

Hawarden Airport

Proposal to Adopt GNSS Approaches and amend Conventional Instrument Flight Procedures at Hawarden Airport Airspace Change Proposal (Annex A) Environmental Impact Assessment

ISSUE 1

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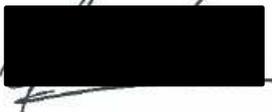
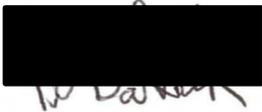
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Introduction

ACP Environmental Impact Assessment

Hawarden Airport is operated as a licensed aerodrome by Airbus Operations Ltd. Airbus Operations Ltd contracts the provision of Air Traffic Services (ATS) to Serco, who are an Air Navigation Service Provider (ANSP) approved under Article 7 of the European Commission Regulation 550/2004. In its capacity as an ANSP, Serco must satisfy the UK Civil Aviation Authority (CAA) as to their ability to provide safe and effective Air Navigation Services.

The Air Traffic Services Unit (ATSU) at Hawarden Airport currently provides services to aircraft to operate at the airport using both visual arrival and departure procedures and Instrument Flight Procedures (IFPs). The current conventional IFPs utilise ground based navigation aids. These conventional procedures require a regular review cycle, which occasionally identifies changes required to remain compliant with the current IFP design criteria. A recent review has identified several such changes. In addition, the primary airline ATI and the airport operators, Airbus wish to introduce Satellite Navigation based approaches (GNSS approaches) at the airport. These changes fall within the scope of the Airspace Change Process.

CAA Civil Aviation Publication (CAP) 725 sets out the processes that are to be followed in applying for making a change to any airspace. This Airspace Change Proposal (ACP) has been developed in accordance with the requirements specified in CAP725.

CAP 725 requires the sponsor (Serco) of the ACP to carry out a consultation with the airspace users who may be directly or indirectly affected by the change and with organisations representing those on the ground who may be affected by the environmental impact of the change; As the change proposed has been identified only to have an impact on aviation stakeholders, the public were not being canvassed as part of this process, however they were free to participate in this process if they so desired

This document is the Environmental Impact Assessment. This document forms Annex A to the Airspace Change Proposal.

A number of Appendices provide amplifying detail where necessary, including a comprehensive Glossary of the aviation terminology used. Additionally, as the required changes affected by requirements arising from a number of UK, European and International Policies and Strategies, a list of source documents is included for reference by consultees.

ACP Environmental Impact Assessment

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List of Abbreviations

ACP Environmental Impact Assessment

ACP	Airspace Change Proposal
ALT	Altitude
ANSP	Air Navigation Service Provider
ATC	Air Traffic Control
ATS	Air Traffic Service
CAA	Civil Aviation Authority
CAP	Civil Aviation Publication
CTA	Control Area
GA	General Aviation
ICAO	International Civil Aviation Organisation
IFR	Instrument Flight Rules
NATMAC	National Air Traffic Management Advisory Committee
PANS-OPS	Procedures for Air Navigation – Operations
SARG	Safety and Airspace Regulatory Group
SSSI	Site of Special Scientific Interest
UK AIP	United Kingdom Aeronautical Information Publication
VFR	Visual Flight Rules

Environmental Impact Assessment

1 Introduction

- 1.1 The CAA requires that sponsors of airspace change take due regard for the need to reduce, control and mitigate the environmental impacts of aircraft operations, including disturbance caused to the general public arising from aircraft noise and emissions from aircraft engines.
- 1.2 The proposal for the adoption of GNSS approaches to runways 04 and 22 at Hawarden Airport have been designed to operate with no significant change to the existing aircraft routings or noise abatement procedures.
- 1.3 The required changes to the conventional instrument approach procedures are to comply with design safety requirements for these procedures. Notwithstanding the need, the changes are relatively minor in nature and therefore should have minimal or no impact.
- 1.4 The layout of a GNSS procedure provides a defined routing over a greater portion of the approach than is currently provided by conventional IFPs. This known routing allows an aircraft to better plan its descent and configuration in order to optimize its efficiency. This optimization can lead to both a reduced noise exposure and reduced aircraft engine emissions. This can be quantified to some degree for a Beluga aircraft, based on fuel burn; for every additional mile flown an additional 18kg of fuel is used (equating to approximately 31 litres).
- 1.5 As such there will be no negative environmental impact but a positive change is envisaged by reductions in unnecessary fuel burn.

2 In the vicinity of Hawarden Airport

- 2.1 There is no change to the noise abatement procedures or circuit procedures resulting from this ACP.

3 Further away from Hawarden Airport

- 3.1 There will be no impact on operators or the environment further away from Hawarden Airport.
- 3.2 The GNSS procedure for runway 04 and 22 establishes Final Approach Fixes which are broadly coincident with the current conventional IFPs. Therefore there will be no significant change to the current distribution of flights on final approach to the GNSS approaches when compared to the existing conventional IFPs.
- 3.3 The GNSS procedure for runway 04 and 22 establishes Initial Approach Fixes and waypoints which are within similar areas to the typical flight tracks for aircraft using the conventional IFPs (as depicted in Chapter 14 diagrams 5 & 6). Additionally, the way points and approach fixes which are not overflown but 'must be turned within', due to varying aircraft performance and pilot or FMC navigation, will give rise to a slight spread of the flight tracks similar to the current situation with the conventional IFPs. As such there will be no change to the distribution of flights on final approach to the GNSS approaches when compared to the existing conventional IFPs. It is also expected that there will be no significant concentration of flights in any area due to the points raised above and the other conventional IFPs remaining available for use.
- 3.4 Diagram 1 and 2 show simplified tracks of the GNSS procedures (including the missed approach track), in red, for both runway 04 and runway 22. These depictions are overlaid with sample actual traffic data for IFR arrivals¹, in yellow.

¹ The depicted traffic are IFR arrivals measured on 2nd, 4th, 7th, 11th, 16th, 23rd & 24th May, 1st, 20th, 22nd and 27th June, plus 4th and 7th July 2017

Diagram 1

Current sample IFR arrival traffic for Hawarden runway 04 compared to typical proposed GNSS arrival tracks.

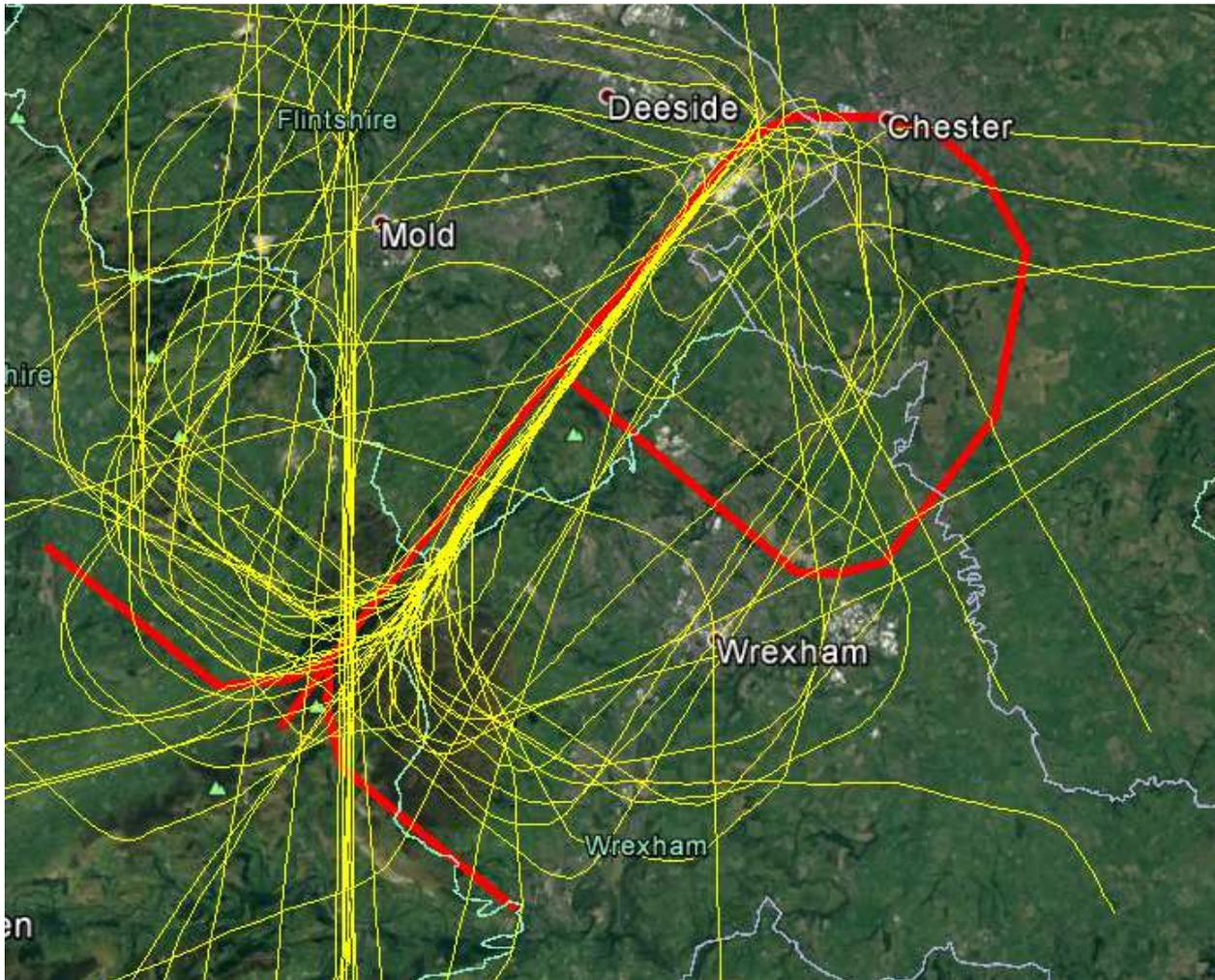
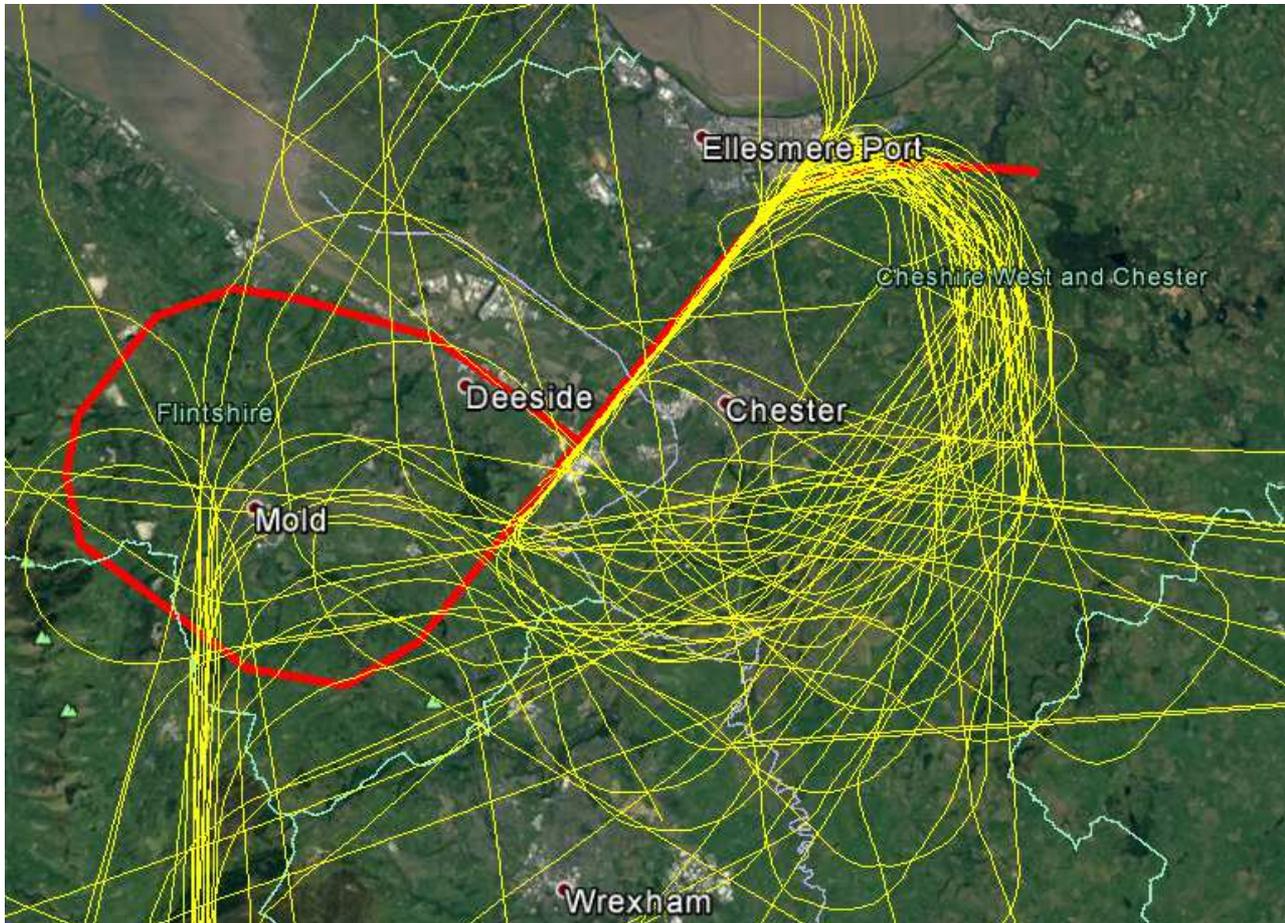


Diagram 2

Current sample IFR arrival traffic for Hawarden runway 22 compared to typical proposed GNSS arrival tracks.



- 3.5 The alteration of the FAF on the conventional IFPs is displaced 0.5 Nautical miles to the northeast. As the conventional IFPs are subject to pilot skill and the accuracy of track keeping of aircraft at this range can only realistically be guaranteed within approximately 0.5nm. Accordingly, this change is within the same parameters as the current IFPs.
- 3.6 As a result of the above it can reasonably be assured that adoption of the proposed GNSS procedures and the amendment of the conventional IFPs will not materially change the existing typical flight racks of arriving aircraft using the IFPs. This in turn means that there will be no new noise nuisance generated by their adoption and amendment; nor will there be any increase in CO₂ generation which might result from extended aircraft routings.
- 3.7 It can be seen from the proposed GNSS missed approach procedures that these are significantly different from the convention IFP missed approach procedures, both in terms of layout and extent. Whilst this has the potential to generate additional noise nuisance and increase CO₂ emissions, it must be remembered that;
- The missed approach procedure is rarely required (as shown in diagrams 1 & 2 above).
 - On rare occasions that aircraft make a missed approach, they are often provided with more efficient radar vectors as opposed to flying the full missed approach.

c) Training aircraft (making multiple approaches) invariably follow b) above.

Hawarden Airport does not specifically record the occasions that missed approaches are flown.

3.8 Arriving VFR traffic will continue to operate in the same manner and use the same routings as present.

4 Distribution of GA activity

4.1 The revised conventional IFPs and GNSS procedures proposed to be implemented will allow for continued use of the airspace in the same manner as present. As such there should be no change to the distribution of GA activity.

5 Climate change

5.1 The proposed GNSS procedures cannot absolutely guarantee consistency of optimised routings for IFR traffic, however it will provide the scope to increase the adherence to these. Accordingly no specific quantifiable statements can be made in relation to addressing climate change.

6 Visual impact and tranquillity

6.1 No negative visual impact or impact on tranquillity has been identified. The design of the procedures in line with the existing procedures will ensure that there is no additional visual impact or impact on tranquillity.

6.2 The potential for the focussing of traffic, and therefore increase in noise nuisance, has been considered but not deemed an issue in respect to the proposed GNSS procedures as outlined in 3.1 – 3.8 (inclusive) above.

7 Air quality

7.1 Technical guidance from the CAA does not require Hawarden Airport to make an assessment of air quality as neither the airport, nor the surrounding airspace, lie within an Air Quality Management Area (AQMA).

8 Areas of Special Scientific Interest & Sites of Special Scientific Interest

8.1 Areas of Special Scientific Interest (ASSI) and Sites of Special Scientific Interest (SSSI) are based upon site based nature conservation, protecting habitats for plant and animal species dwelling within them, or for the protection of specific geological features. Overflight of these areas at typical aircraft operating levels (above 500ft) have no impact on them. The only impact would arise if these areas were to be physically disturbed.

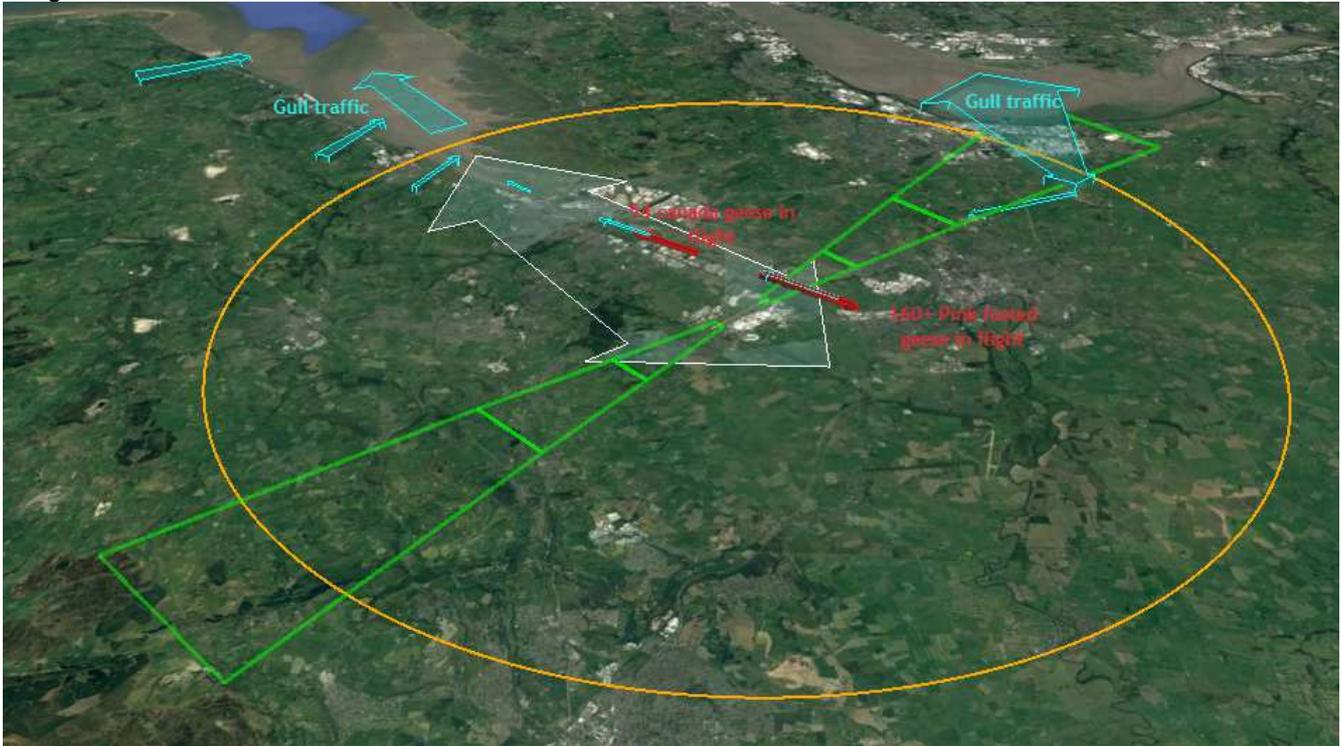
8.2 As there are no associated ground based developments associated with this change there is no impact on any ASSI or SSSI.

8.3 There are numerous SSSIs beneath the route of the approaches; however as both the amended conventional IFPs and the GNSS procedures follow a similar agreed to the current conventional IFPs, there will be effectively no change to the status quo.

9 Bird Migratory Routes

9.1 The known daily bird migratory routes in the vicinity of Hawarden are depicted below (diagram 3).

Diagram 3



9.2 Whilst these routes do transit the amended conventional IFPs and the proposed GNSS procedures, they similarly transit the conventional IFPs and visual approaches to both runways, as at present. This is a factor of the location of the airport and the disposition of the runways rather than associated with the design of the approaches. As such there are no feasible changes that can be made to take allowance of these short duration daily migrations.

9.3 It is noteworthy that these routes are neither strictly defined and are subject to change on a seasonal and annual basis. Various factors such as agriculture, waste sites and weather affect these. Accordingly the survey of these patterns is updated on an annual basis and assessed by the airport management for mitigation or the issue of warnings to aircraft operators.

9.4 There are no known seasonal bird migratory routes affecting the areas of the consultation.

10 Description of Airspace Change

10.1 Hawarden Airport proposes amending the conventional IFPs. The only effect this will have is to change the conventional IFPs base turn and associated approach fix from 7.5nm to 8.2nm. the changes of disposition of these points on the ground are shown in diagrams 4 & 5 below

Diagram 4



Diagram 5



- 10.2 Due to the inherent inaccuracies of these 'procedural based approaches' (lag in responding to aircraft instruments, wind drift, etc), the changes are unlikely to be perceptible from the ground. In effect this means there is no perceptible change in amending the conventional IFPs.
- 10.3 Hawarden Airport also proposes adopting GNSS approach procedures to runway 04 and 22 at Hawarden airport. The disposition of current flight tracks compared to the proposed procedures are broadly similar. It is worth noting that other, than on final approach, GNSS approaches do not provide fixed guidance to the aircraft systems but provide points and routes to operate within. This is particularly applicable to the base leg sections of the 04 and 22 approaches (i.e. the sections positioned east or west of the final approach that aircraft route via to reach final approach). Additionally not all aircraft will fly the full procedure but may be radar vectored to intercept the final approach track between the IAF and FAF. All these factors will result in a spread of flight tracks in the base leg areas similar to those currently experienced. This means there will be no perceptible change in adopting GNSS approaches.
- 10.4 There is no proposed change to the classification of airspace.

11 Traffic Forecasts

11.1 Traffic forecasts were generated as part of the consultation process based on known and predicted operations. The following charts reflect the data compiled in late 2017 (updated in January 2018).

Fig 1

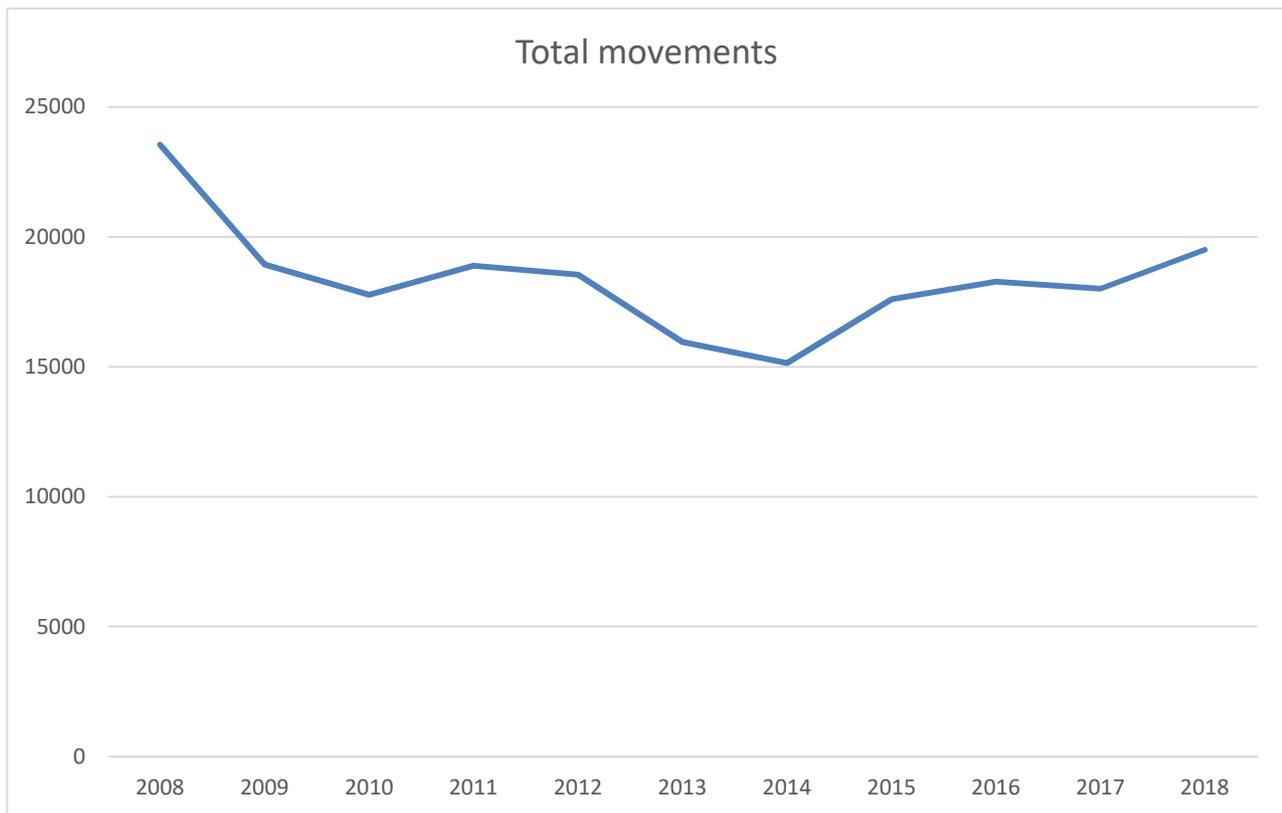
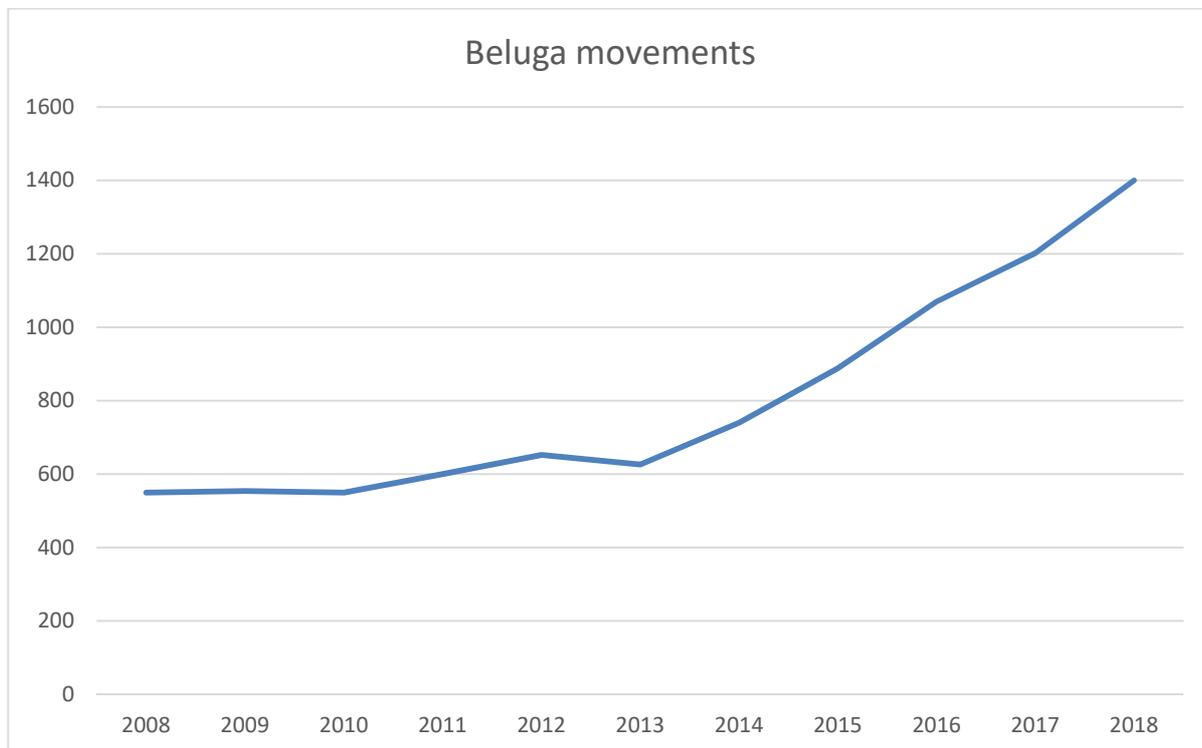


Fig 2



12 Assessment of the effects on noise

12.1 There is no assessment on the effects of noise as there are no significant changes to established IFR or VFR routes.

13 Assessment of the effect in fuel burn/CO₂

13.1 There is no assessment on the effect in fuel burn/CO₂ as are no significant quantifiable changes to established IFR or VFR routes.

13.2 There is no specific assessment on the effect of fuel burn/CO₂ in relation to Jet aircraft has been made however This can be quantified to some degree for a Beluga aircraft, as every additional mile flown an additional 18kg of fuel is used (equating to approximately 31 litres). Therefore any reduction in track mileage that can be made for inbound and outbound jet aircraft has a proportionate reduction in fuel burn/CO₂ reduction.

14 Assessment of the effect on local air quality

14.1 There is no assessment on the effects on local air quality as there are no significant changes to established IFR or VFR routes.

15 Economic evaluation of the environmental impact

15.1 There is no economic evaluation of the environmental impact as there are no significant changes to established IFR or VFR routes.

Appendix A Reference Documents

Abbreviation	Full document title
CAP 393	The Air Navigation Order 2009
CAP 493	Manual of Air Traffic Services Part 1
CAP 670	Air Traffic Services Safety Requirements
CAP 724	The Airspace Charter
CAP 725	CAA Guidance on the Application of the Airspace Change Process
EC Regulation 2096/2005	Common Requirements for the Provision of Air Navigation Services.
CAP 774	UK Flight Information Services
CAP 785	Approval Requirements for Instrument Flight Procedures for Use in UK Airspace
ICAO Annex 11	Air Traffic Services
ICAO Doc 4444	Procedures for Air Navigation – Air Traffic Management
ICAO Doc 8168 (PANS-OPS)	Procedures for Air Navigation Services – Aircraft Operations Vol I: Flight Procedures Vol II: Construction of Visual and Instrument Flight Procedures
ICAO Doc 9163	Performance-Based Navigation Manual
UK AIP (CAP 393)	United Kingdom Aeronautical Information Publication