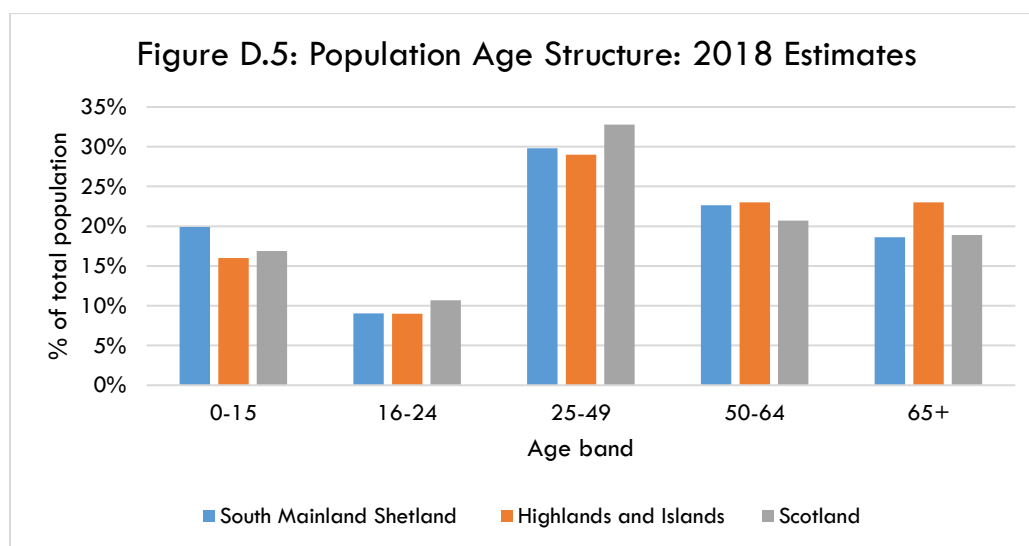
The population structure of mainland Shetland is generally similar to Scotland but has a younger profile than the Highlands and Islands. Population levels are estimated to have fallen by 0.7% between 2011 and 2018, in contrast to growth at the regional and national

levels. The decline among those aged up to 49 years was to a greater extent than in Scotland.

The population of Shetland is forecast to decline slightly between 2018 and 2028-to a lesser degree than in the Highlands and Islands but in contrast to the forecast growth for Scotland.

D.3.2 Shetland South Mainland

Figure D.5 describes the age structure of Shetland south mainland's 2018 population. It also compares this to the structure in the Highlands and Islands and Scotland.

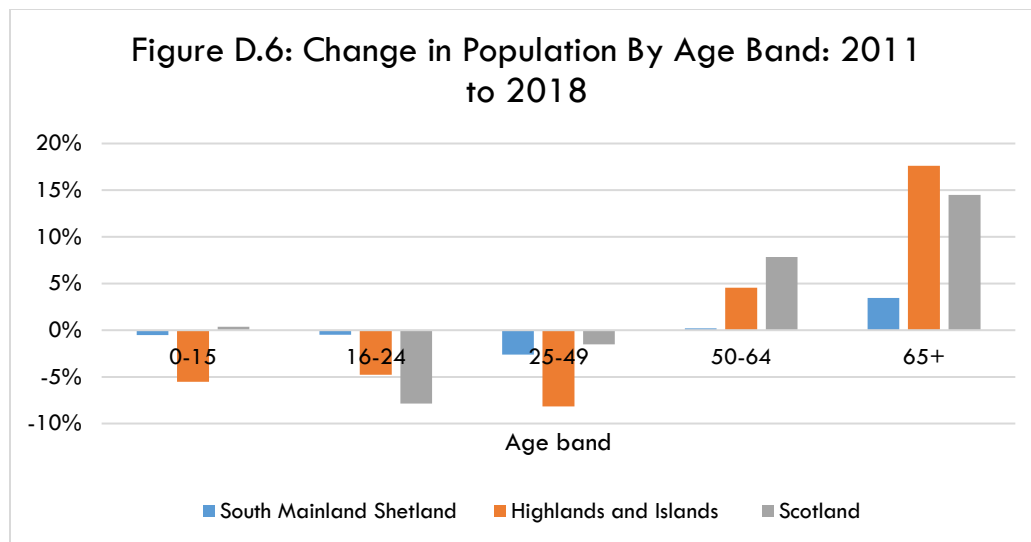


Shetland South mainland has a younger population structure than the Highlands and Islands. Some 59% of residents are aged 49 years or less compared to 54% at the regional level. The area has a higher proportion of residents in each of the three age bands between 0 and 49 years than the Highlands and Islands.

Its population structure is broadly similar to that of Scotland. However, it has a lower proportion of 25-49 year olds, and a higher proportion of those aged 15 years or less.

The estimated 2018 population of Shetland south mainland was 3,370. That is around 3% higher than in 2011 (3,279). This growth was greater than that in both the Highlands and Islands and Scotland, which were 0.4% and 2.6%, respectively.

Figure D.6, over, describes how the change in Shetland south mainland population was spread across different age bands and compares this with the trends in the Highlands and Islands and Scotland.



It fell in the three youngest age bands, with the largest decrease (around 3%) among those aged 25-49. A similar general trend was observed in the Highlands and Islands and Scotland. However, the scale of the decrease in Shetland south mainland was less than in the Highlands and Islands.

The number of people aged 50+ increased in all three geographies. However, the scale of growth in Shetland south mainland was much lower than in both the Highlands and Islands and Scotland.

Summary:

Shetland South mainland has a younger population structure than the Highlands and Islands; and one that is quite similar to that of Scotland.

It is estimated that between 2011 and 2018 the area's population grew at a faster rate than in the Highlands and Islands and Scotland. Within this, the population of Shetland south mainland fell in the three youngest age bands although to a lesser extent than in the Highlands and Islands.

D.4 CONSULTEEs' ISSUES AND CONCERNS

D.4.1 Community Consultees

The most common concerns related to *the technical feasibility and resilience of remote tower operations*. That was related to:

- A remote centre necessarily being less effective and safe than a local one where the staff can assess all factors affecting air traffic management decisions.

- The robustness of ICT links which are seen as having been historically poor in Shetland, and the quality of back-up systems that would be in place in case of failure.
- A lack of information about how maintenance and repair of cameras and ICT links would be undertaken and how far this would be undertaken by personnel based outside Shetland.

The possible outcomes were seen as actual and perceived reductions in safety of flights, and cancellations due to a lack of resilience.

These concerns were in a context of what a number of consultees see as *the distinctive features of Sumburgh Airport*. These include:

- Complexities of handling the mix of fixed-wing and helicopter arrivals and departures using three runways close to the sea.
- Highly changeable visibility and some of the most extreme weather conditions experienced in the UK and beyond.

One consultee stated that they had understood from previous discussions with HIAL that these factors and the need for the technology to have been thoroughly proven that remote tower operation at Sumburgh would be some ten years away if it happened at all.

Some consultees wondered if *HIAL staff recruitment and retention issues were due to their not undertaking proper workforce planning*. It was suggested that this could have been addressed by more effort to advertise and recruit from local communities.

Notwithstanding the above, a number of consultees saw *Sumburgh as having no genuine recruitment problem nor a lack of available cover for full operations*. They referred to Sumburgh having had very few occasions in the last three years where airport opening or operations were affected by a lack of staff availability. Thus, if the case for ATMS rested on staff recruitment and retention issues this did not apply in the case of Sumburgh.

In a similar vein one consultee stated that *ATMS could be seen as aimed at meeting requirements of airline customers-notably offshore oil and gas operators looking for extended/extensions to opening hours-at the expense of the local community whose concern is the loss of high paid jobs*.

Two consultees also referred to the possibility that *the local surveillance alternative could deliver the same or better benefits than ATMS at a lower risk and a lower capital cost*. This includes a failure by HIAL to consider RITT systems. They were also concerned that:

- ATMS is a complex project for a relatively small organisation like HIAL to deliver.
- The risk that ATMS will be overtaken by developments in technology.

D.4.2 Stakeholder Consultees

A number of consultees referred to *uncertainties about how remote tower operations would affect operations at Sumburgh Airport*. In particular, the ability to maintain all six runways if ATC was based on cameras.

Some believe that it would not be possible to retain all existing runways. Cameras would not be able to provide an uninterrupted 360 degrees view, while cameras that compress images would not be more safe than the current ATC.

Other uncertainties raised were:

- How the challenges in providing ICT links between the CSC and Sumburgh would be overcome.
- What limitations on the camera equipment could there be due to weather conditions.
- The location of personnel to carry out repair and maintenance of the equipment at Sumburgh. Concerns were expressed that if they were based outside Shetland this could lead to the airport being closed for periods-leaving the islands totally dependent on external ferry services.

Concern was raised that *ATMS could result in multiple airport failures if there were ICT connectivity issues between the Inverness area and the five airports*. In that case helicopters destined for Sumburgh would not be able to use either Wick John O' Groats and Kirkwall as alternates-rather they would have to use either Aberdeen or Norway instead. This would increase fuel requirements and reduce aircraft payloads.

It was also stated that *Sumburgh had a largely stable workforce with posts filled in a manageable way and there was no history of any staffing issues having affected the resilience of air services*.

ATMS is seen as providing no service or safety benefits at Sumburgh over what is currently provided. In fact, some consultees see ATMS as leading to a deterioration. In part, that would be due to the loss of local knowledge by the removal of ATC based at Sumburgh airport.

Airline consultees were generally happy with the current service provided at Sumburgh. They did not see lack of ATC resource as an issue that negatively affected their operations. There was mention, however, of a desire to see later opening hours and some ongoing issues of delays in early morning departures from Sumburgh.

In general airline consultees had no significant concerns about ATMS and did not foresee it having any marked difference on their operations. However, some issues were raised. For example:

- How the CSC would deal with what is seen as a quite complex mix of fixed wing and rotary flights.

- Continuation of services at the same level as currently provided-e.g. MET observations.

D.5 PROFILE OF AFFECTED STAFF AND HOUSEHOLDS

D.5.1 Staff Profile

The profile of the affected 15 staff (excluding the part-time AFISOs) currently employed at Sumburgh is:

- Most (nine) are male.
- Seven are in ATCO-related roles, a further six are ATSOAs, plus one student and one trainee.
- Based on the data provided by HIAL, [REDACTED] live in the south mainland of Shetland, [REDACTED] further north-e.g. Lerwick area and [REDACTED] one having a place of residence outside Shetland.
- Around half the staff are aged 34 years or less, with most of the others between 35 and 44 years old. The median age is 40 years.
- Most have up to seven years' experience in air traffic service, with the remainder having 11 years' plus experience.

All ten staff members responding to the survey answered the question about what action they would be most likely to consider in response to the proposed changes under ATMS, as follows.

Seven stated "Don't know/unsure at this time".

One each responded:

[REDACTED]

D.5.2 Household Profile

The following information is from the staff survey. This had 10 responses from a mix of ATCOs and ATSOAs.

[REDACTED] had a spouse or partner living in their household.

Nine of the respondents provided information on household numbers, with a total of 22 people living in them. Their age distribution is:

- 0-15 years: [REDACTED]
- 16-24: [REDACTED]
- 25-54: 11.

Survey respondents identified a total of [REDACTED] children who are attend either nursery or secondary school.

[REDACTED] respondents have other family members who live elsewhere in their community/area. [REDACTED] provides care and support (e.g. household maintenance, providing lifts) to elderly relatives. [REDACTED] provides childcare for other family members.

[REDACTED] respondents have a spouse/partner living in their household who also works. In most cases they work full time. In addition [REDACTED] other members of respondents' households also work (most are full-time).

Spouse/partner jobs included working for Shetland Islands Council, at Sumburgh Airport, NHS, construction and water transport. Based on the information provided we estimate that four of those jobs could be ones that might be hard to fill should the current postholder leave.

All ten households participate and/or contribute to the running of local community, voluntary and other organisations. That encompassed 18 individual household members. There was a high level of involvement in sports clubs-e.g. football, athletics, boating. Roles include coaching in particular, as well as committee membership and treasurer.

Other activities included retained firefighting service, organisation of Up-Helly-Aa fire festival, social clubs, children's playgroups and Women's Aid.

D.6 POTENTIAL IMPACTS

D.6.1 Economic Impacts

Changes in Direct Employment and Salary Payments at Sumburgh Airport: ATMS Compared to the Current Position

Table D.3 shows the reduction in direct employment and gross salary payments as a result of the movement of air traffic management from Sumburgh Airport to the CSC.

TABLE D.3: ATMS: REDUCTION IN AIR TRAFFIC MANAGEMENT STAFF AND SALARIES		
AT SUMBURGH AIRPORT		
Number of Full Time Equivalent Posts (non-AFISO)	Number of Part Time Posts-AFISO	Total Annual Salary Payments
13.1	3	£591,000

The reduction of £591,000 in direct gross salary payments will lead to reduced wage expenditures in Shetland businesses (shops, etc.). We estimate that this will reduce employment by a further 3.6 FTE posts in Shetland.

This may appear small in relation to the reduction in gross direct salary payments. However, it is the case that:

- Calculating the induced impacts requires deducting income tax and national insurance payments from the gross salary figure (i.e. it based on the net salary total).
- Some of the wages previously received would have been spent with businesses based outside Shetland-e.g. internet purchases, some large purchases and holidays.
- Some of the spend will include VAT which does not generate income and employment in business where the wages are spent.

Table D.4 shows the total quantified impacts.

TABLE D.4: ATMS: TOTAL IMPACTS FROM CHANGES IN DIRECT EMPLOYMENT AT SUMBURGH AIRPORT		
Impact	Employment (FTE)	Total Annual Gross Salary Payments
Direct	13.3	£591,000
Induced	3.6	£79,000
Total	16.9	£670,000

Among *community consultees*, the most commonly mentioned impact was the *loss of direct employment at Sumburgh*. The jobs were variously referred to as “highly skilled”, “well paid”, “attractive” and “some of the highest-quality”. They were also viewed as:

- Extremely valuable in maintaining a diverse local labour market and a career option for future generations in Shetland.
- Contributing to the promotion of Shetland as a place to live, work, study and invest.

The number of direct jobs being lost was seen as significant. It was noted that there would be *additional impacts through the loss of wages spend with local businesses, as well as any reduction in local purchases of goods and services required by the operation of the Sumburgh tower*.

In addition, the direct job losses could lead to households to relocate from Shetland. This was seen as *possibly leading to the loss of the wages spend of the HIAL staff member’s spouse*.

Among *stakeholder consultees*, one of the most commonly mentioned impacts was the *loss of direct jobs at Sumburgh Airport*. These were variously referred to as “high paid”, “skilled” and “quality” posts. It was also mentioned that a specific type of occupation was being removed from the local economy.

In addition, mention was made of the *potential loss of jobs currently undertaken by the staff’s household members if they were to leave Shetland*. It was noted that some of these were in positions where there is already a shortage of the relevant skills-e.g. social work, specialist medical posts, childcare.

The loss of direct jobs at Sumburgh airport and the possibility that some spouses' positions would not be filled/filled reasonably quickly would *reduce wage spend in shops and use of local services*.

Changes in Direct Employment and Salary Payments at Sumburgh Airport: Surveillance Alternative Compared To ATMS

Table D.5 shows the change in direct employment and gross salary payments as a result of the implementation of the local surveillance alternative *rather than the CSC*. The impacts shown assume that the current part-time AFISO posts are no longer required.

TABLE D.5: LOCAL SURVEILLANCE ALTERNATIVE: INCREASE IN AIR TRAFFIC MANAGEMENT STAFF AND SALARIES AT SUMBURGH AIRPORT COMPARED TO ATMS	
Number of Full Time Equivalent Posts	Total Annual Salary Payments
27	£1,700,000

Note: Assumes no requirement for part-time AFISOs

The increase of £1,700,000 in direct gross salary payments will lead to increased wage expenditures in Shetland businesses (shops, etc.). We estimate that this would increase employment by a further 9.2 FTE jobs in Shetland.

Table D.6 over shows the total quantified impacts.

TABLE D.6: LOCAL SURVEILLANCE ALTERNATIVE: TOTAL IMPACTS FROM CHANGES IN DIRECT EMPLOYMENT AT SUMBURGH AIRPORT		
Impact	Employment (FTE)	Total Annual Gross Salary Payments
Direct	27	£1,700,000
Induced	9.2	£208,000
Total	36.2	£1,908,000

These impacts are based on HIAL's estimates of direct employment and salaries. As shown at **Chapter 4** these have been challenged by Prospect who believe the figures are overstated. If that is the case then the impacts would be lower than those shown at **Table D.6**.

One community consultee noted the significant increase in local employment associated with local surveillance. While this would present recruitment challenges typically associated with recruiting to specialised skilled posts, Sumburgh's past record suggests that Shetland has had more success with filling these types of vacancy than other parts of the Highlands and Islands.

Wider Impacts

A number of *community consultees* considered that ATMS could reduce passenger and freight activity at Sumburgh if it led to:

- The airport being closed for extended periods.
- People flying less because of safety concerns.

This would, in turn, have a negative impact on the local economy, including reducing attractiveness as place in which to live, work and invest.

Consultees placed *the range of stated impacts in the context of:*

- Adding to the significant weather-related disruptions that Shetland's transport already faces
- The need for Shetland to attract investment to support economic growth.
- The loss of high quality jobs in what is a very fragile economy-as evident in the recent closure of Scatsta airport which had employed a large number of people.

Some *stakeholder consultees* also foresaw a wider economic impact if/when ATMS made flights less reliable and thus depressing passenger numbers at Sumburgh. This would in turn reduce income for businesses that rely on the airport-e.g. taxi operators. In addition, it would affect businesses that make flights from the airport.

These impacts were set within a context of what was seen as a particularly challenging time for parts of the Shetland economy. This included, in particular, the closure of Scatsta airport. As well as the significant job losses at the airport site, its closure also removes a potential alternative source of employment for the current air traffic staff at Sumburgh. Mention was also made of the effects of the downturn in the oil industry.

D.6.2 Community Impacts

Population

For *community consultees* the most common issue was the *potential loss of population* if the jobs losses led to households leaving Shetland. This was seen as affecting the rolls and thus viability of some schools and demand for other services (e.g. local shops, health facilities).

It would also mean an *older age profile in the affected communities*. This was set in the context of the pressures that Shetland faces to retain its working age population. It was also stated that if the reliability of air services at Sumburgh declined because of ATMS then this would make attracting or retaining people even more challenging.

Stakeholder consultees referred, in particular, to the *possible loss of population including entire households*. This was seen potentially affecting some local services due to decreased demand, and reducing school rolls.

Some consultees noted what they saw as *the positive impacts of the local surveillance alternative*:

- Retaining and increasing the number of high skilled jobs in Shetland.
- Addressing demographic imbalance and attract new individuals and families to Shetland.
- Increasing the viability of local services.

Community Activity

Stakeholder consultees highlighted the contribution of staff household members to their local communities. That included running and participating in local organisations, clubs, retained fire service and voluntary work. Many of these activities are seen as contributing to communities' distinctive way of life. The loss of individuals to the various bodies could be challenging as it could not be assumed that the gaps created would be filled by others.

Other Impacts

Stakeholder consultees saw local communities being affected if ATMS led to less resilient air services at Sumburgh. That is because their members would be affected by delayed and cancelled flights. Others would feel less confident about using the flights on safety grounds.

APPENDIX E: CAITHNESS IMPACT ASSESSMENT SUPPORTING INFORMATION

E.1 AIR SERVICES AT WICK JOHN O' GROATS AIRPORT

E.1.1 Activity

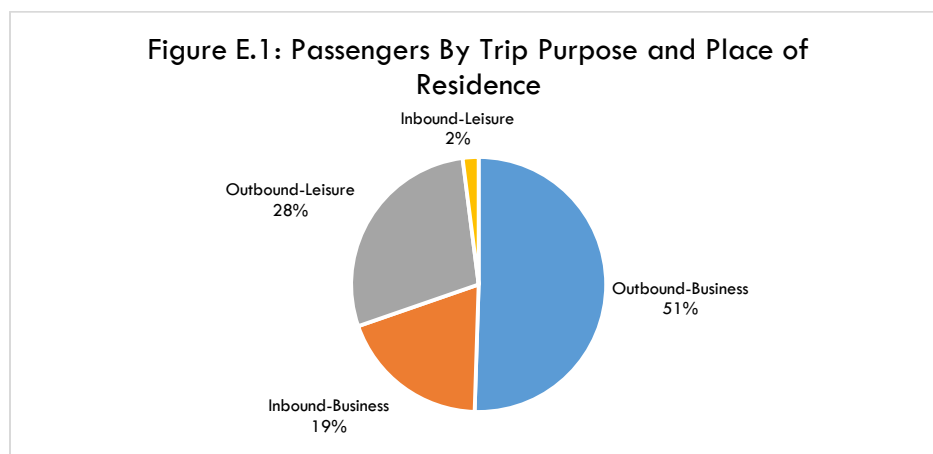
Scheduled Flights

Between April 2019 and March 2020 there was a total of 1,160 scheduled aircraft movements at Wick John O' Groats Airport.

Based on CAA data in 2019 around 13,000 passengers used scheduled services at Wick John O' Groats. The following analysis is of passengers using these flights in 2018 which were to Aberdeen and Edinburgh. It should be noted that both these services ceased in the first quarter of 2020.

More than three quarters (79%) of trips were outbound-i.e. made by those who live in the airport catchment area. The remaining 21% were inbound-i.e. by people who live elsewhere.

Most (70%) passengers were on business with the other 30% travelling for leisure purposes. A more detailed breakdown is shown at **Figure E.1**.



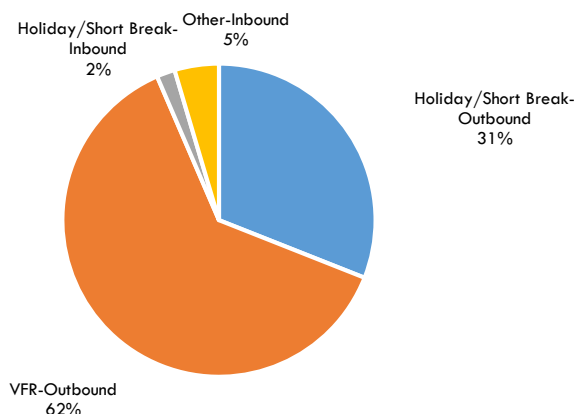
Outbound Business is the largest market segment accounting for around half (51%) of all passengers. That is followed by Outbound Leisure with 28% of passengers. Inbound Business traffic is much lower than Outbound Business traffic, while Inbound Leisure trips are minimal.

Most (63%) leisure passengers were travelling to Visit Friends and Relatives (VFR). Almost all of the rest (32%) were taking a Holiday or Short Break. That leaves just 5% of passengers travelling for Other Leisure purposes.

Figure E.2, over, provides some further detail on leisure passengers.

Outbound VFR trips account for more than half (62%) of leisure passengers with most of the rest (31% of all leisure passengers) Outbound Holiday/Short Break trips.

Figure E.2: Leisure Passengers By Detailed Trip Purpose and Place of Residence



There were no recorded inbound VFR passengers or outbound passengers travelling for Other Leisure purposes.

Non-Scheduled Flights

Between April 2019 and March 2020 there were 2,535 non-scheduled movements (excluding circuits) at Wick John O' Groats Airport. The most frequent categories of movement were:

- Private: 32% of all non-scheduled movements.
- Positioning: 28%.
- Training: 14%.

Compared to the other six HIAL airports included in ATMS Wick John O' Groats specialises in Private, Air Taxi and Positioning flights.

E.1.2 Role and Distinctive Contribution of Air Services

Role

Based on previous *Reference* research into Wick John O' Groats air services they have mainly:

- Facilitated business travel in particular.
- Supported the nuclear sector, oil and gas supply chain companies and offshore commuting by local residents.

Distinctive Contribution

The air services have facilitated travel to/from England in particular by offering onward connections at Aberdeen and Edinburgh airports.

For travel within Scotland the air services have helped overcome the long surface distances between Caithness and both the Aberdeen area and central belt. That is in a context where the drive time from Wick to Edinburgh-including allowance for comfort breaks-is around 6 hours, and around 5½ hours to Aberdeen. Public transport journey times are even longer.

E.2 LOCAL ECONOMY

In 2018 there was a total of 10,500 jobs in the local area around Wick John O' Groats airport (hereafter termed "the local area"). This was a fall of over 4% (500 jobs) since 2015. This was in contrast to an increase in employment in both Scotland (2%) and the Highlands and Islands (1%) over the same period.

The 2018 share of jobs in the local area which are part time (35%) is very similar to that for Scotland (34%). However, it is less than the level in the Highlands and Islands (39%).

Table E.1 describes the structure of employment in the local area in 2018 and compares this to the Highlands and Islands economy.

TABLE E.1: WICK JOHN O' GROATS AIRPORT LOCAL AREA EMPLOYMENT STRUCTURE: 2018		
Industry	Share of Total Employment	
	Wick John O' Groats Airport Local Area	Highlands and Islands
Agriculture, forestry and fishing	1%	12%
Mining and quarrying	1%	<1%
Manufacturing	5%	7%
Electricity, gas, steam and air conditioning supply	<1%	1%
Water supply, sewerage, waste management and remediation activities	12%	1%
Construction	7%	6%
Wholesale and retail trade; repair of motor vehicles and motor cycles	15%	13%
Transport and storage	4%	5%
Accommodation and food service activities	8%	10%
Information and communication	3%	1%
Financial and insurance activities	1%	1%
Real estate activities	1%	1%
Professional, scientific and technical activities	10%	4%
Administrative and support service activities	3%	5%
Public administration and defence; compulsory social security	4%	7%
Education	7%	7%
Human health and social work activities	13%	15%
Arts, entertainment and recreation	2%	3%
Other service activities	2%	2%
TOTAL	100%	100%

Note: Column data do not sum to 100% due to rounding

The four industries in the local area with the largest employment levels accounted for 50% of total employment. They were:

- Wholesale and retail trade; repair of motor vehicles and motor cycles: 15%.
- Human health and social work activities: 13%.
- Water supply, sewerage, waste management and remediation activities: 12%.
- Professional, scientific and technical activities: 10%.

The last two of these industries reflects the significance of the Dounreay nuclear plant which is currently being decommissioned, and the related local supply chain.

The data in the Table shaded in yellow denote industries with a share of total employment that is at least two percentage points greater than the corresponding share of Highlands and Islands employment. Again, this highlights the distinctive contribution of activities related to the Dounreay site.

A number of industries (shaded in blue) are underrepresented. In addition, the three “public sector” categories-Public administration and defence; compulsory social security, Education, Human health and social work activities-account for 24% of total employment. That is clearly lower than the figure of 29% in the Highlands and Islands.

In 2019 the average (mean) gross wage for a full time job in the Wick Travel To Work Area (TTWA) was £35,572. That is slightly (c2%) higher than the figure for Scotland (£34,916). The figure for the Thurso TTWA was considerably higher. At £41,629 it was almost 20% above the Scottish average. These average wage levels in the local area are clearly influenced by the employment generated by the Dounreay site.

Parts of Caithness have seen unemployment rates above the regional and national averages for a considerable number of years. **Table E.2** compares recent data for the local TTWAs with those at the regional and national level.

TABLE E.2: WICK JOHN O' GROATS AIRPORT LOCAL AREA MONTHLY UNEMPLOYMENT RATES BETWEEN MAY 2019 AND MARCH 2020

Area	Trough	Peak
Thurso Travel To Work Area	3.1%	3.4%
Wick Travel To Work Area	3.8%	4.4%
Highlands and Islands	2.2%	2.6%
Scotland	3.1%	3.3%

It shows that the rate in both TTWAs was above that in the Highlands and Islands. The Thurso TTWA figures are virtually the same as those for Scotland, while the Wick TTWA unemployment rate is clearly above the national average.

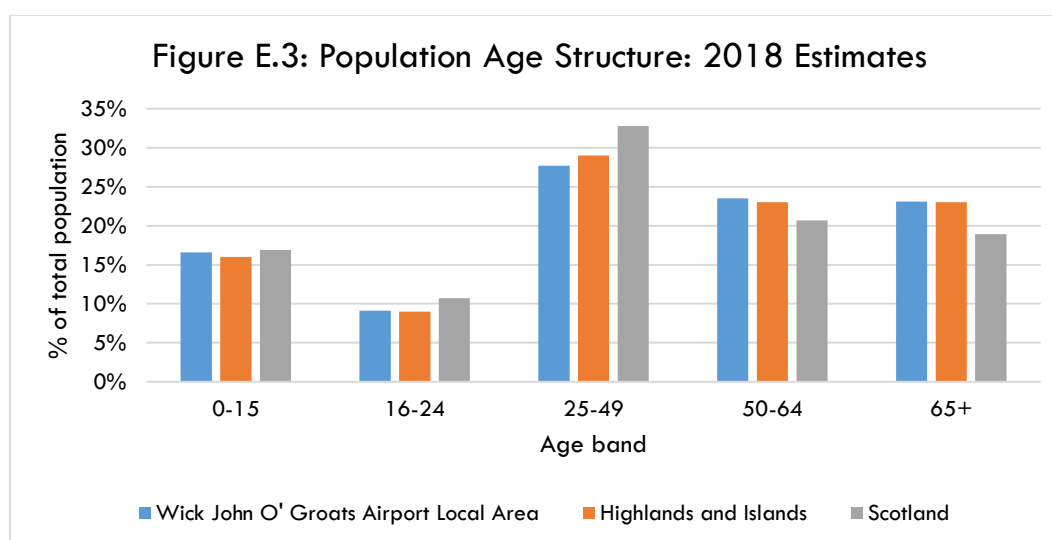
Some two (c5%) of the 38 data zones in the local area fall within designated HIE Fragile Areas. In addition, Caithness (in which the area analysed for Wick John O' Groats airport sits) is one of three HIE employment action zones in the Highlands and Islands.

Summary:

- Employment in the local area fell between 2015 and 2018 in contrast to the growth seen in the Highlands and Islands and Scotland.
- Four industries account for 50% of the total employment in the area.
- The most distinctive feature of the local economy is the activity generated by the Dounreay nuclear site. This supports highly paid employment but these jobs will disappear over time as the site continues on its path to decommissioning.
- Wages in full time jobs are higher than the Scottish average and particularly so in the Thurso TTWA.
- The unemployment rate has been above that for the Highlands and Islands, while the Wick TTWA figure has also been higher than the Scottish one.
- The local area contains two designated HIE Fragile Areas. Caithness is also an HIE employment action zone.

E.3 DEMOGRAPHIC PROFILE

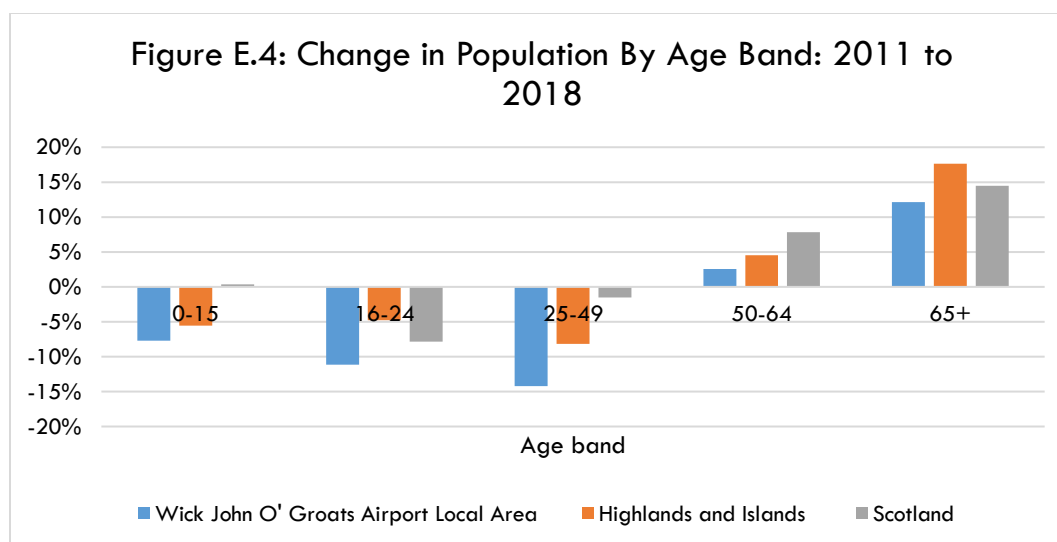
Figure E.3 describes the age structure of the local area's 2018 population. It also compares this to the structure in the Highlands and Islands and Scotland.



It shows that the local area population structure is very similar to that of the Highlands and Islands. As such, it is older than in Scotland, with lower proportions of 16-24 and 25-49 year olds. For the latter, the local area's share is some five percentage points less than the Scotland figure.

In 2018 the estimated population of the local area was 25,413. That is around 1,000 (around 4%) less than in 2011 (26,433 people). This fall of was in contrast to population growth in both the Highlands and Islands and Scotland (of 0.4% and 2.6%, respectively).

Figure E.4, over, describes how the changes in population were spread across different age bands.



The local area's population fell in each of the three youngest age bands. The size of the fall was bigger than in either the Highlands and Islands or Scotland, including a 14% decrease in the number of 25-49 year olds. While the local area saw some growth in the number of older (i.e. 50+) residents this was at a lower level than at the regional and national levels.

Recent population forecasts are only available at the local authority level. There is a projected increase of 0.5% in the population of Highland between 2018 and 2028. However, given the trends in the local area between 2011 and 2018 and the challenges presented by the future decline in employment related to Dounreay, there will continue to be pressure on both the level and age profile of the local population.

Summary:

Between 2011 and 2018, the local area's population fell, in contrast to the growth seen in the Highlands and Islands and in Scotland. Its population structure is very similar to that of the Highlands and Islands but is older than in Scotland. The local area's population has been ageing at a faster rate than at the regional and national levels.

E.4 CONSULTEES' ISSUES AND CONCERNS

E.4.1 Community Consultee

It was noted that *there are the already challenges faced by Wick John o' Groats Airport which may well be exacerbated by the Covid pandemic and its possible longer-term impacts on the aviation sector.*

The introduction of AFIS at Wick, as already happens at a number of other smaller HIAL airports, is welcomed. It is understood that this would help to sustain most of the current employment. It was strongly advocated that this proposal be carried out in full and that any further centralisation of services that might move employment away from Wick should be

avoided. That is particularly as a number of the posts anticipated would be relatively high quality jobs.

E.4.2 Stakeholder Consultees

Wick John O' Groats has helicopter and non-scheduled operations and as such it remains a *complex airspace to manage*. The CAA has made it clear to Prospect that flexible controlled airspace would be granted to Wick if it was requested.

It was noted that Wick John O' Groats has had staff recruitment and retention issues with a significant turnover of staff prior to the announcement of remote towers.

Introduction of AFIS at the airport was viewed as downgrading air traffic management at the airport and unarguably reduces the service and safety provision.

In contrast, one airline stated that the introduction of radar under ATMS would make AFIS operations workable for Wick John O' Groats airport.

E.5 **PROFILE OF AFFECTED STAFF**

The profile of the affected five staff (excluding the part-time AFISOs) currently employed at Wick John O' Groats is:

- All are male.
- All are in ATCO-related roles, [REDACTED]
- Most live in Wick or other northern parts of the local area.
- All are aged 44 years or less. The median age is 33 years.
- Most have up to seven years' experience in air traffic services.

E.6 **POTENTIAL IMPACTS**

E.6.1 Economic Impacts

Changes in Direct Employment and Salary Payments at Wick John O' Groats Airport: AFIS Compared to The Existing Position

Table E.3 shows the estimated change in direct employment and gross salary payments as a result of the move from ATC to AFIS.

TABLE E.3: NET CHANGE IN AIR TRAFFIC MANAGEMENT STAFF AND SALARIES: COMPARISON OF AFIS AND EXISTING POSITION	
Number of Full Time Equivalent Posts	Net Loss in Total Annual Salary Payments
0	>£55,000<£65,000

This shows no change from the current number of FTE posts and a loss of >£55,000<£65,000 in gross salaries.

The average salary per FTE would fall from [REDACTED] to around £42,000. However, that would still be above the current averages for the two local TTWAs.

The reduction of >£55,000<£65,000 in direct gross salary payments will lead to reduced wage expenditures in the local area (shops, etc.). We estimate that this will reduce employment by 0.3 FTE posts in the area.

This may appear small in relation to a reduction of >£55,000<£65,000 in gross direct salary payments. However, it is the case that:

- Calculating the induced impacts requires deducting income tax and national insurance payments from the gross salary figure (i.e. it based on the net salary total).
- Some of the wages previously received would have been spent with businesses based outside the local area-e.g. internet purchases, some large purchases and holidays.
- Some of the spend will include VAT which does not generate income and employment in business where the wages are spent.

Table E.4 shows the total quantified impacts from the change.

TABLE E.4: TOTAL NET CHANGE IN EMPLOYMENT AND SALARIES: COMPARISON OF AFIS AND EXISTING POSITION		
Impact	Number of Full Time Equivalent Posts	Net Loss In Total Annual Gross Salary Payments
Direct	0	>£55,000<£65,000
Induced	0.3	£7,000
Total	0.3	>£62,000<£72,000

Stakeholder consultees placed these impacts in a context of a large reduction in local employment as the Dounreay nuclear site progresses decommissioning. They expect that will lead to population loss, reduced economic activity and an aging population profile.

Changes in Direct Employment and Salary Payments at Wick John O' Groats Airport: AFIS Compared to Inclusion of Wick John O' Groats In CSC

Table E.5, over, shows the difference in employment and salaries of AFIS/Centre of Excellence Compared to what would have occurred if Wick John O' Groats had been included in the CSC.

TABLE E.5: NET CHANGE IN AIR TRAFFIC MANAGEMENT STAFF AND SALARIES: AFIS OPERATIONS COMPARED TO WICK JOHN O' GROATS BEING INCLUDED IN CSC	
Net Increase In Number of Full Time Equivalent Posts	Net Increase In Total Annual Salary Payments
4	£170,000

In addition, AFIS would retain the current six part-time AFISO posts at Wick John O' Groats. These posts would no longer exist if Wick John O' Groats had been included in the CSC.

Table E.6 shows the total quantified impacts.

TABLE E.6: TOTAL NET CHANGE IN EMPLOYMENT AND SALARIES: AFIS COMPARED TO WICK JOHN O' GROATS BEING INCLUDED IN CSC		
Impact	Net Increase in Full Time Equivalent Posts	Net Increase In Total Annual Gross Salary Payments
Direct	4	£170,000
Induced	1	£22,000
Total	5	£192,000

Wider Impacts

Stakeholder consultees were of the view that the loss of ATC at Wick John O' Groats makes the airport less attractive for serving the Beatrice offshore windfarm by helicopter and might result in that traffic switching to Aberdeen airport. It is also seen as potentially having a negative impact on the prospects for the proposed vertical launch spaceport site in Sutherland.

E.6.2 Community Impacts

Population

One consultee referred to the potential for *most or all of the affected households to leave Caithness.*

APPENDIX F: INVERNESS IMPACT ASSESSMENT SUPPORTING INFORMATION

F.1 AIR SERVICES AT INVERNESS AIRPORT

F.1.1 Activity

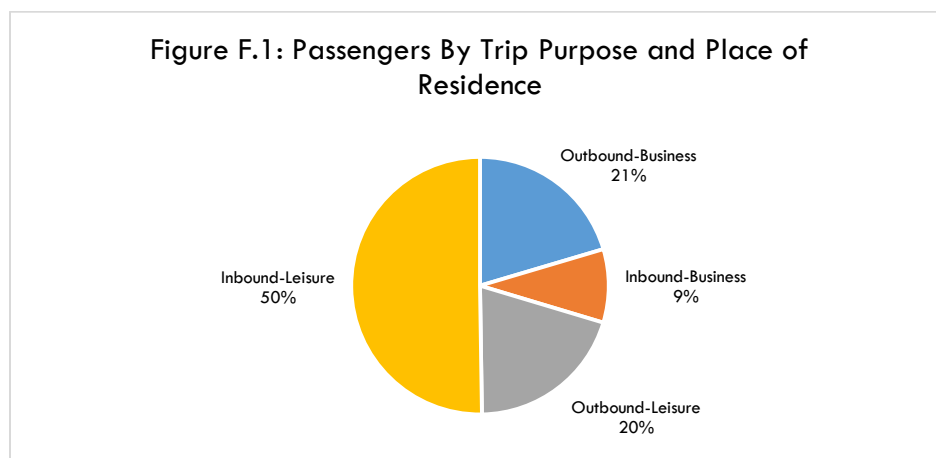
Scheduled Flights

Between April 2019 and March 2020 there was a total of 11,932 scheduled aircraft movements at Inverness Airport.

In 2019 around 932,000 passengers travelled on Inverness' scheduled services. These were to: Amsterdam, Belfast, Benbecula, Bergen, Birmingham, Bristol, Dublin, East Midlands, Gatwick, Heathrow, Jersey, Kirkwall, Luton, Manchester, Stornoway and Sumburgh. The following analysis is based on the CAA survey of Inverness passengers undertaken in 2018.

Most (59%) of passengers were inbound to the area-i.e. they live outside the Inverness airport catchment area. The other 41% of passengers were residents of the airport catchment area.

A majority (70%) of passengers were travelling for leisure purposes, with the other 30% travelling on business. A more detailed breakdown is shown at **Figure F.1**.

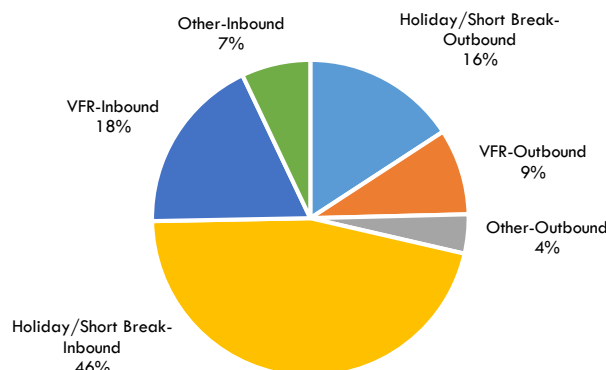


Half of the passengers using Inverness are leisure travellers inbound to the area. Most of the rest are split almost evenly between Outbound Business and Outbound Leisure passengers. Thus more than 70% of leisure passengers are inbound. A majority (70%) of business passengers live in the airport catchment area.

Most (c60%) leisure passengers were travelling for a Holiday or Short Break. Most of the rest (27% of all leisure passengers) were Visiting Friends and Relatives (VFR).

Figure F.2, over, provides some further detail on leisure passengers.

Figure F.2: Leisure Passengers By Detailed Trip Purpose and Place of Residence



It shows:

- The significance of the Inbound Holiday/Short Break market. It accounts for approaching half (46%) of all leisure passengers.
- Two thirds of VFR traffic is inbound to the catchment area.

Non-Scheduled Flights

Between April 2019 and March 2020 there were 13,947 non-scheduled movements (excluding circuits) at Inverness Airport. The most frequent categories of movement were:

- Aero Club: 29% of all non-scheduled movements.
- Positioning: 13%.
- Freight/Cargo: 13%.

Compared to the other six HIAL airports included in ATMS Inverness specialises in Aero Club flights.

F.1.2 Role and Distinctive Contribution of Air Services

Inverness is clearly different from the other HIAL airports included in ATMS. That is particularly in terms of:

- Much greater numbers of air movements and passengers.
- In recent years, providing all year round flights to major international hubs including airports outside the UK, and to other major UK cities.
- Offering flights to the Outer Hebrides and Northern Isles. These are particularly important to public organisations with regional headquarters in Inverness and for access to health services at Raigmore Hospital.

The *community* consultee stated that Inverness Airport is seen as an important source of employment/training opportunities and of connectivity for business and the local tourist/hospitality industry. Compared to surface transport, the air services are more dependent on global markets e.g. tourism linking the Highlands to the rest of the world; and connecting Inverness to other urban centres across UK/mainland Europe.

F.2 LOCAL ECONOMY

In 2018 there was a total of 49,000 jobs in Inverness City (hereafter termed “Inverness”). That was an increase of around 3% (1,500 jobs) since 2015. This rate of employment growth was above that in both Scotland (2%) and the Highlands and Islands (1%).

The 2018 share of jobs in Inverness which are part time (36%) is less than in the Highlands and Islands (39%). However, part time employment is more prevalent than in Scotland (where the figure is 34%).

Table F.1, over, describes the structure of employment in Inverness in 2018 and compares this to the Highlands and Islands economy.

The four industries in Inverness with the largest employment levels were:

- Human health and social work activities: 25%.
- Wholesale and retail trade; repair of motor vehicles and motor cycles: 17%.
- Accommodation and food service activities: 8%.
- Administrative and support service activities: 7%.

Collectively they accounted for more than half (57%) of total employment.

The data in the Table shaded in yellow denote industries with a share of total employment that is at least two percentage points greater than the corresponding share of Highlands and Islands employment. For example, Professional, scientific and technical activities accounts for 6% of employment in Inverness compared to only 4% across the Highlands and Islands.

These industries include Human health and social work activities, Public administration and defence; compulsory social security, and various professional services. Together the three “public sector” categories (Public administration and defence; compulsory social security, Education, Human health and social work activities) account for 37% of total employment in Inverness, compared to 27% in the Highlands and Islands. This reflects Inverness’s role as a regional centre and points to a degree of reliance on public sector employment.

A number of industries (shaded in blue) are underrepresented compared to the Highlands and Islands. These include Manufacturing, and Accommodation and food service activities. However, they are still important generators of jobs.

TABLE F.1: INVERNESS EMPLOYMENT STRUCTURE: 2018

Industry	Share of Total Employment	
	Inverness	Highlands and Islands
Agriculture, forestry and fishing	0%	12%
Mining and quarrying	<1%	<1%
Manufacturing	4%	7%
Electricity, gas, steam and air conditioning supply	1%	1%
Water supply, sewerage, waste management and remediation activities	1%	1%
Construction	5%	6%
Wholesale and retail trade; repair of motor vehicles and motor cycles	17%	13%
Transport and storage	5%	5%
Accommodation and food service activities	8%	10%
Information and communication	2%	1%
Financial and insurance activities	1%	1%
Real estate activities	1%	1%
Professional, scientific and technical activities	6%	4%
Administrative and support service activities	7%	5%
Public administration and defence; compulsory social security	6%	7%
Education	6%	7%
Human health and social work activities	25%	15%
Arts, entertainment and recreation	2%	3%
Other service activities	2%	2%
TOTAL	100%	100%

Note: Column data do not sum to 100% due to rounding

In 2019, the average (median) gross wage for a full time job in Inverness was £31,256. That is around 4% higher than the figure for Scotland (£30,000). In recent times Inverness' unemployment rate has been slightly below that of the Highlands and Islands and clearly below the Scottish level. Between May 2019 and March 2020, Inverness's monthly figure varied between 2.0% and 2.3% compared to:

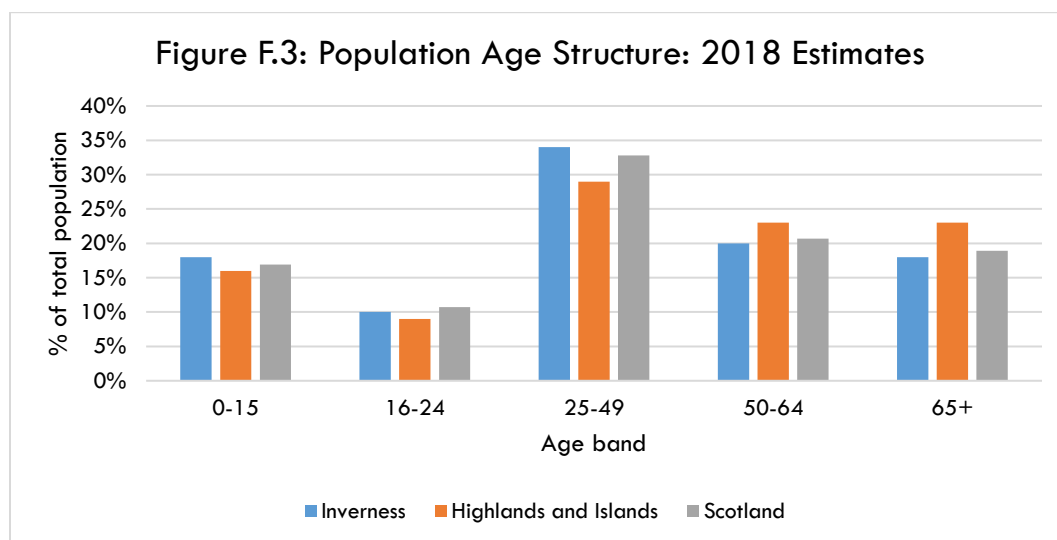
- Highlands and Islands: between 2.2% and 2.6%.
- Scotland: between 3.1% and 3.3%.

Summary:

- Employment levels in Inverness grew between 2015 and 2018, and at higher rate than in either the Highlands and Islands and Scotland.
- Four industries account for more than half of total employment.
- Distinctive features include a relatively high proportion of employment in public sector jobs as a whole, and in Human health and social work activities in particular.
- Average wages in full time jobs are around 4% higher than the Scottish average.
- In recent times Inverness' unemployment rate has been slightly below that for the Highlands and Islands and clearly below the Scottish level.

F.3 DEMOGRAPHIC PROFILE

Figure F.3 describes the age structure of Inverness's 2018 population. It also compares this to the structure in the Highlands and Islands and Scotland.

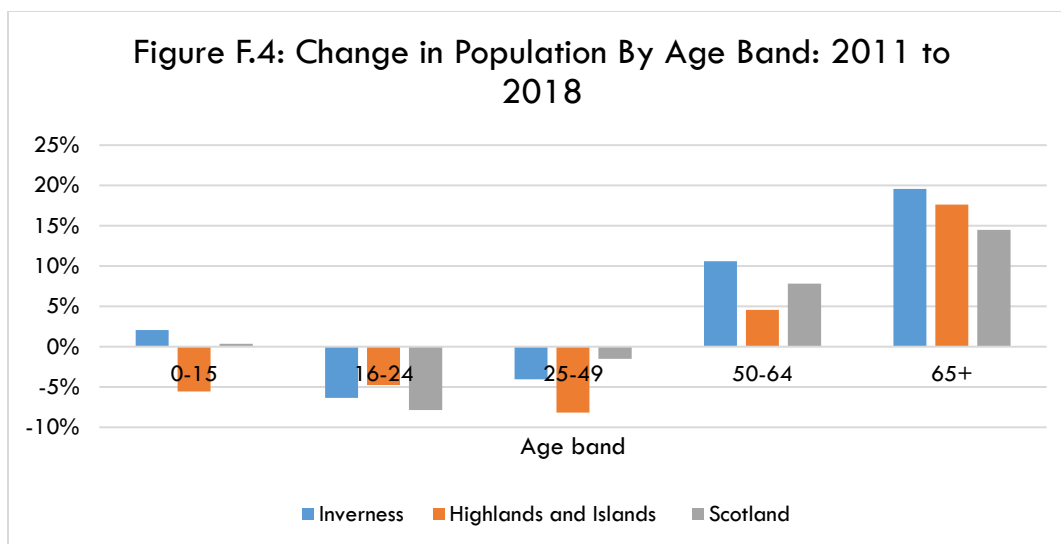


It shows that the population structure of Inverness is very similar to that of Scotland. The main difference is that Inverness has a slightly lower share (10%) in the 16-24 year age band compared to Scotland (12%).

However, Inverness's population is clearly younger than that of the Highlands and Islands. Some 62% of its residents are aged up to 49 years compared to 55% at the regional level. The difference is most marked (five percentage points) in the 25-49 age band.

In 2018 the estimated population of Inverness was 69,751. That is around 2,200 (3.3%) higher than the population in 2011 (67,550)-and represents greater growth than seen in both the Highlands and Islands and Scotland over the same period (0.4% and 2.6%, respectively).

Figure F.4, over, describes how the change in Inverness's population was spread across different age bands and compares this with the trends in the Highlands and Islands and Scotland.



The population of Inverness fell in the 16-24 and 25-49 age bands, with a slight increase in the numbers aged between 0 and 15 years. Thus, its population growth in the years to 2018 was driven by those aged 50 years and above. This trend is similar to that in both the Highlands and Islands and Scotland, with a decrease in the number of people aged 49 years or less.

Summary:

Inverness's population structure is very similar to that of Scotland but clearly younger than the Highlands and Islands. Between 2011 and 2018, Inverness's population grew at a faster rate than in the Highlands and Islands and in Scotland. However, it saw a decrease in the number of people aged 49 years or less-as also occurred at the regional and national levels.

F.4 CONSULTEES' ISSUES AND CONCERNS

F.4.1 Community Consultees

The Inverness area was seen as *coming out quite favourably from ATMS* with increased employment/training and career development opportunities for local residents. However, it was stated that there is a need to be aware of the impacts on affected communities around the other HIAL airports. It is also *important that ATMS does not compromise the safety or security/reliability/resilience of air services to/from the peripheral airports.*

F.4.2 Stakeholder Consultees

The most commonly mentioned concern was that *remote delivery of ATC would not be sufficiently reliable/resilient.* That was because in the event of technical systems failures (e.g. ICT links, cameras non-operable) there would be no AFISO staff at the individual airports to maintain air traffic management until the technical issues are resolved. Thus, the airport could be closed for a period of time.

It was also felt that *such failures would have a very detrimental effect on the public's confidence in air travel* and thus greatly affect the local economies of the affected airports. However, *one airline did not foresee a customer perception of reduced safety-and if that was the case it could be addressed through a good briefing/presentation.*

The point was made that *potential disruption from technical failures at a single point (i.e. CSC) would be very significant* as this would affect all five airports rather than a single one.

Another concern was what was seen as a *significant level of turnover of air traffic management staff at Inverness as well as recruitment issues.* This was seen this as having led to the levels of closures seen at the airport. The implication appears to be that these factors could mean that the CSC may face staff recruitment and retention issues.

However, one consultee expected *potential for staff development and a better ATC community within the new structure under ATMS.*

F.5 PROFILE OF AFFECTED STAFF AND HOUSEHOLDS

F.5.1 Staff Profile

The profile of the affected 27 staff currently employed at Inverness is:

- Very largely male [REDACTED]
- Eighteen are in ATCO-related roles (including five trainees). The other nine are in ATSA related roles.
- Based on the data provided by HIAL, around half live in the city of Inverness. The main other locations are Black Isle/Easter Ross [REDACTED] and Moray [REDACTED].
- Most staff are aged between 35 and 54 years of age. The rest are either 25-34 years old or 55 years and above. The median age is 47 years.
- Most staff have up to seven years' experience in air traffic service, with a number having more than twenty years' experience.

The 13 staff responding to the survey were asked what action they would be most likely to consider in response to the proposed changes under ATMS. The responses were as follows:

- Don't know/unsure at this time: seven respondents: 54% of total.
- Not continuing to work at current airport of employment or at the new Surveillance Centre: three respondents: [REDACTED]
- Taking up a position within the new Surveillance Centre: three respondents: [REDACTED]

F.5.2 Household Profile

The following information is taken from the staff survey. This had 13 responses from a mix of ATCOs and ATSAs.

[REDACTED] had a spouse or partner living in their household.

Ten of the respondents provided information on household numbers, with a total of 22 people living in their households. Survey respondents identified a [REDACTED] children who attend either a primary or secondary school.

[REDACTED] respondents have other family members who live elsewhere in their community/area.

[REDACTED] respondents have a spouse/partner living in their household who also works. In most cases this is full time. In addition one other member of respondents' households also works. Spouse/partner jobs included working at Inverness Airport and the public sector (e.g. NHS, UHI).

[REDACTED] of the 13 households stated they participate in and/or contribute to the running of local community, voluntary and other organisations.

F.6 POTENTIAL IMPACTS

F.6.1 Economic Impacts

Changes in Direct Employment and Salary Payments In Inverness Area: ATMS Compared to the Current Position

Table F.2 shows the net increase in direct employment and gross salary payments as a result of the movement of *air traffic management from ATC at Inverness Airport to the CSC under ATMS*.

TABLE F.2: ATMS: INCREASE IN AIR TRAFFIC MANAGEMENT STAFF AND SALARIES IN INVERNESS AREA	
Number of Full Time Equivalent Posts	Total Annual Salary Payments
67.5	£4,480,000-£4,507,000

The increase in direct gross salary payments will lead to increased wage expenditures in local businesses (shops, etc.). We estimate that this would increase employment by a further 23.3 FTE posts.

Table F.3 shows the total quantified impacts. The induced employment impact is based on the net salary total.

TABLE F.3: ATMS: TOTAL IMPACTS FROM CHANGES IN DIRECT EMPLOYMENT IN INVERNESS AREA		
Impact	Employment (FTE)	Total Annual Gross Salary Payments
Direct	67.5	£4,480,000-£4,507,000
Induced	23.3	£513,000
Total	90.8	£4,993,000-£5,020,000

Community consultees see ATMS as meaning *more high quality jobs for the area, and more training opportunities* for existing workers and school and college leavers. ATMS would also

provide HIAL with a welcome opportunity to increase employment levels further by offering ATC services to non-HIAL airports.

Stakeholder consultees generally recognised a positive impact for the Inverness area economy in terms of increased numbers employed in air traffic management. However, most viewed the scale of impact as marginal or insignificant given the size and buoyancy of the local economy.

Changes in Direct Employment and Salary Payments in Inverness Area: ATMS Compared To Local Surveillance Alternative

Table F.4 shows the net increase in direct employment and gross salary payments as a result of the implementation of ATMS rather than the local surveillance alternative.

TABLE F.4: NET INCREASE IN AIR TRAFFIC MANAGEMENT STAFF AND SALARIES: ATMS COMPARED TO LOCAL SURVEILLANCE ALTERNATIVE	
Number of Full Time Equivalent Posts	Total Annual Salary Payments
69	£4,452,000-£4,479,000

The increase in direct gross salary payments will lead to higher expenditures in the local economy (in shops, etc.). We estimate that this will increase employment compared to the local surveillance alternative by a further 23.8 FTE jobs.

Table F.5 shows the total quantified impacts.

TABLE F.5: TOTAL NET IMPACT OF ATMS COMPARED TO THE LOCAL SURVEILLANCE ALTERNATIVE		
Impact	Employment (FTE)	Total Annual Gross Salary Payments
Direct	69	£4,452,000-£4,479,000
Induced	23.8	£524,000
Total	92.8	£4,976,000-£5,003,000

These impacts are based on HIAL's estimates of direct employment and salaries under the local surveillance alternative. As shown at **Chapter 3** these have been challenged by Prospect who believe the figures are overstated. If that is the case then the negative impact would be less than shown at **Table G.5**.

F.6.2 Community Impacts

Population

For community consultees the increase in employment would bring a few more families and skilled workers into the area to contribute to local economy. This would have a net positive impact on communities although also increasing demand for local services (such as health, housing and education) and increasing commuter traffic.

However, the numbers involved would be fairly small and manageable.

Stakeholder consultees generally viewed the likely community impacts as either slight or none.

APPENDIX G: DUNDEE IMPACT ASSESSMENT SUPPORTING INFORMATION

G.1 AIR SERVICES AT DUNDEE AIRPORT

G.1.1 Activity

Scheduled Flights

Between April 2019 and March 2020 there was a total of 1,083 scheduled aircraft movements at Dundee Airport.

A total of 20,529 passengers used the London Stansted service in 2019. Available survey data suggest that around 66% were travelling on business and the other 34% for leisure purposes, after allowing for the latter's larger average party size. No information is available for the split between inbound and outbound passengers

Non-Scheduled Flights

Between April 2019 and March 2020 there were 4,201 non-scheduled movements (excluding circuits) at Dundee Airport. The most frequent categories of movement were:

- Aero Club: 26% of all non-scheduled movements.
- Private: 15%.
- Business Aviation: 14%.

Compared to the other six HIAL airports included in ATMS Dundee specialises in Executive, Instrument Training and Business Aviation flights.

G.1.2 Role and Distinctive Contribution of Air Services

Role

Consultees viewed Dundee Airport as a significant resource to support the regional economy.

The majority of passengers using the London route are business travellers. It allows local companies to continue to operate from the city/region and interact with their customers and other business partners. It is hoped that the new Belfast service will have more of a focus on the leisure market.

The airport is also viewed as important in terms of:

- General aviation, allowing access to the city and surrounding attractions such as golf.
- Pilot training.

Distinctive Contribution

The London route provides the opportunity for local businesses to make a day return trip to London, while maximising the time that can be spent in the city. This would not be possible by rail or bus. It also avoids a long surface journey (over 70 minutes in each direction) to other Scottish airports in order to travel to London. This is an important selling point for businesses and their customers.

G.2 LOCAL ECONOMY

In 2018 there was a total of 77,000 jobs in Dundee some 1,500 more than in 2015. This rate of growth (2%) was the same as for Scotland.

The 2018 share of jobs in Dundee which are part time (35%) is very similar to that for Scotland (34%).

Table G.1 describes the structure of employment in Dundee in 2018 and also provides a comparison with the Scottish economy.

TABLE G.1: DUNDEE EMPLOYMENT STRUCTURE: 2018		
Industry	Share of Total Employment	
	Dundee	Scotland
Agriculture, forestry and fishing	<1%	3%
Mining and quarrying	<1%	1%
Manufacturing	6%	7%
Electricity, gas, steam and air conditioning supply	<1%	1%
Water supply, sewerage, waste management and remediation activities	1%	1%
Construction	4%	5%
Wholesale and retail trade; repair of motor vehicles and motor cycles	14%	14%
Transport and storage	2%	4%
Accommodation and food service activities	10%	8%
Information and communication	4%	3%
Financial and insurance activities	1%	3%
Real estate activities	2%	1%
Professional, scientific and technical activities	5%	7%
Administrative and support service activities	5%	8%
Public administration and defence; compulsory social security	7%	6%
Education	11%	7%
Human health and social work activities	21%	15%
Arts, entertainment and recreation	2%	3%
Other service activities	2%	2%
TOTAL	100%	100%

Note: Column data do not sum to 100% due to rounding

The four industries in Dundee with the largest employment levels were:

- Human health and social work activities: 21%.
- Wholesale and retail trade; repair of motor vehicles and motor cycles: 14%.
- Education: 11%.
- Accommodation and food service activities: 10%.

Collectively they accounted for more than half (56%) of total employment. The total combined share of 39% across Human health and social work activities, Education, Public administration and defence; and compulsory social security point to a degree of reliance on public sector employment. The comparable figure for Scotland is much lower (28%).

The data in the Table shaded in yellow denote industries with a share of total employment that is at least two percentage points greater than the corresponding share of employment in Scotland. For example, Accommodation and food service activities accounts for 10% of employment in Dundee compared to 8% across Scotland. There is evident specialisation in a number of activities including Manufacture of basic pharmaceutical products and pharmaceutical preparations, and Publishing activities.

A number of industries (shaded in blue) are underrepresented. These include certain types of professional services-e.g. Professional, scientific and technical activities.

In 2019, the average (median) gross wage for a full time job in Dundee was £29,830. That is, very similar to the figure for Scotland (£30,000).

Between May 2019 and March 2020, Dundee's unemployment rate was consistently above that of Scotland. It varied between 4.5% and 4.9% compared to between 3.1% and 3.3% at the national level.

The scale of deprivation in Dundee is evident in data from the 2020 Scottish Index of Multiple Deprivation. They show that 38% of the city's data zones are among the 20% most deprived ones in Scotland.

As another proxy measure of deprivation/socio-economic challenges, some 46% of pupils in Dundee are registered for free school meals. That is well above the Scottish level of 37%.

Summary:

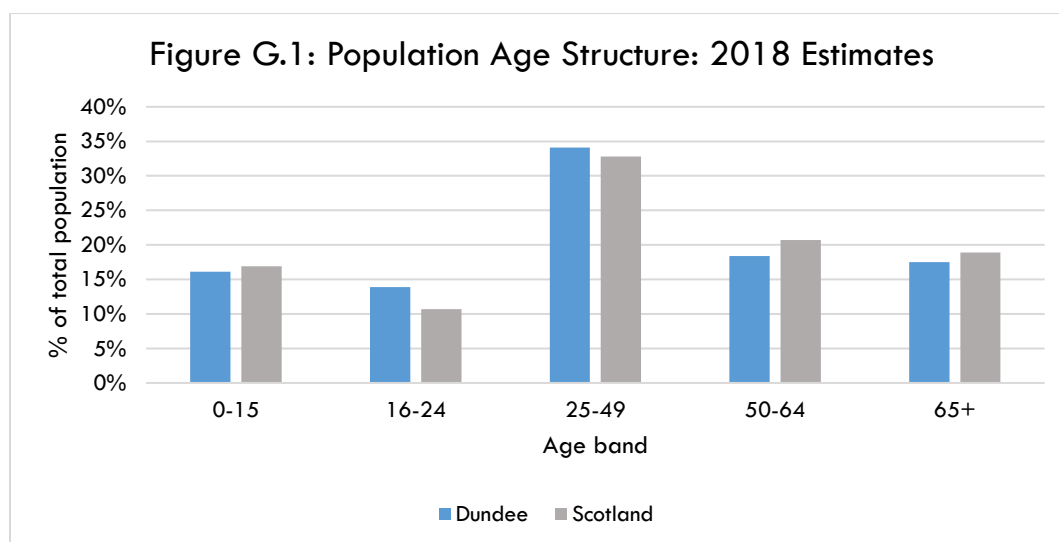
- Employment levels in Dundee grew between 2015 and 2018, at the same rate as in Scotland.
- Four industries are responsible for more than half of total employment.
- Distinctive features include a relatively high proportion of employment in the public sector, and specialisms in Education, Manufacture of basic pharmaceutical products and pharmaceutical preparations and Publishing activities.
- The average wage level in full time jobs is very similar to the Scottish figure.
- Unemployment rate above that for Scotland.

- The scale of deprivation/socio-economic challenges in Dundee is evident from an above average incidence of some of the most deprived areas in Scotland and of pupils registered for free school meals.

G.3 DEMOGRAPHIC PROFILE

The estimated 2018 population of Dundee was 148,750.

Figure G.1 describes the age structure of the city's 2018 population. It also compares this to the structure in Scotland.



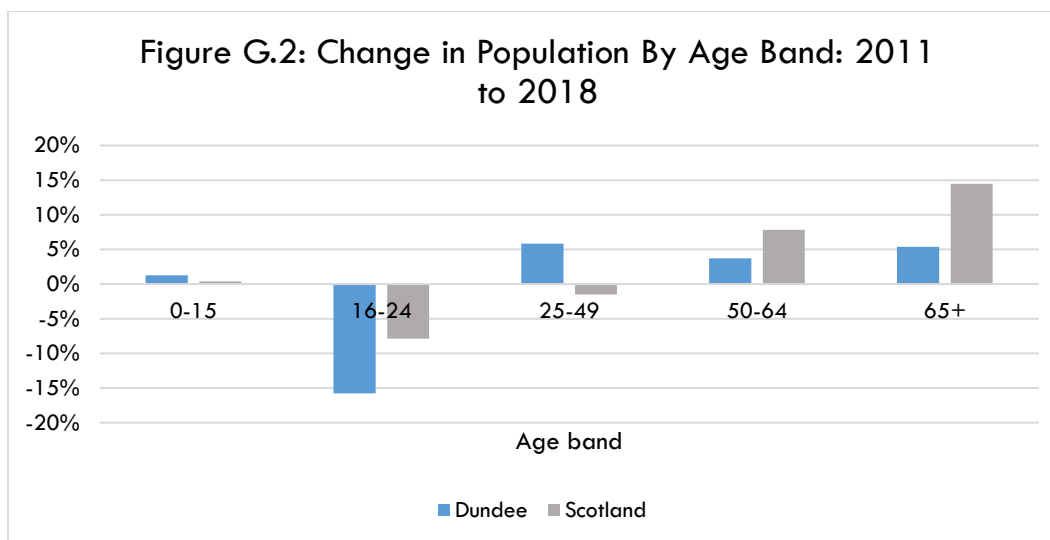
The age structures of Dundee and Scotland are broadly similar. The key difference is the higher share of 16-24 year olds in Dundee (14%) than in Scotland (11%): due at least in part to the level of FE and HE provision in the city. In turn, Scotland Dundee has a lower proportion of those aged 50+ (36%) than in Scotland (39%).

The estimated 2018 population of Dundee was 148,750. That is 1,550 (c1%) higher than the 2011 level (147,200). However, the rate of Dundee's population growth was below that in Scotland over the same period (2.6%).

Figure G.2, over, describes how the change in Dundee's population was spread across different age bands and compares this to the trend for Scotland.

The increase in Dundee's population was driven by growth in the number of 25-49 year olds in particular, as well as increases in the number of residents aged 50 and above. However, there was a significant decline (of more than 15%) in the 16-24 age group. While that age group also declined in Scotland the rate of decrease was much less.

There is projected growth of 0.3% in Dundee's population between 2018 and 2028. That is below the forecast rate of increase for Scotland (1.8%).



Summary:

The age structures of the populations of Dundee and Scotland are broadly similar. The key difference is the higher proportion of 16-24 year olds in the city.

Dundee's population increased between 2011 and 2018 driven by growth in the 25-49 age band in particular. However, this was accompanied by a significant decline in the number of 16-24 year olds. The overall rate of population growth in Dundee was less than half that in Scotland.

The forecast population growth for Dundee is below that projected for Scotland.

G.4 CONSULTEE'S ISSUES AND CONCERNS

One consultee stated that the timescale for proposed implementation of ATMS and surveillance for Dundee should be seen in the context of the city's desire to attract airlines and routes through improved surveillance infrastructure. *There was a desire to see Dundee's migration into the CSC brought forward to achieve expected benefits for Dundee Airport.*

A key issue is ensuring the future of Dundee Airport-and its safe operation. That includes camera operations, back up in case of camera failure and security of the ICT connections between the airport and the CSC. The potential impact of controlled airspace on pilot training also needs to be considered.

Some consultees believe that *remote camera operation may not be feasible* because of the number of aircraft operating to VFR (visual flight rules) and also due to the low sun during winter months.

It was also argued that *there is unlikely to be demand for 24 hour operations at Dundee.* Rather, any out of hours demand could be catered for by calling out air traffic management staff when required. Further, it was felt that Dundee City Council would not sanction regular opening between 2200 and 0600 because of noise restrictions around the airport.

Other points made were that:

- Dundee has had a largely stable workforce with posts filled in a manageable way such that there were no recruitment problems for the CSC to solve.
- There could be issues around implementing controlled airspace given the nearby general aviation airport at Perth.
- The benefits for Dundee from ATMS are solely through the deployment of surveillance technology. This could be delivered locally using the current infrastructure using RIIT.

G.5 PROFILE OF AFFECTED STAFF

The profile of the affected 11 staff currently employed at Dundee is:

- [REDACTED] are male.
- Eight are in ATCO-related roles, a further two are ATSAs, [REDACTED]
- Staff are broadly evenly split between those who live in Dundee itself and those living elsewhere including in Angus, Fife and Perth & Kinross.
- Most staff are aged 45 years or above, with an overall median age of 49 years.
- Around half the staff have up to seven years' experience in air traffic service, with a number of others having considerably more.

G.6 POTENTIAL IMPACTS

G.6.1 Economic Impacts

Changes in Direct Employment and Salary Payments at Dundee Airport: ATMS Compared to the Current Position

Table G.2 shows the change in direct employment and gross salary payments as a result of the movement of air traffic management from Dundee Airport to the CSC.

TABLE G.2: ATMS: REDUCTION IN AIR TRAFFIC MANAGEMENT STAFF AND SALARIES AT DUNDEE AIRPORT	
Number of Full Time Equivalent Posts	Total Annual Salary Payments
11	£571,000

The reduction of £571,000 in direct gross salary payments will lead to reduced wage expenditures in Dundee businesses (shops, etc.). We estimate that this will reduce employment in Dundee by a further 2.6 FTE posts.

Table G.3 shows the total quantified impacts.

TABLE G.3: ATMS: TOTAL IMPACTS FROM CHANGES IN DIRECT EMPLOYMENT AT DUNDEE AIRPORT		
Impact	Employment (FTE)	Total Annual Gross Salary Payments
Direct	11	£571,000
Induced	2.6	£57,000
Total	13.6	£628,000

Some consultees referred to the *loss of highly qualified/paid jobs in the local economy*. However, one consultee stated that the opportunities that ATMS will support at the airport are expected to greatly more than offset the loss of the air traffic management jobs. Another saw the main impacts being on the affected staff members rather than the local economy which had survived larger job losses in the recent past.

Wider Impacts

Some consultees saw ATMS as supporting the creation of greater economic impacts from Dundee Airport. These would include growing passenger numbers, development of hydrogen and electric planes and growth in the Airport's supply chain and in Airport based companies.

One consultee hoped that *enhanced radar/surveillance will help to attract new routes/airlines and potentially cheaper flights*. However, another saw this as dependent on what ATMS delivers compared to the current ATC operation. *If ATMS delivered a poor service this would reduce the reliability of air operations meaning reduced activity at the airport, possibly leading to its closure.*

An airline stated that controlled airspace would mean they were possibly more likely to look at serving Dundee with a small aircraft. However, while this would address some concerns there would still be an issue around runway length.

Changes in Direct Employment and Salary Payments at Dundee Airport: Surveillance Alternative Compared To ATMS

Table G.4 shows the change in direct employment and gross salary payments as a result of the implementation of the local surveillance alternative *rather than the CSC*.

TABLE G.4: LOCAL SURVEILLANCE ALTERNATIVE: INCREASE IN AIR TRAFFIC MANAGEMENT STAFF AND SALARIES AT SUMBURGH AIRPORT COMPARED TO ATMS	
Number of Full Time Equivalent Posts	Total Annual Salary Payments
27	£1,700,000

The increase of £1,700,000 in direct gross salary payments will lead to increased wage expenditures in Dundee businesses (shops, etc.). We estimate that this would increase employment by a further 7 FTE jobs in Dundee.

Table G.5 shows the total quantified impacts. The induced employment impact is based on the net salary total.

TABLE G.5: LOCAL SURVEILLANCE ALTERNATIVE: TOTAL IMPACTS FROM CHANGES IN DIRECT EMPLOYMENT AT DUNDEE AIRPORT		
Impact	Employment (FTE)	Total Annual Gross Salary Payments
Direct	27	£1,700,000
Induced	7	£154,000
Total	34	£1,854,000

These impacts are based on HIAL's estimates of direct employment and salaries. As shown at **Chapter 3** these have been challenged by Prospect who believe the figures are overstated. If that is the case then the impacts would be lower than those shown at **Table G.5**.

G.6.2 Community Impacts

Population

Consultees referred to the potential loss of skilled workers most of whom have family members who are employed in full time posts. These include positions in the NHS, local authorities, banking, retail businesses, plus self-employment.

One consultee expected that, while ATMS may generate additional air services, there will be a natural resistance from the public to fly from the airport.

G.6.3 Environmental Impacts

ATMS

The scale of the benefits from providing aircraft with the most efficient direct climb and descent profiles for use of Dundee airport were estimated as shown at **Table G.6**. The figures shown are for a lower and upper range of impacts based on different aircraft types that were modelled.

TABLE G.6: ATMS: POTENTIAL REDUCTION IN ANNUAL AIRCRAFT FUEL BURN AND CO2 EMISSIONS AT DUNDEE AIRPORT		
Based on Aircraft Type	Average Fuel Burn Reduction Per Year (tonnes)	Average CO2 Reduction (tonnes) Per Year
Saab 340	275	866
ATR42-600	306	1,076

Source: Independent assessment of changes to CO² emissions as a result of changes to the arrival procedures at HIAL aerodromes associated with the implementation of the ATM strategy. Trax International Limited (September 2020)

Thus, the impact lies in a range of between 275 and 306 tonnes reduction in fuel burned, and 866 and 1,076 tonnes reduction in CO₂ emissions.

Unfortunately, the independent report that contained these results does not comment on the significance of the scale of its forecast reductions. However, available data⁴ suggest that an average car produces around 2.1 tonnes of CO₂ emissions per annum. On that basis, the reductions shown at **Table G.6** equate to the annual removal of between 412 and 512 cars from the road network.

These impacts would, of course, require that air operators actually choose to use the climb and descent profiles provided. One airline did not perceive the potential fuel savings to be significant. Not all of their aircraft can fly the GPS approaches and even if they could their planes would still need to carry more fuel to allow for possible missed approaches.

Local Surveillance Alternative

As the local surveillance alternative would potentially provide the same surveillance capability as ATMS then its environmental impacts would also be the same (i.e. as shown at **Table G.6**).

⁴ <https://www.gov.uk/government/statistical-data-sets/nts09-vehicle-mileage-and-occupancy> and <https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2020>

**APPENDIX H: GEOGRAPHICAL DEFINITION OF LOCAL
AREAS AND SOURCES OF SOCIO-ECONOMIC AND
DEMOGRAPHIC DATA**

Geographical Areas

The following geographical areas were used for the socio-economic analysis for each of the airports:

- Benbecula-Uist-i.e. all of the islands between and including Berneray and Eriskay.
- Dundee-Dundee City.
- Inverness-Inverness City.
- Kirkwall-the mainland of Orkney.
- Stornoway-Lewis.
- Sumburgh-the mainland of Shetland; Shetland south mainland (i.e. from Cunningsburgh south).
- Wick John O' Groats-postcode areas KW1, KW2, KW3, KW5, KW6, KW12, KW14.

Comparisons have also been made with the “Highlands and Islands”. That is defined here as the local authority areas of Argyll and Bute, Eilean Siar, Highland, Moray, Orkney and Shetland.

For some data, comparisons were also made with Scotland as a whole.

Data Sources

Gross annual pay. Source: Office of National Statistics Annual Survey of Hours and Earnings 2019. These data are for full time jobs, defined as working more than 30 hours per week.

Employment levels and sectoral breakdown Source: Office of National Statistics Business Register and Employment Survey. This is a sample survey. The data do not include self-employed, covering only businesses which are registered for VAT and/or PAYE or with Companies House. A degree of caution is required in comparing changes in employment levels over time.

Household spending to achieve a minimum acceptable standard of living. Source: A Minimum Income Standard For Remote Rural Scotland: A Policy Update (Centre for Research in Social Policy, Loughborough University October 2016).

Unemployment rate. Source: Office of National Statistics. The rate is calculated as the number of claimants as proportion of working age population (16 years +).

Highlands and Islands Enterprise Fragile Areas and Employment Action Areas⁵ As part of its remit to sustain and develop the communities of the Highlands and Islands, Highlands and Islands Enterprise (HIE) supports projects in a range of *fragile areas*. These are characterised by declining population, under-representation of young people within the population, lack of economic opportunities, below average income levels, problems with transport and other issues reflecting their geographic location. *Employment action areas* are characterised by a lack of employment opportunities, over-reliance on a single employer or sector, decline in jobs base through major closures or structural change and persistent long-term unemployment. These two classifications can

⁵ Highlands and Islands Enterprise: Review of Fragile Areas and Employment Action Areas in the Highlands and Islands: Executive Summary November 2014

be viewed as a better measure of economic and demographic challenges facing areas in the Highlands and Islands than the Scottish Index of Multiple Deprivation.

Scottish Index of Multiple Deprivation 2020. Source: Scottish Government. This was used in the analysis for Dundee City which is outside the Highlands and Islands.

Percentage of pupils registered for free school meals. Source: Scottish Government School Meals Dataset 2019. This was used as a proxy measure for deprivation.

Population levels and age structure. Source: Office for National Statistics. These are mid-year estimates of population levels and structure for the years shown.

Population projections. Source: National Records of Scotland. These were produced in March 2020.

Inbound visitor expenditures. Sources: The Outer Hebrides Visitor Survey 2017, Shetland Islands Visitor Survey 2019, Orkney Islands Visitor Survey 2019, VisitScotland: Highland Factsheet 2018.