Swanwick Airspace Improvement Programme
Airspace Development 4 (Dutch Interface Routes)

# SAIP AD4
# Dutch Interface
# Consultation Document

NATS Uncontrolled

Publication history

| Issue | Month/Year | Change Requests in this issue |
|---|---|---|
| Issue 1.0 | May 2018 | Published |

References

| Ref No | Description | Hyperlink |
|---|---|---|
| 1 | SAIP AD4 CAA web page – progress through CAP1616 | (link) |
| 2 | Stage 1 Assessment Meeting Presentation | (link) |
| 3 | Stage 1 Assessment Meeting Minutes | (link) |
| 4 | Stage 1 Design Principles | (link) |
| 5 | Stage 1 Stakeholder Engagement Evidence | (link) |
| 6 | Stage 2 Design Options | (link) |
| 7 | Stage 2 Design Principle Evaluation | (link) |
| 8 | Stage 2 Initial Options Safety Appraisal | (link) |
| 9 | Stage 3 Consultation Strategy | (link) |
| 10 | Stage 3 Full Options Appraisal | (link) |

Airline Glossary

| Abbreviation | Airline | Abbreviation | Name | Abbreviation | Name |
|---|---|---|---|---|---|
| AFL | Aeroflot | EWG | Eurowings | NJE | Netjets |
| BAW | British Airways | EZY | EasyJet | RYR | Ryanair |
| BCY | Cityjet | FIN | Finnair | SAS | Scandinavian Airlines |
| BEE | Flybe | GWI | Germanwings | UAE | Emirates |
| CFE | BA CityFlyer, a subsidiary of BAW | IBK | Norwegian Air Shuttle | VIR | Virgin Atlantic Airways |
| CPA | Cathay Pacific Airways | KLM | KLM Royal Dutch Airlines | VLG | Vueling Airlines |
| DAL | Delta Airlines | LOT | LOT Polish Airlines | WZZ | Wizz Air |

Contents

# 1. Introduction

## 1.1 The airspace change process

This document forms part of the document set required in accordance with the requirements of the CAP1616 airspace change process. This document aims to provide adequate evidence to satisfy
Stage 3 Consult Gateway, Step 3C Publish Consultation Document.

For previous stages of the airspace change process, including the statement of need, design principles and design options please see the CAA website(Ref 1) detailing the progress of this proposal (also see the reference table on previous page).

Our stakeholders are considered to be an aviation expert audience; therefore we will use aviation technical language in this consultation document, in English only.

## 1.2 The purpose of consultation

This consultation allows NATS to gather and consider views, and information, about the potential impact of this Airspace Change Proposal.

Each stakeholder is given the opportunity to provide relevant feedback, which may conflict with that of other stakeholders. NATS will design the airspace in line with current government guidance[1] unless there is a clear, justified remit across affected stakeholders to do differently, or if the needs of other air navigation service providers (ANSPs) take primacy, in order to progress the proposal.

Stakeholders therefore have a crucial role in providing relevant and timely feedback to the Change Sponsor (NATS) in the form of their views and opinions on the impact of a particular Airspace Change Proposal.

# 2. About this consultation

## 2.1 Overview

NATS' Swanwick Airspace Improvement Programme (SAIP) is proposing a number of modular airspace changes within the London Flight Information Region (FIR), managed by NATS Swanwick. It aims to modernise each region via airspace deployments (AD) in different regions of the FIR.

This module, SAIP AD4, concerns the development and systemisation of westbound air traffic service (ATS) routes in the Clacton Sector where there is significant demand forecast for the future. This region is known by LVNL (Dutch ANSP), MUAC (Maastricht Upper Airspace Control Centre) and NATS as the 'REFSO box' and is a volume of airspace in the Dutch FIR within which the air traffic service are delegated to NATS.

This proposal seeks to alter the westbound traffic flows from Maastricht Delta Sector (MUAC) which currently funnel via a single coordination waypoint (COP), GORLO, to more than one route via additional COPs. Some of the proposed routes will be designated as RNAV1 routes, providing a more systemised route structure aimed at reduced complexity and workload in this region of airspace. An enhanced cross border transfer of westbound traffic will reduce complexity and workload for NATS, LVNL and MUAC.
This proposed change has been designed in support of, and to complement, MUAC's free route airspace implementation (FRA-M) in the Netherlands, east of the UK FIR boundary and area of ATS delegation.
The new COPs being proposed would be RAD restricted in order to complement FRA-M implementation which is planned for 6th December 2018.
This proposal also seeks to alter some eastbound flows, from NATS towards MUAC, in order to partially offset potential fuel disbenefit due to the westbound systemisation.
Please consider the proposed routes in this document and send us your feedback on these changes.

[1] Department For Transport, Air Navigation Guidance 2017 (Oct 2017)

## 2.2 Stakeholders

Stakeholders are third-party groups or individuals interested in an airspace change proposal.

NATS does not plan to target organisations whose primary interest is local or national environment (e.g. noise, local air quality). The proposal occurs mostly over the sea, in Dutch airspace and at high level. General Aviation (GA) airspace users will not be targeted as there would be no change in impact to them; the proposed changes only apply to commercial IFR traffic at high level. NATS will also not target airport operators as this is an en-route proposal with no proposed changes or change in impact to airport operations.

This is all in accordance with our engagement plan described in the consultation strategy (Ref 9). We stated that we would engage airlines which are the major operators in the region of airspace affected by the changes presented here.

Major airspace users were defined as airlines which made up 2% or more of the total flights which routed via GORLO in 2017. The nine airlines which met this criterion were BAW, BEE, CFE, EZY, IBK, KLM, RYR, SAS and WZZ[2]; making up c.70% of all flights. All nine of the airlines have been engaged, and we are targeting their responses in this consultation. These nine targeted airlines will receive an overall environmental analysis covering the proposed changes and separately, an individual estimate of the predicted fuel change per flight.

As described in the consultation strategy document (Ref 9), the following twelve airlines have also been contacted, although not specifically targeted, and will be consulted as stakeholders: AFL, BCY, CPA, DAL, EWG, FIN, GWI, LOT, NJE, UAE, VIR and VLG[2]. These twelve airlines fly far less frequently in this area of airspace than the nine primary airline targets. These twelve airlines will also receive the overall environmental analysis covering the proposed changes.

A link to the consultation will be available on the public NATS website and the NATS Customer Affairs website, used by our customer airlines. Everyone is welcome to respond, however our target for this consultation is to acquire responses from the primary airline stakeholders. The Ministry of Defence (MoD) will also be consulted via DAATM as per standard airspace consultations.

## 2.3 Engagement Activities

NATS has undertaken stakeholder engagement prior to, and throughout, SAIP AD4's development to date as described in the consultation strategy document(Ref 9) and stakeholder engagement evidence(Ref 5).

The nine target airlines have been engaged, individually briefed through meetings or two-way correspondence, and feedback has been sought on the initial proposal's concept. The additional twelve airlines mentioned in Section 2.2 were also contacted about the proposed changes and feedback has been requested as part of this consultation.

We have also presented the proposed changes at the NATS Operational Partnership Agreement (OPA) and Flight Efficiency Partnership (FEP) meetings, where several airlines were present.

NATS has worked collaboratively with both LVNL and MUAC ANSPs prior to, and throughout, SAIP AD4. The proposed changes were developed, assessed and validated jointly between the three ANSPs in July 2017 at a Real Time Simulation (RTS). The ANSPs agreed with the strategy to improve today's airspace away from being a highly manual and complex tactical operation. The preferred concept Option 3 was agreed in principle with the neighbouring ANSPs in November 2017.

All of the above stakeholders and engagement activities have been described fully in our consultation strategy document(Ref 9).

[2] See airline glossary of callsign abbreviations, page 2

# 3. Current Airspace

## 3.1 UK-Dutch FIR Interface

The provision of ATS is delegated to LAC S13 at FL295 and above; and to LAC S14 between FL215 and FL295, in the area to the east of the London/Dutch FIR/UIR boundary. This area of ATS delegation is known as the 'REFSO' area.

There are currently just two access waypoints from the MUAC Delta Sectors to LAC Clacton S13 and S14: GORLO and REFSO. These can be seen in Figure 1 below which shows the current route and sector structure in this region of airspace. MUAC airspace contains several flightplannable DCTs to GORLO.
They are:

- GORLO – REFSO
- GORLO – PEVAD
- HSD – REFSO

The majority of traffic entering UK airspace from MUAC Delta sector flightplans via GORLO.

The transfer of communications and control from MUAC Delta Sector to NATS occurs in relation to these routes i.e. at the start of a plannable route.

Currently, the volume of traffic that converges in the same area (GORLO) creates a high level of complexity and workload due to the manual tactical vectoring given by ATC. The complexity in this area of airspace is also often high due to traffic not being on flightplanned routes. With traffic forecast to increase, the complexity and workload will also continue to grow; alongside a rise in capacity pressure.

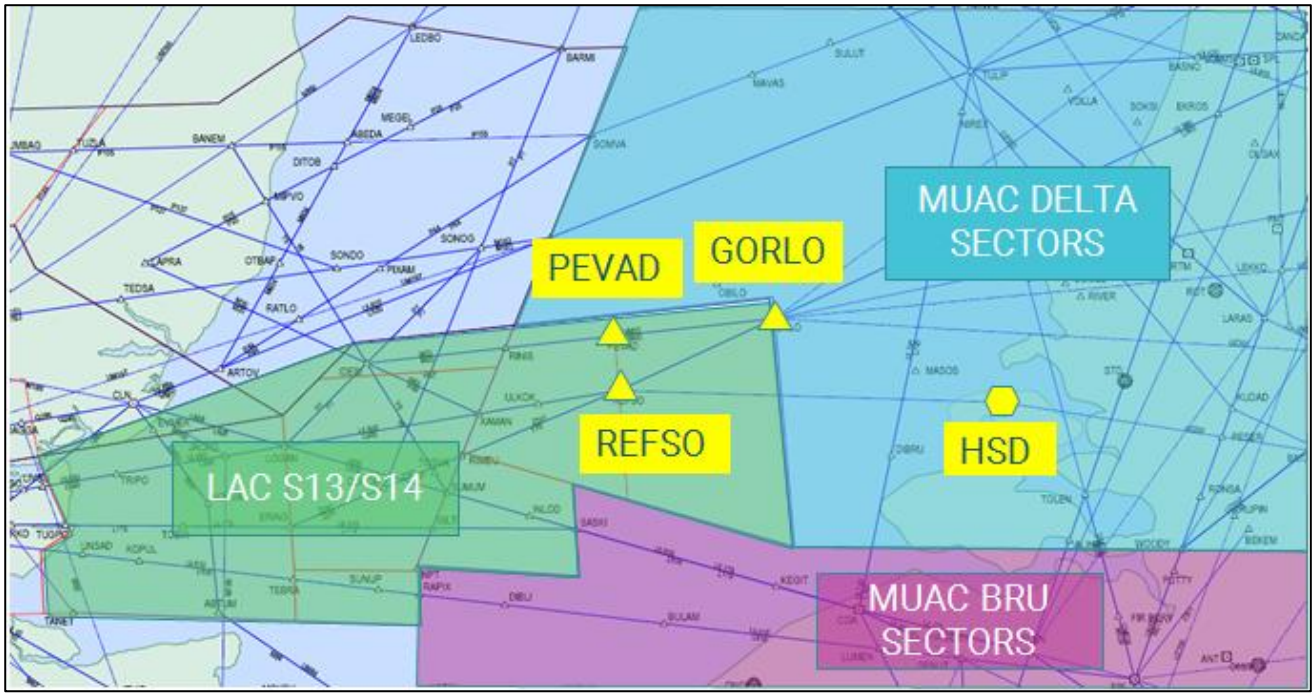


Figure 1: Existing Route and Sector Structure

## 3.2 Current westbound routes

The current westbound traffic flows most relevant to this airspace proposal are illustrated in Figure 3 on page 8.

## 3.3 Current usage

The proportions of airlines using the region has previously been described in the consultation strategy document(Ref 9) and noted in paragraph 2.2 on page 4.

As per that document, airlines BAW, CFE, BEE, EZY, IBK, KLM, RYR, SAS and WZZ are our primary target because, combined, their flights account for c.70% of all flightplans using waypoint GORLO, and also are the operators whose proportion of flights each makes up 2% or more of flights using that same waypoint. These

nine airlines are those most likely to be frequently impacted by the proposed changes, with the most frequent having an average of more than 50 flights per day, and the least frequent at least 7 flights per day.

A further 374 operators flew via GORLO in 2017, making up the remaining 30%.

339 of those operators flew on average less than once per day.
285 of those operators flew on average less than once per week.
199 of those operators flew on average less than once per month.

Proportionally, the remaining operators lower down the list fly far less frequently than the nine primary targets. A further twelve operators CPA, AFL, EWG, GWI, FIN, LOT, DAL, BCY, UAE, VIR, VLG and NJE range from 1.4% (5.6 per day) to 0.5% (2.1 per day) of flights through GORLO.

Table 1 below shows the aircraft types in the 75$^{th}$ percentile which flew via the fix GORLO in 2017. There were a total of 141,161 flights which matched these criteria.

| Aircraft Type | Generic AC Type | Total | Proportion |
|---|---|---|---|
| A320 | Medium Airbus | 29,350 | 20.79% |
| B738 | Medium Boeing | 27,992 | 19.83% |
| A319 | Medium Airbus | 16,166 | 11.45% |
| A321 | Medium Airbus | 8,862 | 6.28% |
| B77W | 2 Engine Boeing Heavy | 6,561 | 4.65% |
| E190 | 2 Engine Small Jet | 5,821 | 4.12% |
| DH8D | Heavy Turboprop | 5,064 | 3.59% |
| E170 | 2 Engine Small Jet | 3,049 | 2.16% |
| B772 | 2 Engine Boeing Heavy | 2,824 | 2.00% |

Table 1: Top Aircraft Types via GORLO

Table 2 below also shows the top 99% of these flights categorised by a generic aircraft type. Medium Airbus and Boeing aircraft made up 62% of these. The total and proportion of these aircraft types is not anticipated to change as a consequence of this proposal.

| Generic Aircraft Type | Total | Proportion |
|---|---|---|
| Medium Airbus | 55,358 | 39.22% |
| Medium Boeing | 32,062 | 22.71% |
| 2 Engine Small Jet | 11,769 | 8.34% |
| 2 Engine Boeing Heavy | 10,347 | 7.33% |
| 2 Engine Airbus Heavy | 8,097 | 5.74% |
| Heavy Turboprop | 5,592 | 3.96% |
| Small Jets | 4,744 | 3.36% |
| Super Heavy | 2,516 | 1.78% |
| Small Heavy | 2,456 | 1.74% |
| Upper Medium | 1,818 | 1.29% |
| 4 Engine Medium | 1,727 | 1.22% |
| 4 Engine Boeing Heavy | 1,649 | 1.17% |
| 3 Engine Small | 1,114 | 0.79% |

Table 2: Top Generic Aircraft Types via GORLO

### 3.4 Traffic patterns

Figure 2 below shows a traffic density plot of all flights in the region. It was created using radar data from 1st to 12th June 2017; a period covering two summer weekends. The data was filtered to show traffic at FL100 or above. The flightplannable routes mentioned above can clearly be seen by a large number of aircraft (30+ a day) which flew these, with wide swathes either side of the flightplan routes within which ATC typically use tactical vectoring or direct routings.

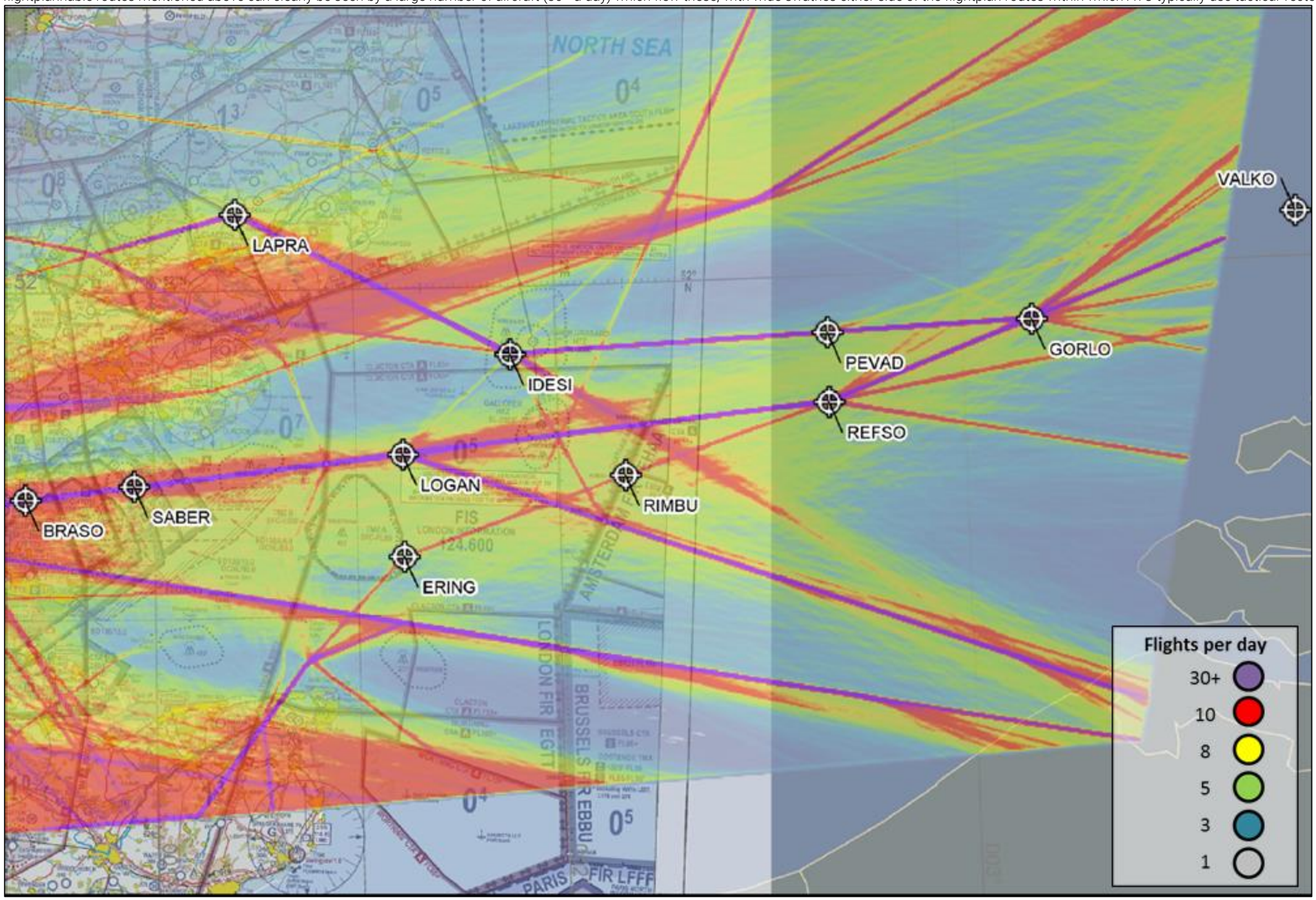


Figure 2: Current Traffic Density Plot, FL100+, showing 1-12 June 2017, a period of 13 days

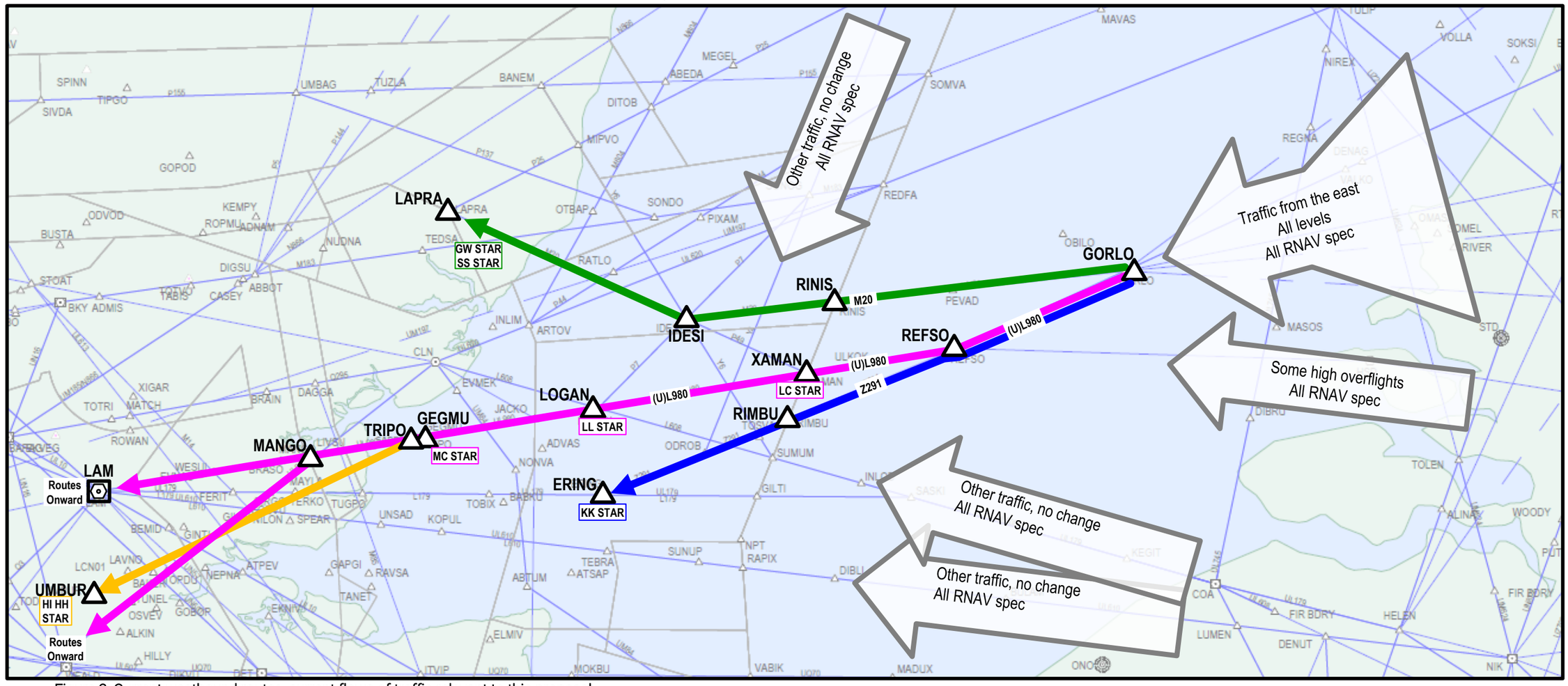


Figure 3: Current westbound routes, current flows of traffic relevant to this proposal

| From GORLO To | Flight Level | Relevant Route Segment |
|---|---|---|
| EGGW EGSS | All | GORLO M20 LAPRA STAR connection point |
| EGLL EGWU EGLC EGMC EGKB EGLF LTMA overflights | All | GORLO L980 to STAR connection point<br>GORLO L980 MANGO route onward via UL620 or LAM |
| EGKK | All | GORLO L980 REFSO Z291 ERING to STAR connection point |
| EGHI EGHH | All | GORLO L980 TRIPO UMBUR STAR connection point |

Table 3: Westbound current route flow information

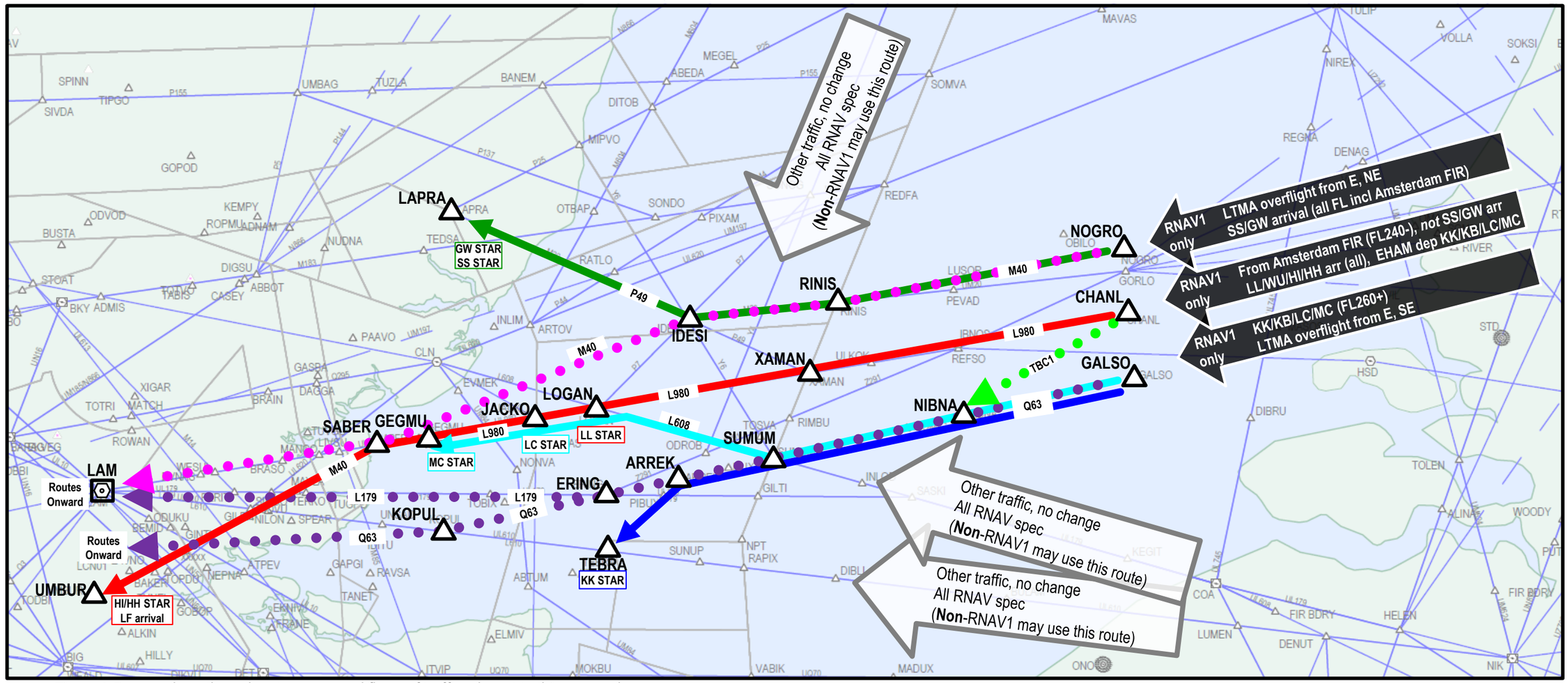


Figure 4: Proposed westbound routes, proposed flows of traffic relevant to this proposal

| To | Flight Level | Relevant Route Segment |
|---|---|---|
| EGGW EGSS | All FLs | NOGRO M40 IDESI P49 LAPRA STAR connection point |
| LTMA Overflights from E/NE | All FLs | NOGRO M40 SABER L980 LAM route onward |
| EGLL EGWU EGLF EGHI EGHH<br>All destinations, leaving the Amsterdam FIR (except arrivals to EGGW EGSS EGKK EGLC EGKB EGMC) | All FLs<br>FL240- | CHANL L980 to STAR connection point<br>CHANL L980 SABER L980 LAM route onward |
| EGKK (except deps from EHAM)<br>EGKK (only deps from EHAM) | FL260+<br>FL240- | GALSO Q63 ARREK TEBRA STAR connection point<br>CHANL TBC1 NIBNA Q63 ARREK TEBRA STAR connection point |
| EGLC EGKB EGMC (except deps from EHAM)<br>EGLC EGKB EGMC (only deps from EHAM) | FL260+<br>FL240- | GALSO Q63 SUMUM L608 LOGAN to STAR connection point<br>CHANL TBC1 NIBNA Q63 SUMUM L608 LOGAN to STAR connection point |
| LTMA Overflights from E/SE | All | GALSO Q63 ERING route onward via Q63 KOPUL or L179 LAM |

Table 4: Westbound proposed route flow information

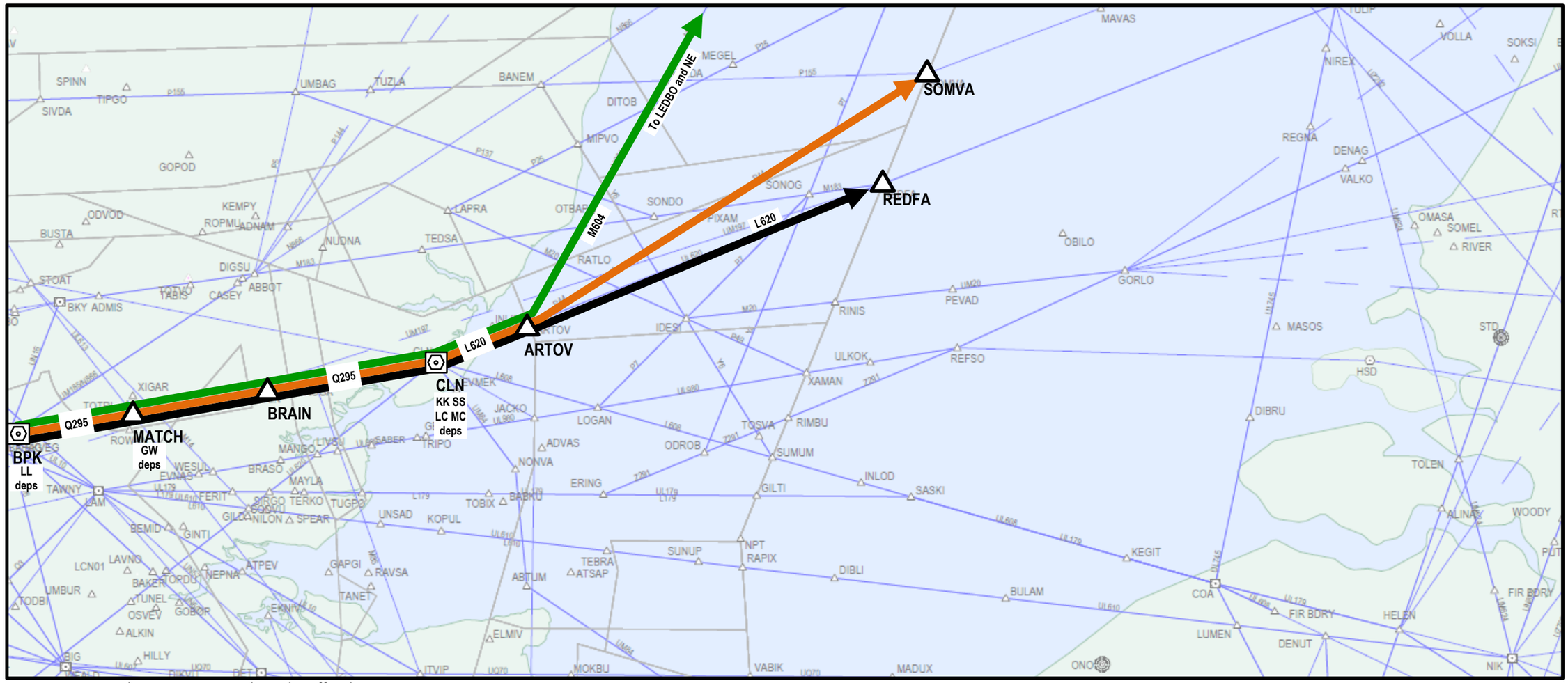


Figure 5 Relevant Current Eastbound Traffic Flows

| Deps To REDFA | Flight Level | Relevant Route Segment | Deps to SOMVA | Flight Level | Relevant Route Segment | Deps to LEDBO and NE | Flight Level | Relevant Route Segment |
|---|---|---|---|---|---|---|---|---|
| EGLL | All | SID to BPK-Q295-CLN-L620 | EGLL | All | SID to BPK-Q295-CLN-L620-ARTOV-P44-SOMVA | EGLL | All | SID to BPK-Q295-CLN-L620-ARTOV-M604 |
| EGKK EGSS EGLC EGMC | All | SID or Dep to CLN L620 REDFA | EGKK EGSS EGLC EGMC | All | SID or Dep to CLN-L620-ARTOV-P44-SOMVA | EGKK EGSS EGLC EGMC | All | SID or Dep to CLN-L620-ARTOV-M604 |
| EGGW | All | SID to MATCH-Q295-BRAIN-Q295-CLN-L620-REDFA | EGGW | All | SID to MATCH-Q295-BRAIN-Q295-CLN-L620-ARTOV-P44-SOMVA | EGGW | All | SID to MATCH-Q295-BRAIN-Q295-CLN-L620-ARTOV-M604 |

Table 5 Eastbound current route flow information

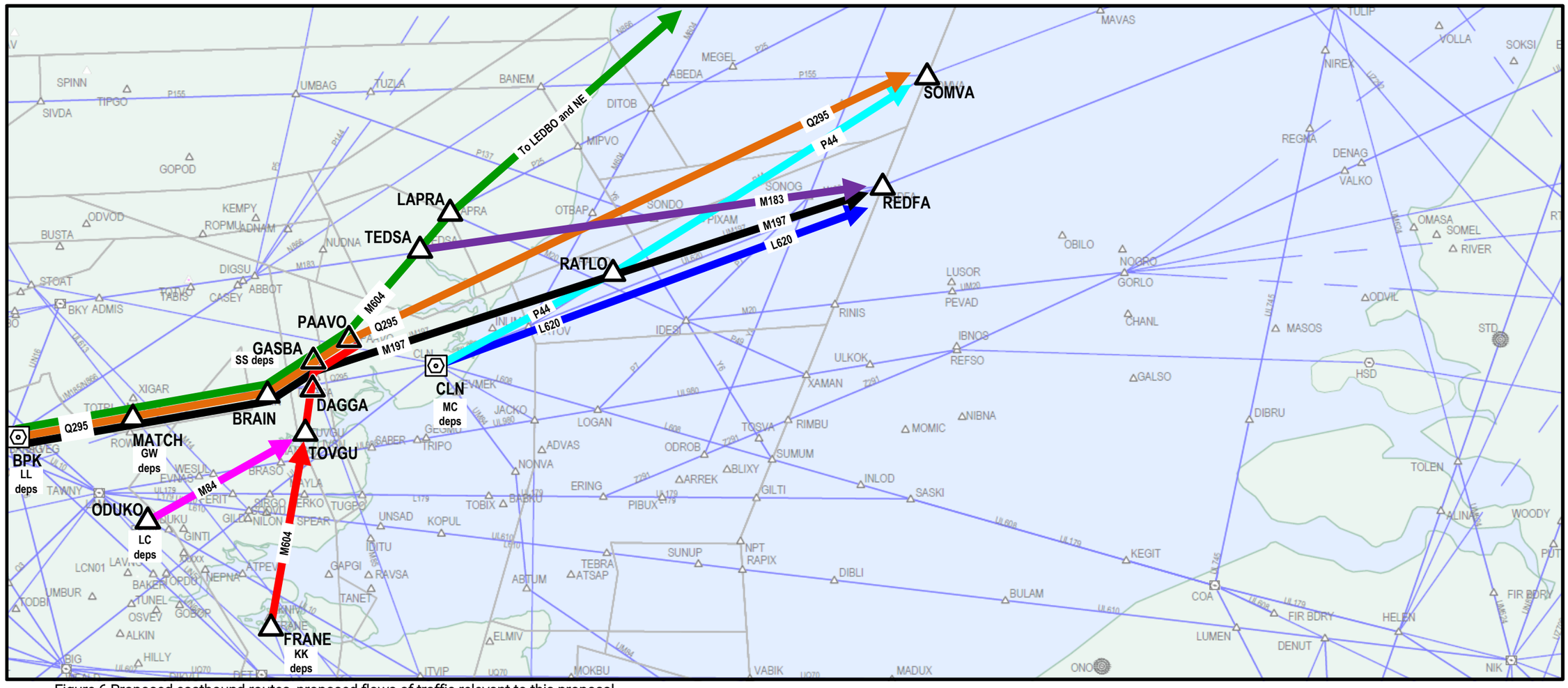


Figure 6 Proposed eastbound routes, proposed flows of traffic relevant to this proposal

| Deps To REDFA | Flight Level | Relevant Route Segment | Deps to SOMVA | Flight Level | Relevant Route Segment | Deps to LEDBO & NE | Flight Level | Relevant Route Segment |
|---|---|---|---|---|---|---|---|---|
| EGLL | All | SID to BPK-Q295-BRAIN-M197-GASBA-M197-REDFA | EGLL | All | SID to BPK-Q295-PAAVO–Q295–SOMVA | EGLL | All | SID to BPK-Q295-PAAVO-M604-LAPRA-M604-LEDBO-M604… |
| EGKK | All | SID truncated to FRANE-M604-DAGGA-GASBA–M197-REDFA | EGKK | All | SID truncated to FRANE-M604- PAAVO–Q295–SOMVA | EGKK | All | SID truncated to FRANE-M604-PAAVO-M604-LAPRA-M604-LEDBO-M604… |
| EGSS | All | SID truncated to GASBA–M197–REDFA | EGSS | All | SID truncated to GASBA–M197–RATLO–P44–SOMVA | EGSS | All | SID truncated to GASBA–M604-PAAVO-M604-LAPRA-M604-LEDBO-M604… |
| EGGW | All | SID to MATCH–Q295–PAAVO–M604–TEDSA–M183–REDFA | EGGW | All | SID to MATCH–Q295–SOMVA | EGGW | All | SID to MATCH -Q295–PAAVO- M604-LAPRA-M604-LEDBO-M604… |
| EGLC | All | SID truncated to ODUKO–M84–TOVGU–M604–GASBA–M197–REDFA | EGLC | All | SID truncated to ODUKO–M84–TOVGU–M604-PAAVO–Q295–SOMVA | EGLC | All | SID truncated to ODUKO–M84–TOVGU–M604-PAAVO-M604-LAPRA-M604-LEDBO-M604… |
| EGMC | All | Dep to CLN–L620–REDFA | EGMC | All | Dep to CLN–P44–SOMVA | EGMC | All | (As per SOMVA then NE when east of the FIR boundary) |

Table 6 Eastbound proposed route flow information

# 4. Proposed Changes

See Section 7 Annex A for draft coordinates of the major new waypoints described in this proposal.

## 4.1 Rationale and Justification behind the proposed changes, and additional objective

Currently, westbound traffic from adjacent ANSPs through the Clacton sectors converge on a single COP. Traffic is manually split and separated into flows by air traffic control. This is a highly manual and workload intensive task; with traffic forecast to increase in the region, the complexity and associated controller workload will also increase, leading to inefficiencies and delay.

The proposed changes have been designed to reduce the complexity in this region of Dutch airspace through improvements made to the ATS route structure. It would mean that traffic is split into appropriate flows as it arrives in the Clacton sectors; leading to decreased controller workload and increased capacity.

NATS' proposed changes have been designed in order to minimise the scale of airspace change in the UK as well as supporting the implementation of MUAC's free route airspace (FRA-M). This is our justification.

The additional objective is to minimise fuel disbenefit which may be caused by the proposed westbound systemisation. To achieve this we are proposing changes to some of the eastbound flows, to reduce flightplan distance where possible. This fits with the Gatwick, Stansted and London City SID truncation work (separately and in advance of this proposal).

## 4.2 Design principles, evolution to date, and options appraisal

Previous work and documents, fully described in Stages 1 and 2 of the airspace change process, explained the principles we used to influence the design decisions (Ref 4), and how each design option was evaluated and appraised (Ref 7).

This process reduced the number of design concepts from four to one, known as Option 3.

This option is the preferred option and supported by LVNL, Maastricht and NATS, meeting Design Principle 1. Option 3 proposes to introduce three new network flows via three new COPs, along with eastbound network improvements to the same eastbound COPs.

The proposed changes would semi-automatically split traffic flows in a similar way in which they are manually split in today's tactical environment. This method was the basis for all the design options, the differences between them were based on their relative positions to unchanging flows (Ref 7). For more detail on the how the preferred Option 3 has been appraised please see Ref 10.

This is considered a Level 2A airspace change as it would only alter ATS routes above an altitude of 7,000ft (and mostly over the North Sea). The proposed concept reduces complexity and interaction; whilst also complementing the MUAC FRA-M implementation.

The Design Options document (Ref 6) details other options which were developed and considered alongside the proposed Option 3. Typically we would expect to consider 'doing nothing' as a viable option i.e. continuing to operate with the current network scenario, unchanged. In this case, doing nothing is not a viable option because of the simultaneous MUAC FRA-M implementation. Additionally, this would not improve the high workload created from the tactical vectoring and speed control required in the Clacton Sectors in order to manually split flows by destination, not meeting Design Principle 8. This will intensify as traffic increases in the future. All three ANSPs agreed that it is not desirable to continue with this highly manual and tactical operation, not meeting Design Principle 1.

In the unlikely event that there are unexpected issues caused by this proposal, it will not be possible to simply revert to today's structure because it would not align with the changes to Dutch airspace.

## 4.3 Proposed changes westbound

The current and proposed westbound flows can be seen in Figure 3 and Figure 4 above, along with route tables. The revised westbound routes would be RNAV1 specification. Relevant waypoints are shown in the charts and route tables. All waypoint names and ATS route designations should be considered draft.

The preferred option proposes three new COPs (from north to south, draft names NOGRO, CHANL and GALSO), and associated westbound flow structures, which are three parallel routes each 7nm apart.

The revised northernmost flow via NOGRO would be used by Luton arrivals, Stansted arrivals and LTMA overflights from MUAC Delta's northern region.

The central flow via CHANL would serve Heathrow arrivals, other LTMA arrivals such as Farnborough, and traffic from the Amsterdam FIR including most Amsterdam Schiphol Airport (EHAM) departures.

The southernmost flow via GALSO would be used by Gatwick, London City and Southend arrivals, and LTMA overflights from MUAC Delta's southern region. EHAM departures to Gatwick, London City and Southend would link onto this southern flow from the central flow at CHANL.

There would be minor sector boundary changes within the CLN sector group; these are not shown as they are not material to the consultation.

Difference from original design option work at Stage 2[(Ref 6)]:
Amsterdam Schiphol's (EHAM) SIDs currently route to GORLO. When the proposed changes were originally defined and our primary stakeholders engaged, LVNL were unable to commit to changing their Amsterdam SIDs in order to fit the new proposed waypoints. Since then, LVNL have committed to do so which means that GORLO can be removed as a COP and the EHAM SIDs can be linked into the new appropriate waypoints. This simplifies the route structure slightly, because there is a reduced need to account for EHAM departures as a separate flow in the revised route structure westwards.

## 4.4 Proposed changes eastbound

The current and proposed eastbound LTMA departure flows can be seen in Figure 5 and Figure 6, along with route tables. The revised eastbound routes would be a mix of RNAV5 and RNAV1 specification. Relevant waypoints are shown in the charts and route tables.

A previous SAIP piece of work was known as AD2.1, part of which involved an operational trial for an alternative alignment for traffic heading towards the northeast and Scandinavia via waypoint LEDBO. We intend to permanently implement a version of this revised northeastern flow by changing ATS route M604 to reflect the improved alignment via this proposal.

As per paragraph 4.1, other eastbound changes have been proposed. Existing routes M197, Q295 and P44 would be partially realigned to reduce flightplan distances to the UK-Dutch FIR boundary at existing COPs REDFA and SOMVA – this has a minor improvement to LTMA overflights from west to east. Those flows are not fully detailed in the charts due to chart legibility, and most of the improvement would come from the revised LTMA departure arrangements eastbound. Also noted in paragraph 4.1, some SIDs from LTMA airports are being truncated separately from this proposal. These truncations mean slight differences in connectivity with the eastbound route network, all of which are covered within this proposal. Note that there is no systemisation *per se* for the eastbound (LAC S12) part of this proposal.

## 4.5 Other changes separate from this proposal

NATS has embarked on a programme of DVOR rationalisation, removing en route dependencies from DVORs. This will have no impact on flight behaviours, but may result in the re-designation of some STARs and waypoint names compared with their designations in this proposal. That ongoing work is separate from this proposal, but there is some regional overlap, therefore the STARs and waypoint names ultimately used will need to accommodate those changes.

### 4.6 Dependencies

The timeline for this proposed airspace change implementation is fixed by an agreed target implementation date for Maastricht ANSP's implementation of free route airspace (FRA-M), on 6th December 2018. This means that there is a limited time available in which to align the two implementation dates.

If this work is not complete by that date, the Anglo-Dutch interface will require two significant airspace changes in short succession which is undesirable for airline operators and all three collaborating ANSPs because flightplan systems would need major updates in successive AIRAC cycles, risking flightplan rejection and the associated delay costs to airlines.

Typically, a consultation would have a 12-week duration. That period would push the timeline for implementation beyond the agreed target date for Maastricht's FRA-M implementation. This is accounting for the fixed periods of CAA decision-making and AIS data lead time for a single AIRAC cycle.

To reduce the risks associated with a shorter than typical consultation period, we have targeted the primary stakeholders and engaged them so they are already well-briefed in advance - see paragraphs 2.2-2.3.

## 5. Benefits and impacts of this proposal

### 5.1 Capacity benefit

- The resulting systemisation of this region would improve predictability and capacity as a result.
- This systemisation would yield an overall benefit in terms of conflict/complexity reduction; thus improving the airspace resilience.
- The monitoring value (a NATS internal measure of sector capacity) is planned to increase c.7% (indicative figure). This would occur post-deployment by the unit if considered appropriate.
- The estimated total UK delay reduction per flight is 1.7s (2019) improving further to 2.4s (2029).

### 5.2 Noise and visual intrusion

CAP1616 states that for a Level 2A change, there is a requirement for the change sponsor to produce environmental ($CO_2$) emissions analysis for inclusion in the consultation material. This is due to the reduction of fuel burn and $CO_2$ emissions being the priority for airspace changes where aircraft operate above 7,000ft. The following data summarises the environmental assessments completed.
As the proposed changes are all above 7,000ft and over the sea, we assess that there would be no significant noise or visual intrusion impact to stakeholders on the ground.

### 5.3 Fuel and $CO_2$

The NATS Analytics team have completed a full environmental analysis on the proposed changes presented here. Table 7 below shows the forecast fuel burn and $CO_2$ emission differences for the proposed changes in the first full year of implementation (2019) and ten years after (2029). It describes the same flows previously described in the document.

| Traffic Flow (SAIP AD4) | Annual Fuel Burn Change 2019 (T) | Annual $CO_2$ Change 2019 (T) | Annual Fuel Burn Change 2029 (T) | Annual $CO_2$ Change 2029 (T) |
|---|---|---|---|---|
| EGGW Arr | +110 | +350 | +120 | +382 |
| EGKK Arr | +463 | +1,472 | +438 | +1,393 |
| EGLC Arr | +230 | +731 | +230 | +731 |
| EGLL Arr | +1,263 | +4,016 | +1,220 | +3,880 |
| EGSS Arr | -7 | -22 | -9 | -29 |
| EHAM Dep (Excluding arrivals to Airports listed above) | +102 | +324 | +115 | +366 |
| Other Westbound flights | -577 | -1,835 | -658 | -2,092 |
| Flights Via REDFA | -597 | -1,898 | -593 | -1,886 |
| Flights Via LEDBO | -694 | -2,207 | -808 | -2,569 |
| Flights Via SOMVA | -59 | -188 | -65 | -207 |
| All flows | **+234** | **+744** | **-10** | **-32** |

Table 7: Fuel burn and $CO_2$ forecast changes

This analysis concluded that there would be an annual increase of 234 tonnes fuel and 744 tonnes $CO_2$ in 2019 after implementation, due to the design and forecast route usage. The analysis has also forecast a decrease of 10 tonnes fuel and 32 tonnes $CO_2$ by 2029. This analysis was based on the Eurocontrol Strategic Forecasting (STATFOR) data for December 2017, which provides quantitative forecasts by origin and destination. The forecast flows between specific origin and destinations may change to a greater or lesser extent.

The short-term increase in fuel usage and $CO_2$ emissions from the proposed route changes is due to some routes becoming longer from systemising this area of airspace. Although there is an immediate increase, minimising the track mileage and environmental extent of these change has been prioritised throughout. This was one of the key drivers behind the design principle evaluation options appraisal[(Ref 7)]. Systemising the airspace does also offer additional benefits such as a reduction in complexity from the systemised flows. It is also difficult to currently account for the fuel used in tactical heading and speed management, tools which controllers employ every day in these sectors of airspace – systemisation would reduce the need for tactical management.

A UK government transport analysis, known as 'WebTAG', has been completed in order to quantify the monetary value of the impact on the environment due to greenhouse gas emissions (specifically using $CO_2$ as the measure). Details of the WebTAG results are given in the Stage 3 Full Options Appraisal[(Ref 10)].

## 5.4 Proposed route usage by traffic flow

Based on the same data used for the environmental assessment, we have analysed the current traffic within the relevant areas within Sectors 13 and 14 and forecast the following route usage.

| Traffic Flow (SAIP AD4) | Total Flights (2019) | Total Flights (2029) |
|---|---|---|
| EGGW Arr | 33,284 | 36,234 |
| EGKK Arr | 28,596 | 27,067 |
| EGLC Arr | 14,867 | 14,853 |
| EGLL Arr | 109,690 | 105,841 |
| EGSS Arr | 43,724 | 51,584 |
| EHAM Dep (Excluding arrivals to Airports listed above) | 19,413 | 22,022 |
| Other Westbound flights | 100,866 | 114,979 |
| Flights Via REDFA | 128,052 | 127,311 |
| Flights Via LEDBO | 17,246 | 20,061 |
| Flights Via SOMVA | 17,348 | 19,021 |
| All flows | 513,086 | 538,973 |

Table 8: Forecast route usage, 2019 and 2029

# 6. Consultation Participation

## 6.1 How to respond

This consultation commences on Wednesday 2nd May 2018 and ends on Wednesday 30th May 2018; a period of 4 weeks.

This consultation is being conducted by NATS. The UK's Civil Aviation Authority (CAA) Safety and Airspace Regulation Group (SARG) will oversee the consultation and ensure that it adheres to the CAP1616 process and government guidelines. See Reference 1 for the CAA's web page dedicated to this proposal.

NATS is conducting this consultation via the CAA's online consultation portal.

This portal is also where responses to this consultation can be submitted through a feedback questionnaire. On submission, this is submitted direct to the CAA.

Please note that when submitting feedback you will be asked to provide the following information:

- Your name, and your role if you are responding on behalf of an organisation
- Your contact details
- A feedback category: SUPPORT NO COMMENT AMBIVALENT OBJECT
- Your level of support for the following aspects of this proposal:
  Use of RNAV1
  Segregation and distribution of traffic flows
  Proposed westbound changes
  Proposed eastbound changes
  Level restrictions
- Your general feedback comments, with an opportunity to provide more detailed comments amplifying your answers, and the opportunity to upload a document containing greater details of your feedback such as charts or tables.

All responses will be analysed, with any common themes extracted and summarised. NATS will actively monitor the consultation portal and will formally respond back to any queries.. All responses will be read by the CAA.

We are asking you to consider what impact this proposal would have on your operation, suggestions you may have regarding those impacts, and how acceptable they are.

## 6.2 What happens with the responses

All responses will be published. Responses will be managed and uploaded to the consultation portal as appropriate. However, should any responses contain commercially sensitive data then we would expect the CAA to redact that information as part of the CAA's moderating practice.

On completion of the consultation, we will analyse the feedback and produce a feedback report, summarising themes arising from the feedback, alongside NATS' response to any issues raised. The feedback report will be uploaded onto the portal. Any new requirements identified will be considered in the on-going design process, leading to the production of a formal airspace change proposal (ACP). The ACP will detail the final design being submitted and make reference to changes that have been made to take account of consultation feedback.

Subject to approval, we plan to implement the final version of this proposal on 6th December 2018, in coordination & aligned with Maastricht's free route (FRA-M) implementation.

## 7. Annex A Table of new waypoints – coordinates

These waypoint names are used within the charts and route tables in Section 3.

Other waypoints in those charts and tables are already in use in the UK and/or the Netherlands.

The following waypoints are not in the current AIP database. Some of these waypoints are in the same location as, but have different designations from, those used in pre-consultation engagement. The names below are those formally requested from ICAO's bank of 5-letter name codes. These names are still draft and are subject to change.

| Draft Waypoint Name | Lat | Long | Direction of use |
|---|---|---|---|
| ARREK | 513643.04N | 0015007.27E | West |
| CHANL | 515056.9923N | 0031018.6100E | West |
| FRANE | 512306.00N | 0003739.40E | East |
| GALSO | 514357.5336N | 0031018.6100E | West |
| GASBA | 515008.21N | 0004755.61E | East |
| NIBNA | 514147.76N | 0023905.46E | West |
| NOGRO | 515756.4428N | 0031018.6100E | West |
| ODUKO | 513531.78N | 0001715.47E | East |
| PAAVO | 515359.59N | 0005425.30E | East |
| TOVGU | 514403.22N | 0004537.67E | East |

This list shows the waypoints most relevant to this proposal. In conjunction with the existing waypoints, it will allow fuel calculations to be carried out by stakeholder airlines.

This list does not show every individual new waypoint planned for this proposal because many are intermediate waypoints along ATS routes, and would be used for data transfer, flight-strip production, sector boundaries, or other similar purpose.

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