Agenda Item	**9**
Report No	**CC/05/23**

HIGHLAND COUNCIL

Committee: **Caithness Committee**

Date: **6 February 2023**

Report Title: **Wick Public Service Obligation**

Report By: **Executive Chief Officer Infrastructure, Environment & Economy**

1 Purpose/Executive Summary

1.1 The purpose of this report is to provide Members with an update on the Wick Public Service Obligation (PSO) since its inception in April 2022, and on forward plans as the service enters its second year.

2 Recommendations

2.1 Members are invited to **note** the contents of the report.

3 Implications

3.1 **Resource** – The Council has committed a resource of £300,000 per annum towards the PSO. As of the date of this report, approximately £155,000 of the resource for Year 1 has been either spent or provisionally allocated towards pending financial obligations, leaving an underspend of approximately £145,000.

3.2 **Legal** – There are no legal implications arising directly from this report.

3.3 **Community (Equality, Poverty, Rural and Island)** – The Wick PSO provides a direct economic and social benefit to Caithness and North Sutherland. It provides air services to the community within a guaranteed price range, enabling the community to access healthcare, leisure, employment and social opportunities in the rest of Scotland.

3.4 **Climate Change / Carbon Clever –** There are some carbon implications insofar as the delivery of air services results in a measure of carbon dioxide emissions. However, modelling work carried out by external consultants has shown that at certain load factors, the delivery of air services between Wick and Aberdeen is comparable with other modes of transport in terms of carbon emission (see **Appendix 1**).

3.5 **Risk** – Due to the current underperformance of the service with regards to passenger numbers, there is a risk of service failure. There is also a financial risk to the operator.

3.6 **Gaelic** – None arising from this report.

4 Background: Wick Public Service Obligation

4.1 Following the preparation and submission to Transport Scotland of a business case by Caithness Chamber of Commerce, and subsequent lobbying efforts by local partners, Scottish Government in 2021 awarded £1m per annum to support air services from Wick John O'Groats Airport by means of a Public Service Obligation (PSO), with the Highland Council committing a further £300,000 per annum.

A tender process was carried out and, following deliberation and scoring of received responses, a decision was made to award the contract to Eastern Airways to operate services between Wick and Aberdeen. The service started in April 2022 and has been in operation since then, with one change to the timetable agreed with local stakeholders in August 2022. In July 2022, the Council appointed a Project Officer to oversee the contract with Eastern Airways and to work to support and promote the services.

The PSO provides a set schedule and fare structure, agreed between the Council and the operator to provide services that best fit the needs of the community. The schedule and fare structure for Year 1 of the PSO are as follows:-

Timetable

Wick-Aberdeen
- Monday - 7:55am, 11:45am
- Tuesday - 7:55am, 11:45am, 7:55pm
- Wednesday - 11:45am, 7:25pm
- Thursday - 11:45am, 7:25pm
- Friday - 11:45am, 7:25pm
- Saturday - No scheduled flights
- Sunday - 3:45pm

Aberdeen-Wick
- Monday - 10:40am, 6:20pm
- Tuesday - 10:40am, 6:20pm
- Wednesday - 10:40am, 6:20pm
- Thursday - 10:40am, 6:20pm
- Friday - 10:40am, 6:20pm
- Saturday - No scheduled flights
- Sunday - 2:40pm, 6:20pm

Fare Structure
- Value - £49.99-£69.99
- Standard -£89.99-£103.99
- Flexible - £123.99

There are a number of different calculations which factor into seat pricing and availability, and in order to support the availability of fares at the very lowest price to benefit the local community, there is a need to drive additional revenue where it is possible to do so without adversely impacting demand. As such, certain days which see consistently high demand from business travellers such as Sundays and Mondays would tend to command a slightly higher price point.

As part of the tender process, the Council agreed to a "fuel price cost adjustor" mechanism, whereby it would assume liability for any increases in the cost of fuel over the course of the contract. Due to the war in Ukraine and subsequent global cost increases, this quickly resulted in a significant potential liability, and it was agreed in June 2022 that a £10 "fuel price surcharge" would be implemented to help reduce this liability, and as such the base price of the value ticket has risen to £49.99, with similar rises across the standard and flexible fare bands.

	Fuel Projections	Fuel actuals	Difference	Surcharge Income	Adjusted Difference
Apr-22	£ 17,093.16	£ 21,571.84	-£ 4,478.68	£ -	-£ 4,478.68
May-22	£ 17,965.26	£ 36,173.71	-£ 18,208.45	£ -	-£ 18,208.45
Jun-22	£ 17,616.42	£ 34,779.23	-£ 17,162.81	£ 8,280.00	-£ 8,882.81
Jul-22	£ 17,965.26	£ 30,278.06	-£ 12,312.80	£ 7,120.00	-£ 5,192.80
Aug-22	£ 18,314.10	£ 24,298.97	-£ 5,984.87	£ 7,730.00	£ 1,745.13
Sep-22	£ 18,139.68	£ 24,735.91	-£ 6,596.23	£ 7,940.00	£ 1,343.77
Oct-22	£ 17,965.00	£ 24,228.00	-£ 6,263.00	£ 9,440.00	£ 3,177.00
Nov-22	£ 18,314.00	£ 23,468.00	-£ 5,154.00	£ 8,290.00	£ 3,136.00
Dec-22	£ 14,651.00	£ 20,661.00	-£ 6,010.00	£ 8,290.00	£ 2,280.00

As can be seen, while the fuel price remains above projections, the income from the surcharge is effectively covering this difference and mitigating against the Council's liability. Should fuel prices decrease, the surcharge will be adjusted downwards or removed entirely in line with this.

5 Current Position – Passenger Figures & Performance/Reliability

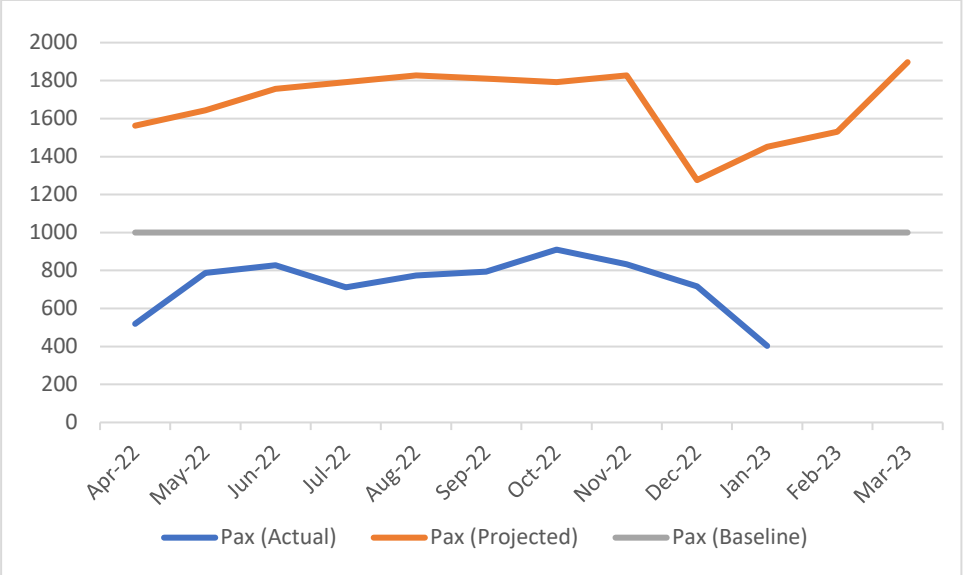
5.1 Passenger Numbers

There have been challenges to date in achieving the volume of passenger numbers projected in the original contract submission. This is in part due to significantly reduced demand from the business community post-Covid.

As can be seen from the below figures, the trend has been generally upwards. This has been helped by a schedule change in August 2022 which introduced services at times more amenable to business use.

A temporary schedule reduction was introduced over the Christmas – New Year period in 2022/early 2023, and this has also proven successful, with little reduction in passenger numbers and significantly reduced operating costs. It is anticipated that this schedule change may be extended later into January 2024.

Month	Pax (Actual)	Pax (Projected)	Pax (Baseline)	Diff (%)
Apr-22	520	1563	1000	33%
May-22	788	1643	1000	48%
Jun-22	828	1757	1000	47%
Jul-22	712	1,792	1000	40%
Aug-22	773	1,827	1000	42%
Sep-22	794	1,810	1000	44%
Oct-22	910	1,792	1000	51%
Nov-22	832	1,827	1000	46%
Dec-22	716	1,276	1000	56%



The passenger profile has changed considerably from the initial assumptions provided in the PSO business case. Based on historical passenger surveys at WJOG carried out in 2017, this showed a profile of around 75% business usage of the Aberdeen route, with just 25% accounted for by leisure travel.

Survey work carried out by Eastern Airways in paints a different picture of the current usage profile of the service. Just 35% of those surveyed said they were flying for business purposes, with 52% giving a clear leisure-related reason (attend event, visit family, etc.).

30% of passengers connected to an onward destination at Aberdeen, with the vast majority (74%) doing so via plane. The onward destinations are largely to UK domestic airports, with London destinations occupying around 30% of the onward travel market.

Given the continued shortfall in passenger numbers compared to projections, there are concerns about the long-term sustainability of the service, and various options are being explored to ensure that the operation of lifeline air services to and from the region can be secured.

Forward modelling shows that service becomes financially sustainable assuming a continuation of the current subsidy when a 40-50% increase along both axes is achieved – that is, in scenarios where both passenger numbers and average revenue per passenger increase by around the 40-50% mark simultaneously.

5.2 **Performance/Reliability**

The service performance has been generally positive by comparison to other domestic flights. Looking at those services which arrived at their destination within 15 minutes of scheduled time of arrival, we can see that the Wick-Aberdeen route consistently outperforms compared to domestic services from Aberdeen, and to domestic services across the UK as a whole.

	Wick-Aberdeen	Aberdeen Domestic	UK Domestic
April 2022	77%	67%	56%
May 2022	89%	67%	49%
June 2022	81%	58%	43%
July 2022	84%	49%	42%
August 2022	72%	52%	48%
September 2022	82%	53%	45%
October 2022	77%	55%	54%

6 Ongoing / Future Work

6.1 There is a need for the Council and the operator to work together to identify options to reduce service costs and increase average per passenger revenue where possible, without restricting demand, to ensure that the service becomes financially sustainable in Year 2 and beyond. Various options are currently being explored with regards to the schedule and the fare structure to ensure the long-term sustainability of the service while retaining the provision of lifeline air services to the community

6.2 A significant focus on route marketing is being developed, and the Council has contracted a marketing agency (3x1) with significant experience in the aviation industry, to run a series of marketing campaigns targeting leisure travellers in connecting destinations via Aberdeen (Manchester and Belfast).

6.3 Engagement with the business community continues, and the Project Officer has had some success in agreeing bespoke fare packages for businesses in the region. Work is ongoing to engage with Dounreay Site Restoration Ltd as one of the major employers in the region, and there are positive indications that a bespoke package will be agreed with them in the near future.

Survey work is currently being undertaken with Caithness Chamber of Commerce to identify the future requirements of the business community, and the results of this will be used to shape any service specification agreed for Year 2.

6.4 From the start of the service, there has been significant indication of local demand for a Wick-Edinburgh route. This was one of the two routes originally proposed as part of the PSO, and Eastern Airways has developed a working model for a proposed additional Edinburgh leg on the existing Wick-Aberdeen route. The Project Officer is currently engaging with colleagues in the Legal department to understand whether this would be achievable within the bounds of the existing contract.

Designation:	Executive Chief Officer Infrastructure, Environment & Economy
Date:	24 January 2023
Authors:	David Swanson, Project Officer (Wick Public Service Obligation)
Background Papers:	Appendix 1 – Wick John O'Groats-Aberdeen International PSO Service: Carbon Footprint Assessment

Appendix 1

Wick John O'Groats Airport
Ceangailte · Connected

The Highland Council
Comhairle na Gaidhealtachd

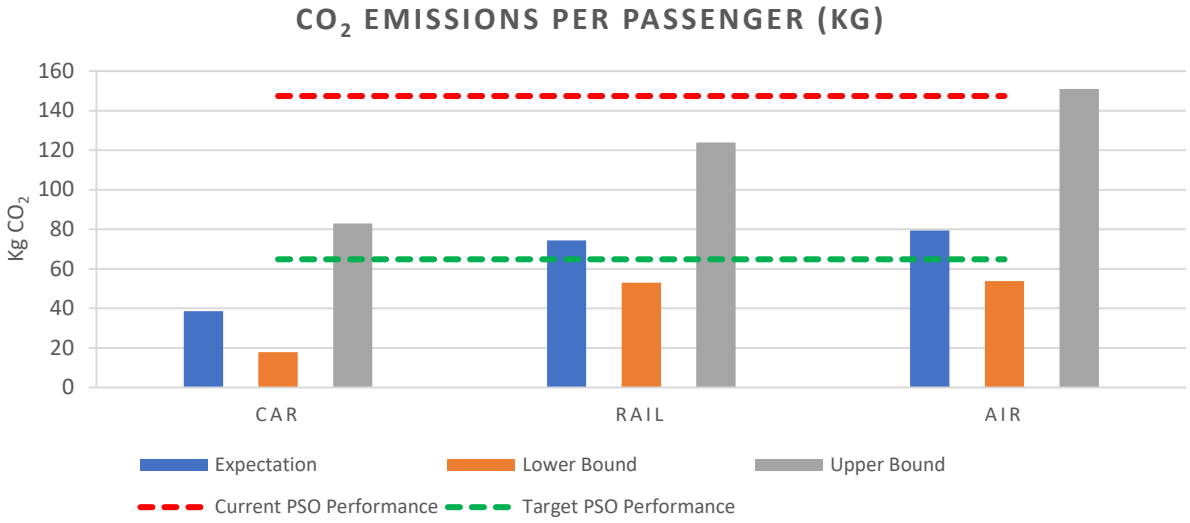
Wick John O'Groats – Aberdeen International PSO Service: Carbon Footprint Assessment

October 2022

Prepared with Assistance from
NORTHPOINT
Aviation, Travel and Tourism Consultants

Executive Summary

Northpoint Aviation Services Ltd has been engaged by the Highland Council to undertake a follow-up analysis of the carbon emission performance of the Public Service Obligation (PSO) service from Wick John O'Groats Airport. The results show that although flying is between 8-10 times quicker (airport to airport) than the other modes of transport available for journeys between Wick and Aberdeen, based on current load factors, it also has the greatest carbon footprint. This is shown as the red line in the figure below.



That being said, it is important to note that during the start-up phase of a new air service passenger numbers are often suppressed while awareness of, and trust in, the route grows. Consequently, there are passenger growth scenarios, which are within reasonable boundaries of what Wick John O'Groats Airport could achieve, where the PSO route will achieve parity with, or even exceed, the carbon efficiency of other modes – most notably rail. If the target load factor for the PSO route (i.e., 58%) is eventually achieved - as represented by the green line in the Figure above – then the relative performance of the air route in terms of carbon emissions will improve dramatically.

In addition to increased passenger numbers, various supplementary options can be explored to reduce the carbon footprint of the PSO route (or to offset it). These include, but are not limited to, participation in the UK Emissions Trading Scheme, the deployment of full or partial Sustainable Aviation Fuel, and if passenger growth exceeds expectations, switching to a larger, more efficient turboprop aircraft. However, these have their own technological and associated financial challenges which would require further investigation.

1. Introduction

Northpoint Aviation Services Ltd has been engaged by the Highland Council to undertake a follow-up analysis of the carbon emission performance of the Public Service Obligation (PSO) service from Wick John O'Groats Airport. The aim of this report is to compare the PSO's carbon footprint against alternative surface modes using actualised data on the aircraft, schedule, and load factors. In addition to this, a second aim is to provide a carbon emission baseline for the service which can then be monitored and improved upon.

2. Methodology

The approach taken in this report is to propose analysis on a vehicle-by-vehicle basis. Broadly, current Department for Business, Energy & Industrial Strategy (BEIS) conversion factors for carbon reporting do not accurately represent the specific emissions associated with the particular vehicles, rolling stock, or planes used on individual journeys due to its top-down methodology for calculating carbon-emissions factors. Therefore, where able, we have followed a bottom-up approach to calculating vehicle emissions directly from fuel consumption.

The best available routes for each mode of transport have been based on upon the 'recommended' journey based on a Google map search.

Road:

Emission factors have been calculated using the data provided for cars and engine sizes by BEIS. Using data from the National Travel Survey 2021, reliable car occupancy rates can be adopted as well as providing an upper and lower bound. By dividing the car's carbon footprint by the occupancy rate, a per passenger carbon footprint can be calculated.

Rail:

The methodology for calculating rail journey is atypical as it takes account not only of journey distance but also time. This provides advantages, such as being able to take account of whether a train is on a 'stopping' or 'high-speed' journey. In addition, using manufacturer data, a more accurate estimate of a vehicle's carbon footprint for each rail class and carriage configuration can be determined. The total carbon footprint of the train is then divided by the number of passengers on a train. The seat-mile occupancy rate has been assumed to match that reported by ScotRail in 2019. We believe this is a sound basis on which to undertake the analysis because, despite the impact of COVID on rail travel, the current operating schedule has reflected this by reducing the number of services by 55%. The calculations reflect each leg of the rail journey summed into a total carbon footprint.

Air:

Airplane emissions have been calculated in line with ICAO recommendations. The methodology follows a dynamic approach which calculates carbon emissions by splitting the phase of a flight into two sections the LTO (landing, take-off) phase and the CCD (cruise, climb, descent) phase. Initially, the fuel consumption is predicted for a specific airplane for each phase of flight from which carbon emissions can be estimated.

A radiative forcing multiplier is calculated and applied in line with guidance from EcoTransIT World methodology, which determines that the critical height for CO_2 emissions to be more damaging happens at cruise altitudes of >9km. Actual passenger load factors and predicted load factors have been provided by Wick John O'Groats Airport in order to more closely model the carbon footprint per passenger for the PSO route.

The annual carbon footprint from the Wick-Aberdeen PSO route has been calculated by multiplying the number of scheduled flights by the average carbon footprint of an individual flight.

Modal Carbon Emission Comparison

Road:

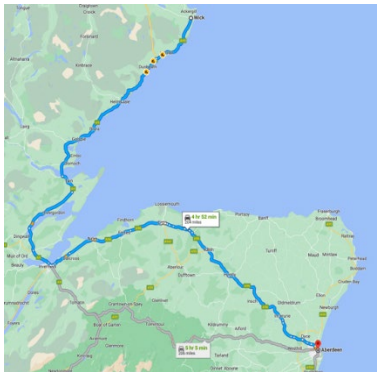


Figure 1: The car journey

The fastest and shortest route for a car journey between Wick and Aberdeen is via the A9 and A96. It has been assumed that all car journeys have taken the route shown in Figure 1. This journey is 204 miles and is expected to take 4 hrs 52 mins[1].

The parameters used for the expected, upper and lower bound passenger carbon footprints are described in the table below.

Road	*Vehicle Description*	*Assumed Occupancy Rate*	*Carbon Footprint per passenger (kg)*
Lower Bound	Small car, hybrid engine	1.9	17.94
Expected	Medium car, 'average' engine	1.5	38.36
Upper Bound	Large car, petrol engine	1.1	82.89

Table 1

Rail:

The fastest and most comparable rail journey follows the route shown in Figure 2. It has two legs.

The first leg is from Wick to Inverness on a two-carriage Class 158 which takes 4 hrs 32 mins. The second leg has been assumed to be on a 3-carriage Class 170 which takes 2hrs 25 mins, but it has also been reported to intermittently use a 2-carriage Class 158 as well.

The upper and lower bounds for a passenger's carbon footprint come from varying the load factor according to
Table 2.

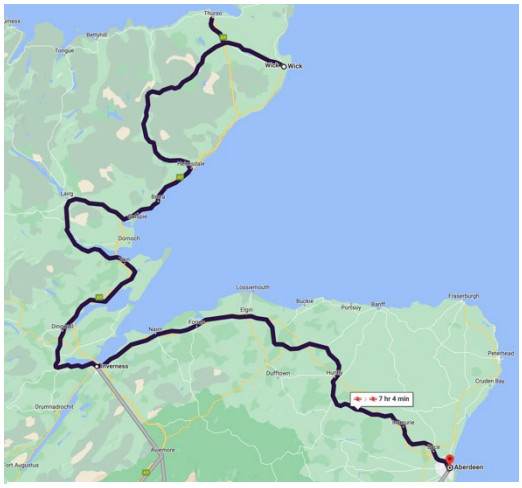


Figure 2: The route of the rail journey

[1] According to Google Maps.

Rail	Wick-Inverness seat-mile occupancy rate	Inverness-Aberdeen seat-mile occupancy rate	Carbon Footprint per passenger (kg)
Lower Bound	10.2%	10.8%	53.07
Expected	17%	18%	74.30
Upper Bound	23.8%	25.2%	123.84

Table 2

Air:

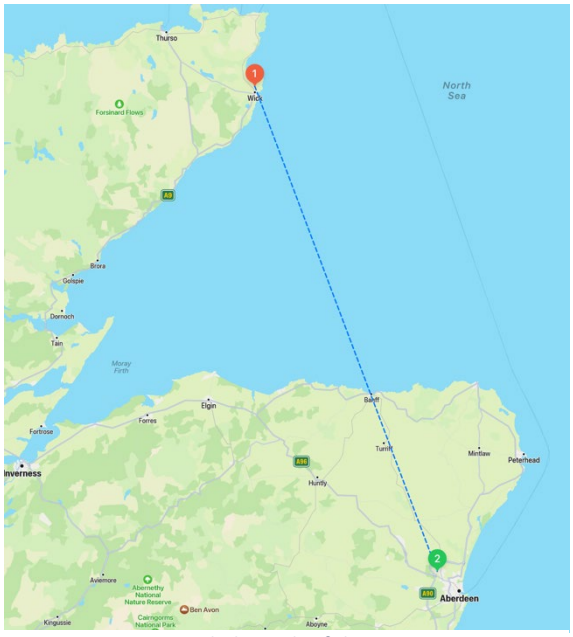


Figure 3: Flight path of the PSO route

Figure 3 shows a direct flight taken by an aircraft on the PSO route. The direct greater-circle distance is 150km, but an additional 9% flight distance has been added to account for aircraft positioning, indirect flight paths and delays. This means the predicted sector length to be 163km.

The aircraft deployed on this route is a Jetstream 41 which on this route has a typical flight time, gate-to-gate, of 40 minutes.

The expected, upper bound and lower bound load factors have been estimated using actual passenger numbers and predicted passenger numbers provided by Wick John O'Groats Airport.

Air	Load Factor	Carbon Footprint per passenger (kg)
Lower Bound	70%	53.90
Expected	47.5%	79.44
Upper Bound	25%	150.93

Table 3

The current and target carbon footprint for a passenger on a PSO journey has been compared to the route analysis in Figure 4. As the PSO route has recently started, the current passenger numbers reflect the typical pattern of early start-up phase of all new air routes. The result is lower load factors than might otherwise be expected, leading to a higher per passenger carbon footprint of 147.39kg CO_2. However, once local people and businesses, and visitors to Caithness have become aware of the route and what it offers, the route will build passenger volumes increasing throughput to a commercially viable level of c.58% (which is the target load factor of Wick John O'Groats Airport). At this point the CO_2 emissions for the journey will become comparable to other modes of transport as can be seen in Figure 4, notably in comparison to rail.

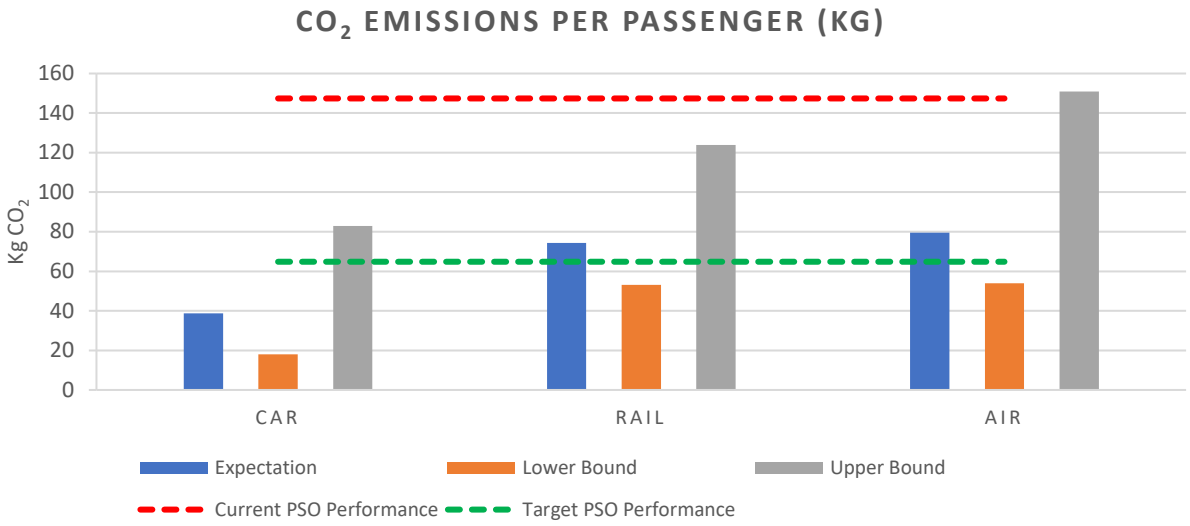


Figure 4: Comparison of current and target PSO performance on a per passenger basis

The per passenger-km performance of the aircraft type being used on the PSO route (i.e. the Jetstream 41) is less carbon efficient than rail and road alternatives. This in part reflects the fact the journey length of the plane is substantially shorter in terms of kilometres travelled because it takes a direct path over the North Sea compared to the land journey which must travel along the coast or through the hills of North-East Scotland. It also means the flight cycle (take-off, climb, cruise, descent, landing) works sub- optimally in terms of carbon efficiency, although the journey time savings are large.

The graph showing the comparison can be seen in the Appendix.

3. Baseline Position

The baseline for CO_2 emissions of the PSO route can be seen in Table 4, the number of aircraft movements have been gauged using historical aircraft movements and extrapolating the present schedule. The CO_2 emissions per movement have been calculated as outlined in the methodology section. This means that, under the current conditions, the PSO operation is projected to generate 1,328 tns CO_2.

	PSO Y1 Performance
Total aircraft movements	1,217
CO_2 emitted per aircraft movement	1091 kg
Total CO_2 emitted	1,328 tns

Table 4

The performance of a PSO can also be evaluated on a per month basis as seen in Figure 5. The target CO_2 emissions have been calculated using target passenger number provided by Wick John O'Groats Airport. Figure 5 shows that should the route see normal or high passenger growth the carbon footprint per passenger will reduce over time. However, should the PSO route see little to no passenger growth, it can be expected that the carbon footprint for each passenger will stay the same or even rise in the coming months.

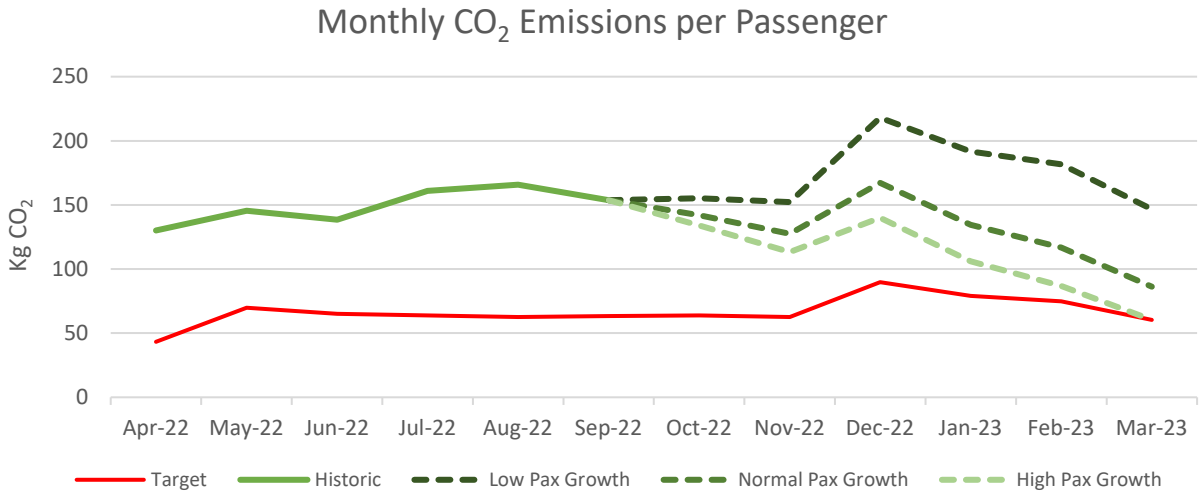


Figure 5: A comparison of CO_2 emissions per passenger based upon predicted passenger growth

4. Scope for Carbon Offsetting or Reduction

There are multiple methods that could be taken to reduce the carbon emissions generated by the PSO Service. The first method would be to offset the associated carbon production. While there are numerous means of doing this, simplest would be offsetting through the UK Emissions Trading Scheme (ETS). The current price of the UK ETS is set by HM Treasury; using this to calculate offsetting for the PSO service is set out in Table 5 overleaf. However, it is worth noting that recent Government guidance associated with Green Book appraisals suggests that based on the UK's Net Zero emissions targets, the price of the offsets should be >4 times current ETS levels.

	Offsetting
Total CO_2 emitted	1,328 tns
Current UK ETS (per tn)	£62.10
Total cost of offsetting	£82,469

Table 5

A second means of reducing the carbon footprint of the PSO route is to use sustainable aviation fuel (SAF) over kerosene. SAF provides a reduction of up to 80% in carbon emissions compared to jet fuel. At a blend rate of 30% SAF to 70% kerosene, this would result in 320 tonnes less carbon being emitted; at 50% the reduction would be 530 tonnes or 40% overall. However, the concern about SAF is that currently it would probably cost 3.0-3.5 times the cost of kerosene, although that differential may reduce over time; the blend also needs to be certified and carefully managed before it can be uplifted, which requires access to relevant equipment and expertise.

Finally. looking forward, should passenger numbers on the PSO route grow as hoped, the per-passenger carbon footprint could be reduced by using a larger and more efficient aircraft. An example would be the ATR 42-600 for which is the initial PSO evaluation was performed.

Appendix

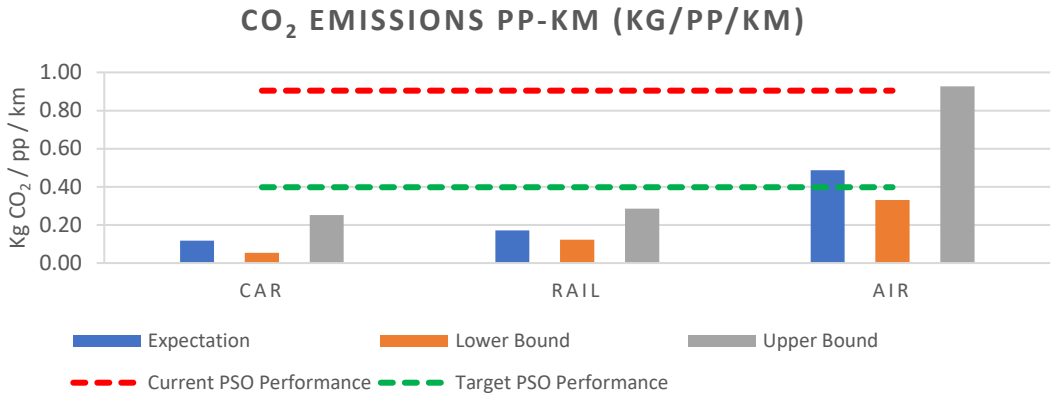


Figure 6: Comparison of current and target PSO performance on a pp/km basis

Tabled Data used for Figures:

Figure 4 data:

CO_2 EMISSIONS PP (KG)	EXPECTATION	LOWER BOUND	UPPER BOUND
CAR	38.68	17.94	82.89
RAIL	74.3	53.07	123.84
AIR	79.44	53.9	150.93

	CO_2 EMISSIONS PP (KG)
CURRENT PSO PERFORMANCE	147.39
TARGET PSO PERFORMANCE	64.83

Figure 5 data: CO_2 Emissions pp (kg)

MONTH	TARGET	HISTORIC	LOW PAX GROWTH	NORMAL PAX GROWTH	HIGH PAX GROWTH
APR-22	43.28	130.08			
MAY-22	69.72	145.37			
JUN-22	65.20	138.35			
JUL-22	63.93	160.89			
AUG-22	62.70	165.78			
SEP-22	63.29		153.68	153.68	153.68
OCT-22	63.93		155.23	142.09	133.89
NOV-22	62.70		152.25	127.58	113.28
DEC-22	89.78		218.00	167.21	139.90
JAN-23	78.95		191.71	134.60	106.12
FEB-23	74.82		181.69	116.77	86.75
MAR-23	60.39		146.64	86.27	60.39

Figure 6 data:

CO_2 EMISSIONS PP-KM (KG/PP/KM)	EXPECTATION	LOWER BOUND	UPPER BOUND
CAR	0.12	0.05	0.25
RAIL	0.17	0.12	0.29
AIR	0.49	0.33	0.93

	CO_2 EMISSIONS PP-KM (KG/PP/KM)
CURRENT PSO PERFORMANCE	0.90
TARGET PSO PERFORMANCE	0.40