

Operational Service Enhancement Project:- New Amsterdam/London UIR Crossing Point

Gateway documentation:
Stage 2 Develop and Assess

Step 2A document (i)
Airspace Change Design Options

Roles

Action	Role	Date
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Issue	Month/Year	Changes this issue
0.5	October/ 2021	Draft shared with stakeholders for feedback
1.0	November 2021	Submitted to CAA with following amendments: - Option 2 updated to “Connectivity for overflight traffic and ScTMA airfields” - Section 3 updated to include details of stakeholder engagement - Section 4 Updated to include a traffic forecast - Annex A- Stakeholder Engagement Evidence

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1. Introduction

- 1.1 This document forms part of the document set required in accordance with the requirements of the CAP1616 airspace change process.
- 1.2 This document aims to provide adequate evidence to satisfy:
Stage 2 Develop and Assess Gateway, Step 2A Airspace Change Design Options.
- 1.3 The CAA reference is [ACP-2019-55](#).

2. Options development – brief history

- 2.1 As part of the introduction of Free Route and Flexible Use Airspace (FRA/ FUA) within the Amsterdam Upper Information Region (UIR), Maastricht Upper Area Control (MUAC) have requested the introduction of a new coordination/crossing point (COP) on the London/Amsterdam Flight Information Region (FIR) boundary to facilitate the transfer of aircraft (See Figure 1).



Figure 1: Provisional location of new COP, Final coordinates to be provided by MUAC.

- 2.2 The introduction of this point will enable better connectivity between the London and Amsterdam Upper Information Regions (UIRs) following their introduction of Free Route Airspace (FRA) within the MUAC Area of Responsibility providing fuel savings and reducing CO₂ emissions.
- 2.3 As part of the NATS Operational Service Enhancement Project (OSEP), NATS have commenced an Airspace Change Proposal (ACP) to provide connectivity between the UK ATS route network and this new COP.

3. Stakeholder Engagement

- 3.1 In 2019 MUAC contacted NATS to discuss the introduction of a new COP point on the London/ Amsterdam FIR interface following the introduction of FRA within the Amsterdam FIR. Following these discussions NATS commenced this ACP to introduce connectivity to a new COP, which will be introduced by MUAC, to the UK ATS network.
- 3.2 Engagement relating to this change has primarily been with the following stakeholders:

- #### 4. Baseline (do nothing) description

A 'Do Nothing' option representing the current day operation must be included and is used as the baseline against which all other options are measured

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CAP1616-OSEPMUAC COPDesOpts

- 4.2 Aircraft operating East of the interface within MUACs area of responsibility do so using FRA principles. When leaving or entering this airspace aircraft are required to do so via published COPs situated on the interface between the London and Amsterdam UIRs.
- 4.3 Currently aircraft required to route to the COP LONAM before continuing their route fly additional track mileage and limits the perceived benefits of FRA.
- 4.4 To enhance the benefits of FRA within the Amsterdam UIR, MUAC have requested an additional COP, north of LONAM, be added to the Amsterdam/ London UIR interface. This will allow aircraft to fly, shorter, more direct routes increasing the efficiency of the airspace within the Amsterdam UIR resulting in decreased fuel burn and CO₂ emissions.
- 4.5 The EUNM has estimated that the introduction of a new COP and associated connectivity could save approximately 4.7 NM per flight which flight plans via this new COP.
- 4.6 The EUNM provided NATS with 2 days of data from 2019 for flights which could have elected to flight plan via this new COP, 1 weekday (5th July 2019) and 1 weekend day (5th May 2019). NATS analytics have used this Data to forecast the number of flights which could flight plan via this COP in 2022, the year following implementation, and 2032, 10 years post implementation (See Table 1). This forecast assumes no Danger area activity and that the two sample days are representative for the year and should therefore be considered an “up to” value.

Year	Flight Count	Fuel Benefit (T)	CO ₂ Benefit (T) ¹
2022	38,039	4,401	13,994
2032	62,452	22,976	22,976

Table 1: Forecast traffic numbers which could flight plan via a new COP in 2022 and 2032.

¹ In line with CAP1616 requirements for a L2b and 2c changes, as there is no fuel or CO₂disbenefit, a WebTAG analysis of this change will not be provided.

5. Concept Overview

- 5.1 MUAC will introduce a new COP on the London/ Amsterdam FIR interface and provide NATS with the coordinates of this point. Besides the baseline (Do Nothing) option, this proposal is limited to a single design concept owing to the extant SUA structures contained within this region of the North Sea, within both Dutch and British Airspace
- Connectivity to UK ATS Network provided through the introduction/amendment of new/extant CDRs.
- 5.2 A workshop has been undertaken between Subject Matter Experts (SMEs) from NATS and MUAC as well as the European Union Network Manager (EUNM) to consider how best to connect a new COP on the Amsterdam/ London interface to the UK ATS network. This engagement has led to the following Six design options which provide CDR connectivity to the new COP being proposed. Each option provides CDR connectivity for different traffic flows. Each option is compatible with the other options:
- **Option 1:** Connectivity for overflight traffic.
 - **Option 2:** Connectivity for overflight traffic and ScTMA airfields.
 - **Option 3:** Connectivity for Manchester/Midland and Dublin group airfields.
 - **Option 4:** Connectivity for London group airfields and overflight traffic.
 - **Option 4a:** Alternative connectivity for London group airfields and overflight traffic.
 - **Option 5:** Replication of Existing Night-Time Fuel Saving Routes for daytime use.
- 5.3 Any combination of these options will enable more efficient use of airspace within the Amsterdam UIR whilst preparing NATS control staff for greater connectivity options as a result of impending FRA introduction. The greatest benefit will be realised if all options are implemented.
- 5.4 Each option will provide the following benefits as listed at the assessment meeting:
- Meets our international obligations.
 - Reduces track mileage per flight
 - Provides fuel saving and reduced CO₂ emissions per flight.²
 - Meets our obligations on regulated environmental performance.
 - Meets the requirement of the CAAs AMS (CAP1711)
 - Responds to the needs of our customers.
 - Optimises airspace availability via FUA principles.
 - Prepares our control staff for greater connectivity options as a result of impending FRA introduction.

6. Option 0: Do Nothing

- 6.1 **Option 0** is included a baseline against which the design options can be evaluated. The aim of this proposal is to introduce connectivity to a new COP provided by MUAC. This Option does not provide any connectivity to this new COP and is therefore not viable. It assumes that there is no change to the current airspace or operation and is included solely for evaluating the other options against.

² EUNM estimates an average saving of 4.7 NM per flight, however the majority of this saving will be contained within Dutch airspace.

7. Option 1: Connectivity for overflight traffic

- 7.1 Option 1 introduces two additional bi-directional CDRs emanating at the new reporting point and connecting with the extant route network. This option will facilitate additional connectivity for overflight traffic utilising FRA within the Amsterdam UIR subject to the activity status of extant Danger Areas (DAs). This option is shown in Figure 3:

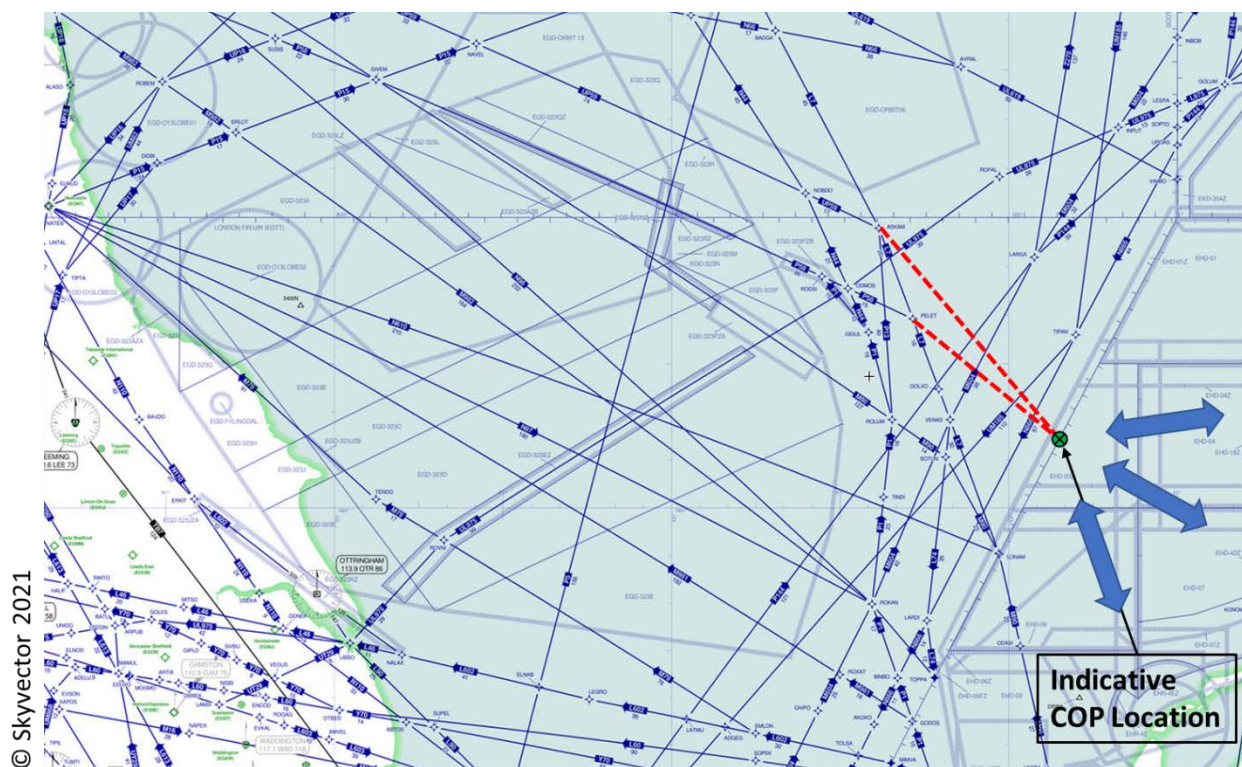


Figure 3: Indicative location of 2 new CDRs which will be utilised by east west overflight traffic.

8. Option 2: Connectivity for overflight traffic and ScTMA airfields

- 8.1 **Option 2:** introduces an additional 2 bi-directional CDRs (as an addition to Option 1) emanating at the new reporting point and connecting with the extant route network. This option will facilitate additional connectivity for overflight traffic as well as ScTMA arrivals and departures utilising FRA within the Amsterdam UIR subject to the activity status of DAs within both the Dutch and UK airspace. This option is shown in Figure 4.

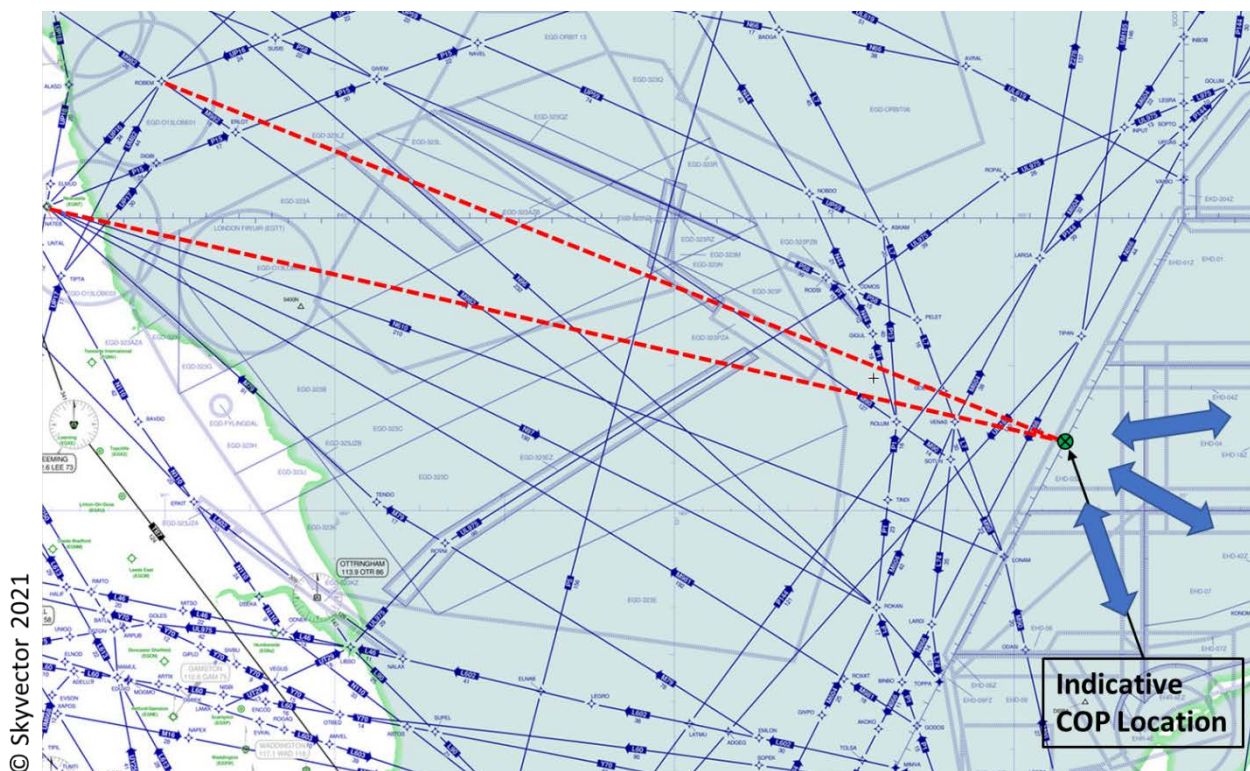


Figure 4: Indicative location of 2 new CDRs which will be utilised by east west overflight traffic and ScTMA.

9. Option 3: Connectivity for Manchester/Midland and Dublin group airfields

- 9.1 Option 3 introduces an additional bi-directional CDR emanating at the new reporting point and connecting to the extant route network. This option will facilitate enhanced connectivity for central UK airfields as well as allowing Dublin group traffic to make use of FRA routings within the Amsterdam and Copenhagen UIRs subject to DA activity within all 3 (London, Amsterdam and Copenhagen) UIRs. Option 3 is shown in Figure 5

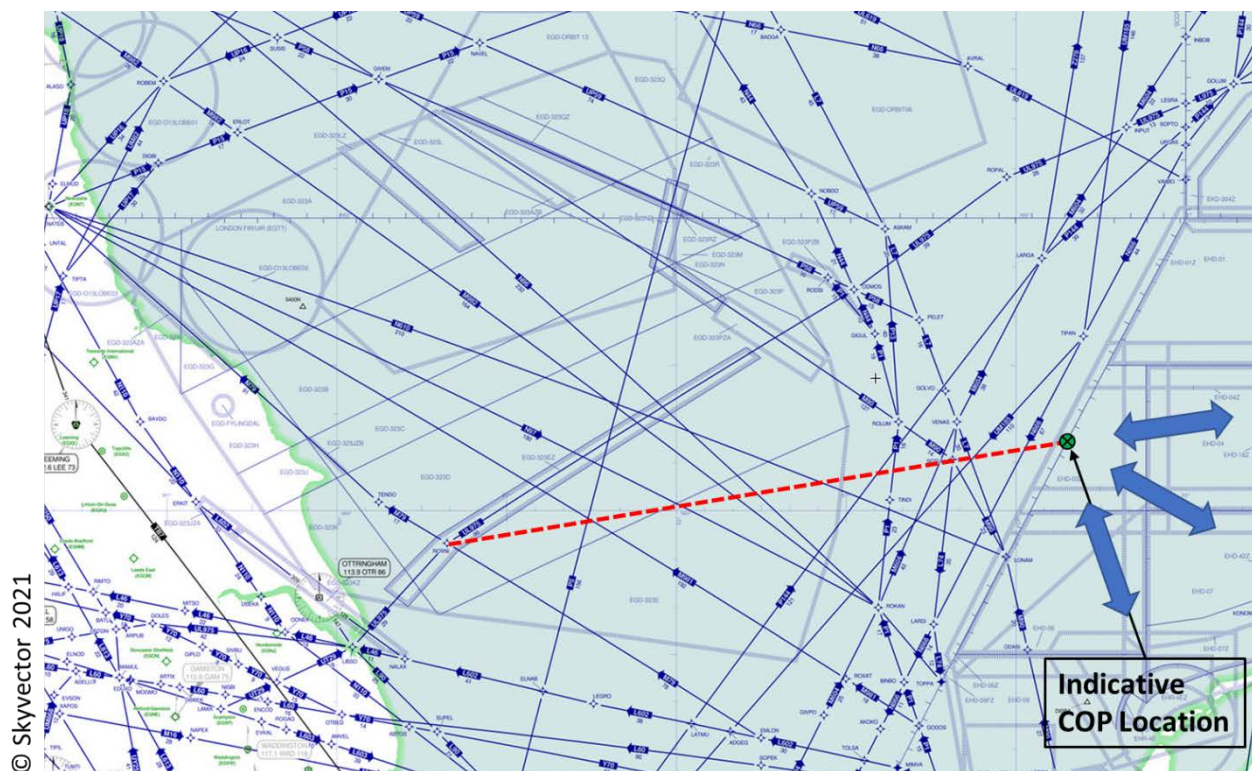


Figure 5: Indicative location of a new CDR which could be utilised by Manchester, Midland and Dublin group traffic.

10. Option 4: Connectivity for London group airfields and overflight traffic

- 10.1 Option 4 introduces 2 new CDRs emanating at the new reporting point and connecting to the extant route network. These CDRs will facilitate enhanced connectivity for both London group airfields as well as overflight traffic utilising FRA in the Copenhagen and Amsterdam UIRs.
- 10.2 In addition, Option 4 will introduce an additional CDR from the extant COP, LONAM, to the route network. This additional CDR will provide improved connectivity for traffic entering the UK UIR from the Amsterdam UIR.
- 10.3 These CDRs will be dependent on DA activity within all 3 (London, Amsterdam and Copenhagen) UIRs. Option 4 is shown in Figure 6

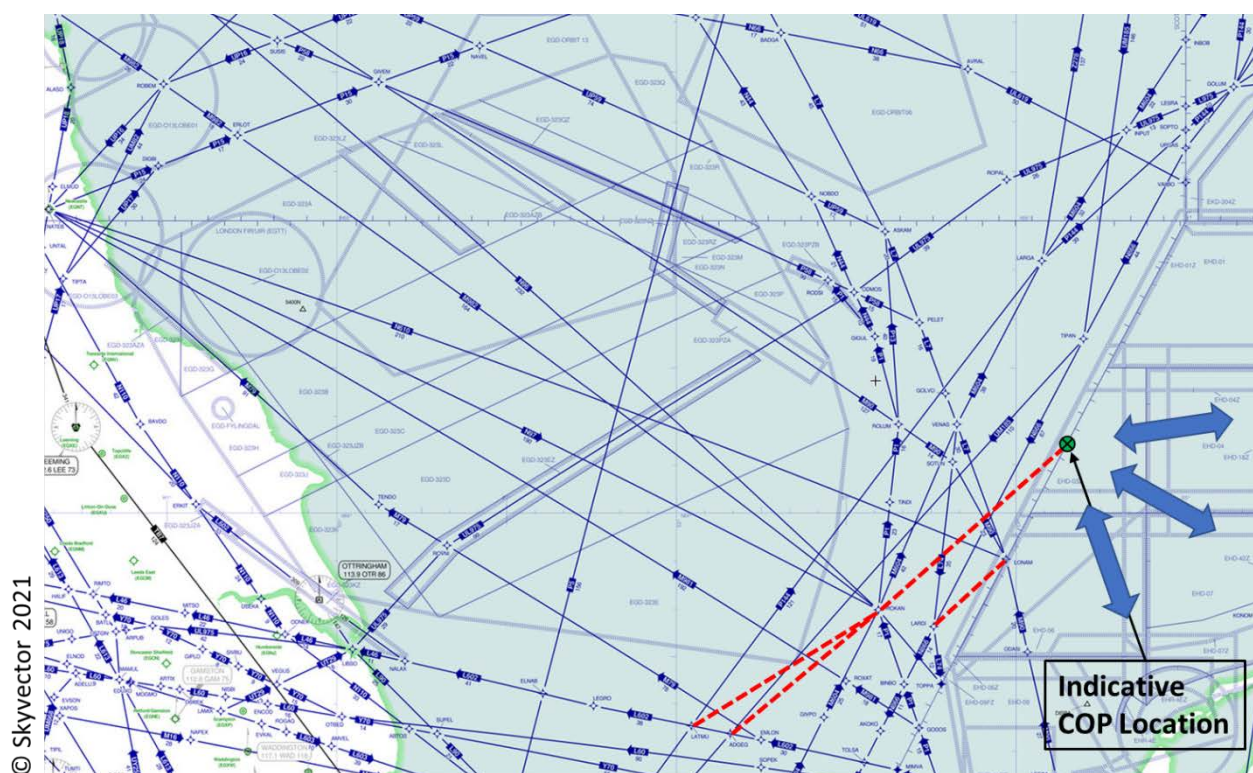


Figure 6: Indicative location of 3 new CDRs which could be utilised by overflights and London group traffic.

11. Option 4a: Alternative connectivity for London group airfields and north/ south overflights

- 11.1 **Option 4a** would introduce the same 2 new CDRs as option 4 which emanate at the new reporting point and connect to the extant route network. These CDRs will facilitate enhanced connectivity for both London group airfields as well as overflight traffic utilising FRA in the Copenhagen and Amsterdam UIRs.
- 11.2 In addition, **Option 4a** will introduce a new waypoint on one of the new CDRs where it crosses N866. This will provide improved connectivity for traffic entering the UK UIR from the Amsterdam UIR but has the advantage of its availability being dependant on fewer DAs contained within the Dutch UIR.
- 11.3 These CDRs will be dependent on DA activity within all 3 (London, Amsterdam and Copenhagen) UIRs. Option 4a is shown in Figure 7.

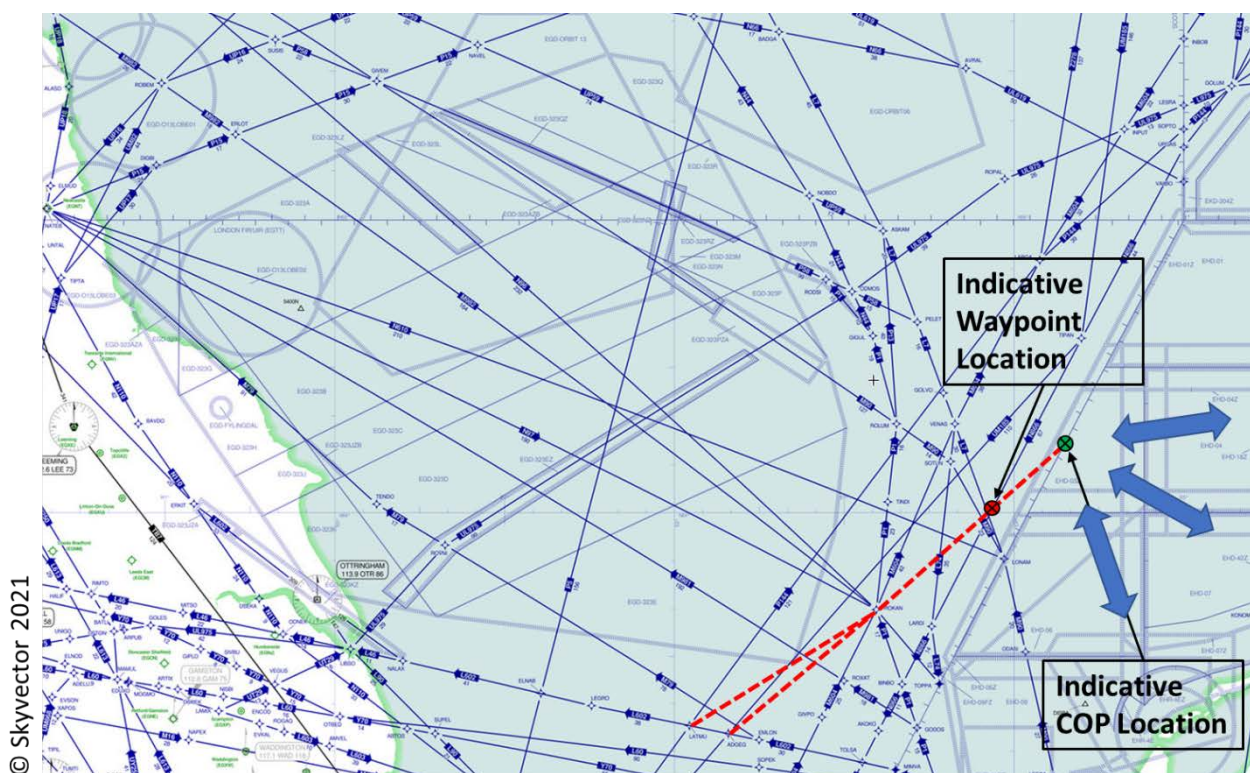


Figure 7: Indicative location of 2 new CDRs and one new waypoint which could be utilised by overflights and London group traffic.

12. Option 5: Replication of Existing Night-Time Fuel Saving Routes for daytime use

- 12.1 Option 5 will replace existing uni-directional CDRs with bi-directional CDRs. This option replicates existing Night-Time Fuel Saving Routes (NTFSR), improving the connectivity whenever the DAs are not in use, as opposed to being co-dependant on time and DA use. Option 5 is shown in Figure 8:

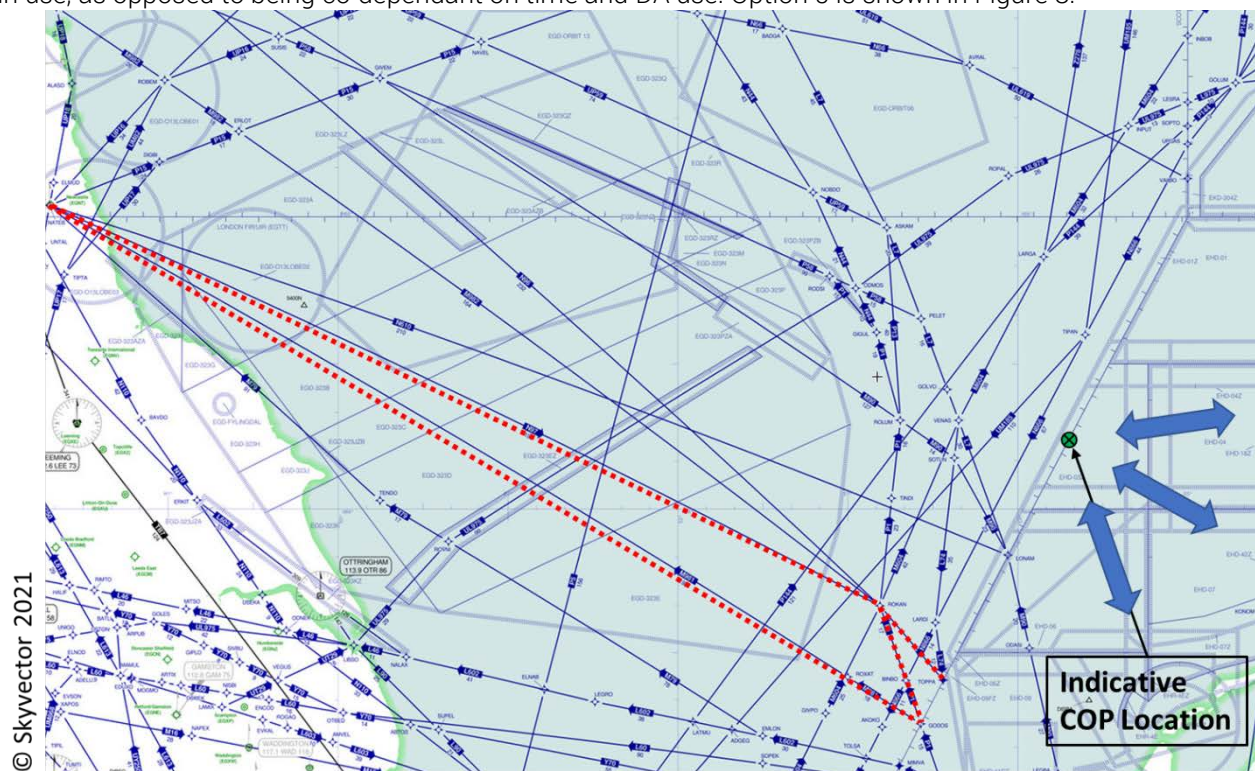


Figure 8: Proposed Bi-directional CDR use replicating current NTFSR.

13. Conclusion and Next Steps

- 13.1 MUAC will provide NATS with the coordinates of a new COP on the Amsterdam/ London UIR. This ACP seeks to introduce connectivity between this COP and the UK ATS network.
- 13.2 The Design Options have been limited to a single concept, CDRs owing to the extant SUA structures contained within this region of the North Sea, within both Dutch and British Airspace
- 13.3 A workshop between SMEs from NATS, MUAC and the EUNM led to the proposal of a number of Design Options were which fit this design concept.
- 13.4 These options can be implemented independently or in any combination of these options excluding option 0; however the greatest benefit will be realised if all options are progressed.
- 13.5 The next document, Step 2A(ii), will evaluate the design options listed in this document, reducing the longlist to a shortlist for appraisal.

14. Annex A: Stakeholder Engagement Evidence

14.1 Email to Stakeholders requesting feedback on Draft Design Options Document 4th October 2021

Dear Colleague,

NATS are progressing an Airspace Change Proposal to improve the connectivity between the London and Amsterdam Upper Information Regions (UIRs) following the introduction of Free Route Airspace within the Amsterdam UIR.

We are currently at Stage 2 of the CAP1616 Airspace Change process. This stage involves preparing and evaluating Design Options for this change. Please find attached a copy of our Stage 2A(i)- Design Options document which uses a single design concept to provide 6 design options as to how this can be implemented.

At this stage of the Airspace Change Process we are required to provide evidence that design options have been developed and influenced by stakeholder feedback. As such, we would like to invite your feedback on these options by 19th October 2021.

At the next stage of the process, you will be formally consulted on the best design option(s).

Kind regards

NATS Airspace Change Team



14.2 Follow-up Email to Stakeholders requesting feedback on Draft Design Options Document 11th October 2021

Dear Colleague,

NATS contacted you on 4th October 2021 (See below) requesting feedback on our design options to improve the connectivity between the London and Amsterdam Upper Information Regions (UIRs) following the introduction of Free Route Airspace within the Amsterdam UIR.

We understand that not everyone is going to be able to respond, however should you wish to respond we would appreciate your input by 19th October so that we can consider your feedback.

Kind regards

NATS Airspace Change Team



14.3 Email response of DAATM to Draft Design Options Document 12th October 2021

Good Morning,

The MOD have no further comments to make at this stage.

Regards

[Redacted]

[Redacted] | Sqn Ldr | SO2 Airspace Operations | Defence Airspace and Air Traffic Management | [Redacted]

14.4 Email response of DAATM to Draft Design Options Document 12th October 2021

Good morning,

Maastricht supports the introduction and a new reporting point on the Amsterdam / London boundary and associated connectivity within the London UIR, as well as the review of existing connectivity offered by conditional routes. The design options provided by NATS would enable more effective use of airspace within the Amsterdam UIR which is operated as FRA. Maastricht will continue to work with NATS to develop the proposed options in order to maximise the efficiency of our shared airspace interface in line with FUA principles.

Kind regards,



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