Safety and Airspace Regulation Group

SWANWICK AIRSPACE IMPROVEMENTS PROGRAMME AD 1

Airspace Change Decision

CAP 1594

Published by the Civil Aviation Authority, 2017

Civil Aviation Authority,

Aviation House,

Gatwick Airport South,

West Sussex,

RH6 0YR.

Enquiries regarding the content of this publication should be addressed to:

Airspace and ATM Aerodromes, Safety and Airspace Regulation Group, CAA House, 45-59 Kingsway, London, WC2B 6TE

The latest version of this document is available in electronic format at www.caa.co.uk, where you may also register for e-mail notification of amendments.

Contents

Chapter 1

Executive summary

Objective of the Proposal

1. The objective is to introduce systemised RNAV1 ATS routes and RNAV1 Standard Arrival Routes (STARs) for Heathrow, Gatwick, Luton, Stansted, Northolt, Cambridge, Birmingham and East Midlands traffic that route via the London Area Control Centre Worthing sectors to the south-west of the London TMA and include a number of additional routes for overflying aircraft through UK airspace. This will deliver increased predictability and improved flight profiles by segregating certain flows of air traffic.

Summary of the decision made

2. Subject to the conditions set out in Annex A the CAA has decided to approve the following changes to the structure of UK airspace above 7000ft amsl:

    a. Changes to existing ATS routes.
    b. Introduction of new RNAV1 ATS routes.
    c. Introduction of new RNAV1 STARs inbound to Heathrow, Gatwick, Luton and Stansted (note: Cambridge traffic also use the Luton/Stansted LOREL STAR whilst Northolt traffic also use the Heathrow STARs.)

Next steps

3. The CAA's Post Implementation Review (PIR) of the changes approved by the CAA in this decision will commence at least one year after implementation of those changes. It is a condition of the CAA's approval that the sponsor provides data required by the CAA throughout the year following implementation to carry out that PIR. In due course, the sponsor will be advised of the specific data sets and analysis required, and the dates by when this information must be

provided. The PIR is the seventh stage of the CAA's airspace change proposal process (set out in CAP 725, the Guidance on the Application of the Airspace Change Process[1]) and will consider whether *"the anticipated impacts and benefits, set out in the Airspace Change Proposal, have actually been delivered"*.

[1] www.caa.co.uk/CAP725

Chapter 2

Decision Process and Analysis

Aims and Objectives of the Proposed Change

4. This is a proposal to introduce systemised RNAV1 ATS routes and RNAV1 Standard Arrivals (STARs) for Heathrow, Gatwick, Luton, Stansted, Northolt, Cambridge, Birmingham and East Midlands traffic that route via the Swanwick Worthing sectors to the south-west of the London TMA.; it affects traffic inbound and outbound to/from the London Terminal Control Area and a number of overflights through the region. In addition to these new ATS Routes and STARs, the proposal also includes formalising a procedure (known as a 'stack swap') for changing Gatwick inbound routing towards the TIMBA Hold from the East to route to the WILLO hold when traffic conditions necessitate a re-allocation of traffic from one hold to the other.

5. To achieve significant operational and environmental benefits through the systemisation of the Air Traffic Management (ATM) operation. The proposal intends to capitalise on these benefits by delivering increased predictability and improved flight profiles which the operators have been seeking for some time.

6. The aim is to segregate flows of traffic by establishing RNAV1 ATS routes and STARs which are spaced according to CAA route spacing guidelines for RNAV1 routes published in CAP1385. Airspace diagrams are at Appendix A.

7. The CAA endorses the aims and objectives of the proposal.

Chronology of Proposal Process

Framework Briefing

8. A Framework Briefing was held on 17 November 2017 during which the sponsor (NATS) briefed the CAA on the scope of the proposal (at this point, the

project was named the Swanwick Airspace Optimisation Programme (SAOP) Module 1).

9. It was also confirmed that a CO_2 analysis was required to support the change proposal in order to determine the environmental benefits to be realised.

10. A follow-on Framework Briefing was subsequently held on 27 March 2017 for the reasons detailed in paragraph 12.

Consultation

11. As there was no requirement for additional controlled airspace, NATS proposed that a 12 week consultation period would not be necessary. The CAA agreed there was no requirement to consult with NATMAC and the GA community. Nevertheless, whilst identified stakeholders and associated airspace users were confirmed as the MOD, airlines, and the airports associated with the new RNAV1 STARs, these parties required engagement. Consequently, NATS was advised to provide evidence of consultation with these parties demonstrating that there were no objections to the proposals.

Submission of Airspace Change Proposal and supporting documents

12. The change proposal was submitted to the CAA on 6 December 2016. Following a completeness check, as a number of elements required to support the proposal were missing, this proposal was returned to the sponsor for re-submission as the submission did not meet the requirements of CAP 725. On 23 December 2016, NATS subsequently advised the CAA that they would delay proposed implementation until Autumn 2017 and would re-submit the airspace change proposal at a later date. No analysis of the first proposal was therefore undertaken by the CAA.

13. Following the suspension of the project a follow on Framework briefing was held on 22 March 2017. The sponsor updated the CAA with a number of additional elements which were added to the original SAOP Module 1 project and briefed on a number of issues concerning the supporting material which had subsequently been prepared to address the missing elements which were

omitted from the original SAOP Module 1 proposal. NATS also advised that they had changed the airspace development project titles, and hence, SAOP Module 1 had now been updated and become known as the Swanwick Airspace Improvements Programme (SAIP) Airspace Development (AD) 1.

14. A revised change proposal for SAIP AD1 was submitted to the CAA on 18 April 2017. Following a successful completeness check, the CAA commenced its regulatory assessment.

CAA Analysis of the Material provided

15. As a record of our analysis of this material the CAA has produced:

    a. An Operational Assessment of the proposal;
    b. A Consultation Assessment of the engagement with aviation stakeholders.
    c. An Environmental Assessment of the CO2 emissions analysis and environmental benefits.

    These assessments will be published on the CAA's website to accompany this decision document.

CAA assessment and decision in respect of Consultation

16. NATS provided records of their engagement with aviation stakeholders which was targeted at the MOD, the airlines and the airports to which the new RNAV1 STARs would serve. These included diagrams of the proposals and a number of PowerPoint slides demonstrating the benefits to be realised. As the proposal for new ATS routes and STARs was wholly contained within existing controlled airspace and embedded with the existing route structure, no further engagement with other aviation stakeholders was considered necessary.

17. Nevertheless, it was evident from the engagement evidence provided with the proposal that there were a number of issues with the collation of engagement data. The consultation activity was therefore considered to be barely adequate

despite this being considered by both sponsor and regulator as a straightforward non-contentious proposal.

18. Notwithstanding the issues with the engagement activity with aviation stakeholders and the subsequent provision of evidence of engagement, NATS has demonstrated that the users affected by this proposal have been consulted. No objections were raised to the proposal and therefore the CAA considered on balance, that given the benefits to be realised from this proposal, it was reasonable to accept the evidence of engagement although the quality of this part of the engagement process was only marginally acceptable.

CAA Consideration of Factors material to our decision whether to approve the change

Explanation of statutory duties

In exercising its air navigation function, the CAA must assess all airspace changes in accordance with its statutory duties set out in Section 70 of the Transport Act.

Conclusions in respect of safety

19. The CAA's primary duty is to maintain a high standard of safety in the provision of air traffic services and this takes priority over all other duties.[2]

20. In this respect, with due regard to safety in the provision of air traffic services, the CAA is satisfied that the proposals maintain a high standard of safety for the following reasons:

    a. The proposed network of new RNAV1 routes introduces a systemised network of routes where certain parallel route alignments are separated by 7NM. These proposals have been submitted in accordance with CAP1385 (Performance-based Navigation Enhanced Route Spacing Guidance) and future guidance (proposed by NATS and accepted by

[2] Transport Act 2000, Section 70(1).

the CAA which has yet to be formally published for parallel route structures above FL 170 and in excess of 300kts).

b. Where the change proposal has elements proposing reduced airspace containment of 2NM as opposed to CAA policy of 3NM, NATS have presented a satisfactory safety argument with appropriate mitigations. Specific regulatory requirements have been issued to the sponsor as a condition of the approval to ensure appropriate radar monitoring and procedures are in place to safeguard against potential incursions into CAS.

Conclusions in respect of securing the most efficient use of airspace

21. The CAA is required to secure the most efficient use of the airspace consistent with the safe operation of aircraft and the expeditious flow of air traffic.[3]

22. The CAA considers that the most efficient use of airspace is defined as 'secures the greatest number of movements of aircraft through a specific volume of airspace over a period of time so that the best use is made of the limited resource of UK airspace'.

23. The CAA considers the expeditious flow of air traffic to involve each aircraft taking the shortest amount of time for its flight. It is concerned with individual flights.

24. In this respect the CAA is satisfied that the proposal introduces enhancements to the existing design by introducing a number of parallel and segregated route structures to enable a more systemised flow of traffic which increases predictability and improved flight profiles. This enables controller workload to be reduced, more optimised flight paths to be achieved for certain flows of traffic (by raising level caps) and helps to reduce stepped descents to certain traffic flows. There are reductions in overall track mileage, although it is recognised that some reductions are rather small, but nevertheless, when

[3] Transport Act 2000, Section 70(2) (a).

considered overall, the cumulative reduced track mileage contributes to overall enabled fuel savings.

Conclusions in respect of taking into account the Secretary of State's guidance to the CAA on environmental objectives

25. In performing the statutory duties, the CAA is obliged to take account of the extant guidance provided by the Secretary of State,[4] namely the 2014 Guidance to the CAA on Environmental Objectives.

26. In this respect all the changes take place above 7000ft which is airspace in which the DfT has issued guidance to the CAA such that the CAA should promote the most efficient use of airspace with a view to minimising aircraft emissions and where mitigating the impact of noise is no longer a priority. The proposal results in reduced track mileage which provides enabled fuel savings on implementation of an estimated 7.11KT per annum, and consequently there are environmental benefits to be realised.

Conclusions in respect of aircraft operators and owners

27. The CAA is required to satisfy the requirements of operators and owners of all classes of aircraft.[5]

28. In this respect commercial air traffic which are RNAV1 equipped will benefit from this proposal which introduces new routes to replicate where aircraft are tactically vectored in the existing airspace structure. Non-RNAV1 operators may still use the existing en-route network but may not be able to take advantage of the improved network structure.

29. Class G airspace users are not affected by this proposal as there is no change to existing CAS.

30. MOD operations will not be affected as the new Conditional Routes through the Portsmouth danger areas permit use by General Air Traffic (GAT) when the danger area airspace is not required by the MOD – these operations are conducted under the principle of Flexible Use of Airspace (FUA).

[4] Transport Act 2000, Section 70(2)(d)
[5] Transport Act 2000, Section 70(2) (b).

Conclusions in respect of the interests of any other person

31. The CAA is required to take account of the interests of any person (other than an owner or operator of an aircraft) in relation to the use of any particular airspace or the use of airspace generally.

32. In this respect the new ATS routes are embedded in the existing ATS route structure and are designed to replicate where aircraft are currently radar vectored by air traffic controllers. As the changes occur above 7000ft where priority is given to reducing emissions, there should be no noticeable change to aircraft noise below 7000ft amsl. Whilst the current route structure and radar vectoring above 7000ft amsl passes through areas of outstanding beauty, the new routes should not cause any significant impact compared with existing operations.

Integrated operation of ATS

33. The CAA is required to facilitate the integrated operation of air traffic services provided by or on behalf of the armed forces of the Crown and other air traffic services.[6]

34. In this respect, the MOD has not objected to this proposal.

Interests of national security

35. The CAA is required to take into account the impact any airspace change may have upon matters of national security.[7] There are no impacts for national security.

International obligations

36. The CAA is required to take into account any international obligations entered into by the UK and notified by the Secretary of State.

37. In this respect notification of new ATS routes in High Seas airspace beyond the 12NM distance from the UK shoreline has been provided to ICAO on 3 August 2017 in accordance with normal practice. The new route structure has been

[6] Transport Act 2000, Section 70(2) (e).
[7] Transport Act 2000, Section 70(2) (f).

co-ordinated between the sponsor and neighbouring States' Air Navigation Service Providers.

Chapter 3

CAA's Regulatory Decision

38. Noting the anticipated impacts on the material factors we are bound to take into account, we have decided to approve the implementation of the new ATS route structure proposed in the SAIP AD1 airspace change proposal because the proposal delivers benefits to commercial airspace users which results in enabled fuel savings, reduced emissions, more optimised flight profiles, provides elements of systemisation with segments of parallel route structures which offers opportunities to reduce both ATC and pilot workload as aircraft may be left on their own navigation for longer periods thus reducing both R/T transmissions and the need for radar vectoring. As the changes are above 7000ft amsl, the impacts to people on the ground should not be discernible.

Conditions

39. As the proposal seeks to implement routes with reduced airspace containment from adjacent airspace boundaries, the sponsor proposed a number of procedures to seek mitigations from existing CAA SARG policy on airspace containment. The CAA has accepted these mitigations, but nevertheless, the approval is subject to the conditions as specified in Appendix B.

40. The sponsor is required to provide data to the CAA for the Post Implementation Review (PIR). Details will be notified separately to the sponsor in due course.

Implementation

41. The revised airspace will become effective on 9 November 2017 (AIRAC 12/2017). Any queries are to be directed to the SARG Project Leader (Mr D W Raine on 020 7453 6518).

Post Implementation Review

42. In accordance with the CAA standard procedures, the implications of the change will be reviewed after one full year of operation, at which point, CAA staff will engage with interested parties to obtain feedback and data to contribute to the analysis.

Civil Aviation Authority

2 October 2017

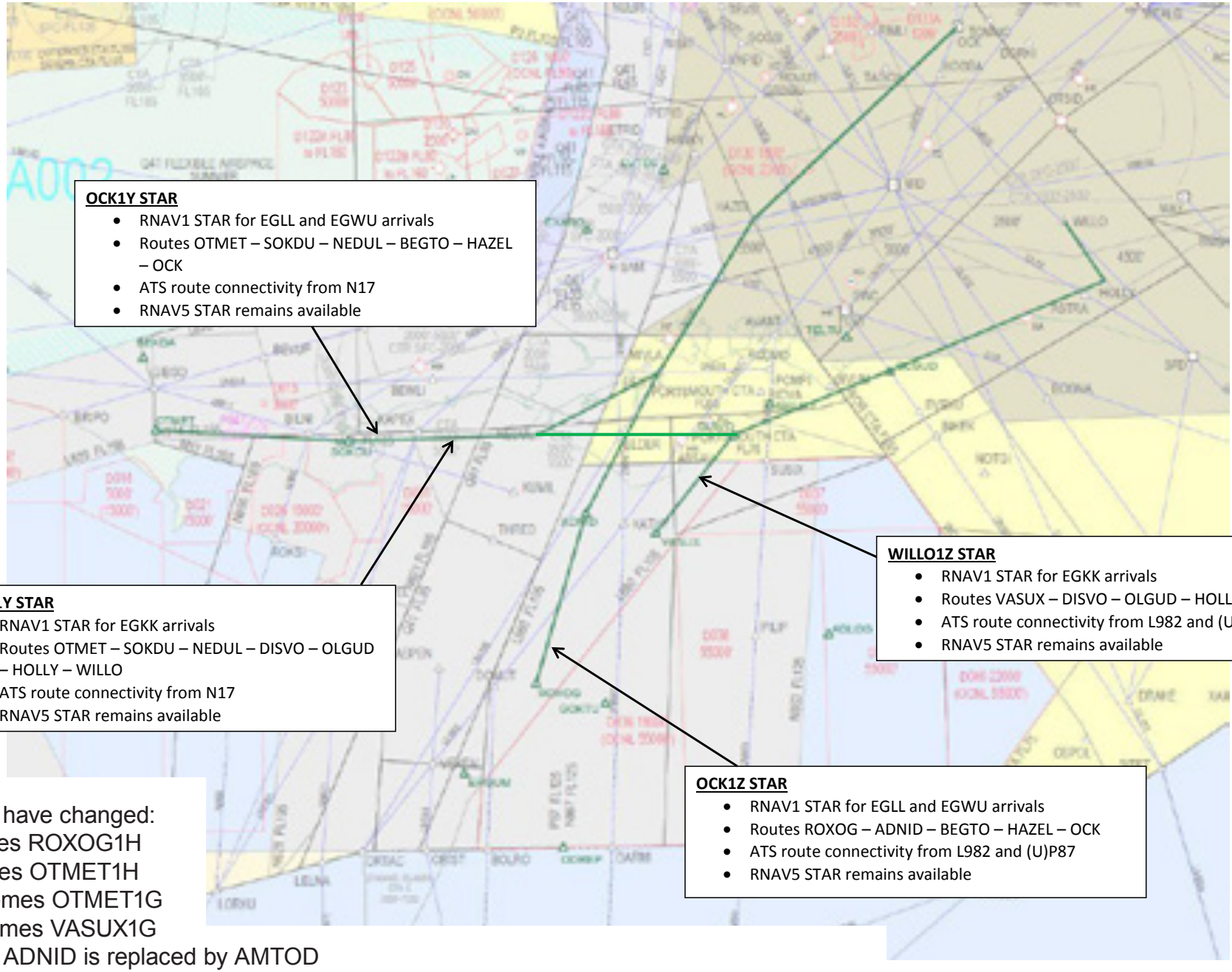
Appendicies:

A. Airspace change proposal diagrams.

B. Conditions for SAIP ADI airspace change approval.

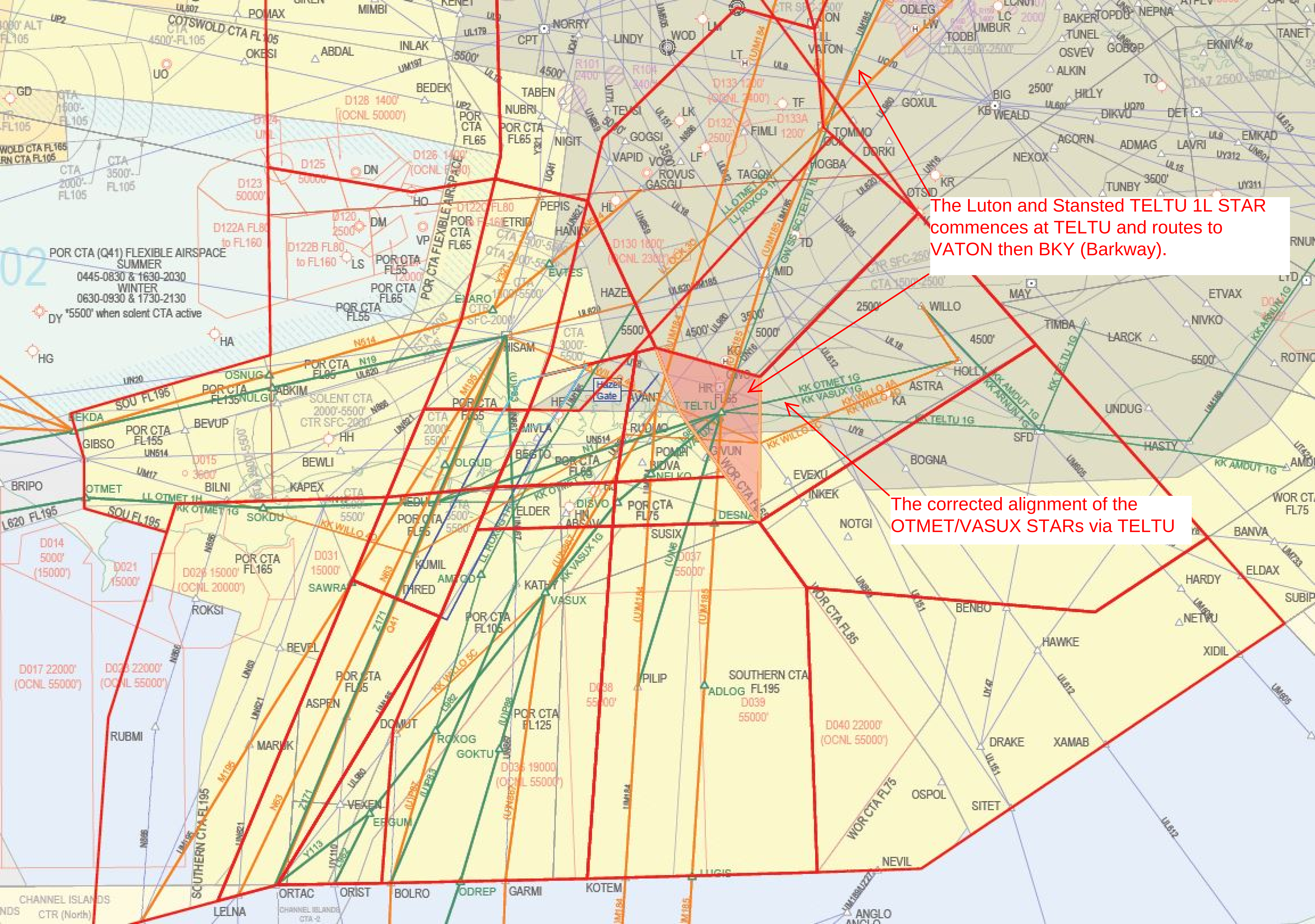
APPENDIX 1 to SAIP AD1 Decision Document - New route diagrams

For illustrative purposes only - extract from NATS consultation material, with permission from NATS



CAA Notes:

1. STAR designations have changed:
   - OCK1Z becomes ROXOG1H
   - OCK1Y becomes OTMET1H
   - WILLO1Y becomes OTMET1G
   - WILLO1Z becomes VASUX1G
2. On the ROXOG1H, ADNID is replaced by AMTOD
3. The OTMET1G & VASUX1G alignment has changed after DISVO and routes to TELTU-HOLLy-WILLO


The Luton and Stansted TELTU 1L STAR commences at TELTU and routes to VATON then BKY (Barkway).
The corrected alignment of the OTMET/VASUX STARs via TELTU

M17 – modified ATS route

- RNAV1 East of EXMOR
- Realigned to route BEKDA – EXMOR
- FL245+ between BEKDA and EXMOR
- No changes West of EXMOR
- Will no longer exist East of BEKDA/GIBSO

N514 – modified ATS route

- RNAV1 East of DIDEL
- Realigned to route BEKDA – DIDEL
- FL245+ between BEKDA and DIDEL
- No changes West of DIDEL
- Further changes East of BEKDA detailed in Section B

N19 – new ATS route

- RNAV5 DOMUT – SAM
- RNAV1 SAM – BEKDA – KOXOD – GAPLI
- BEKDA 2nm from edge of TRA002
- FL195 - FL460 East of BEKDA
- FL245 – FL460 West of BEKDA
- DOMUT – SAM portion for EGVN/TK arrivals
- SAM – GAPLI portion for LTMA Oceanic departures

L982 – new ATS route

- RNAV1
- FL105 - FL460
- 2nm from the edge of CAS below FL125 between ERGUM and DISVO
- Routes ORTAC – ERGUM – ROXOG – VASUX – DISVO – TELTU

(U)P88 – new ATS route

- RNAV1
- Routes ODREP – GOKTU – VASUX
- CDR 3 FL125-FL195
- CDR 1&3 FL195-FL460
- To be managed subject to D036 activity inheriting identical criteria to (U)P87
- Used for EGKK arrivals (EGKK STAR starts at VASUX)

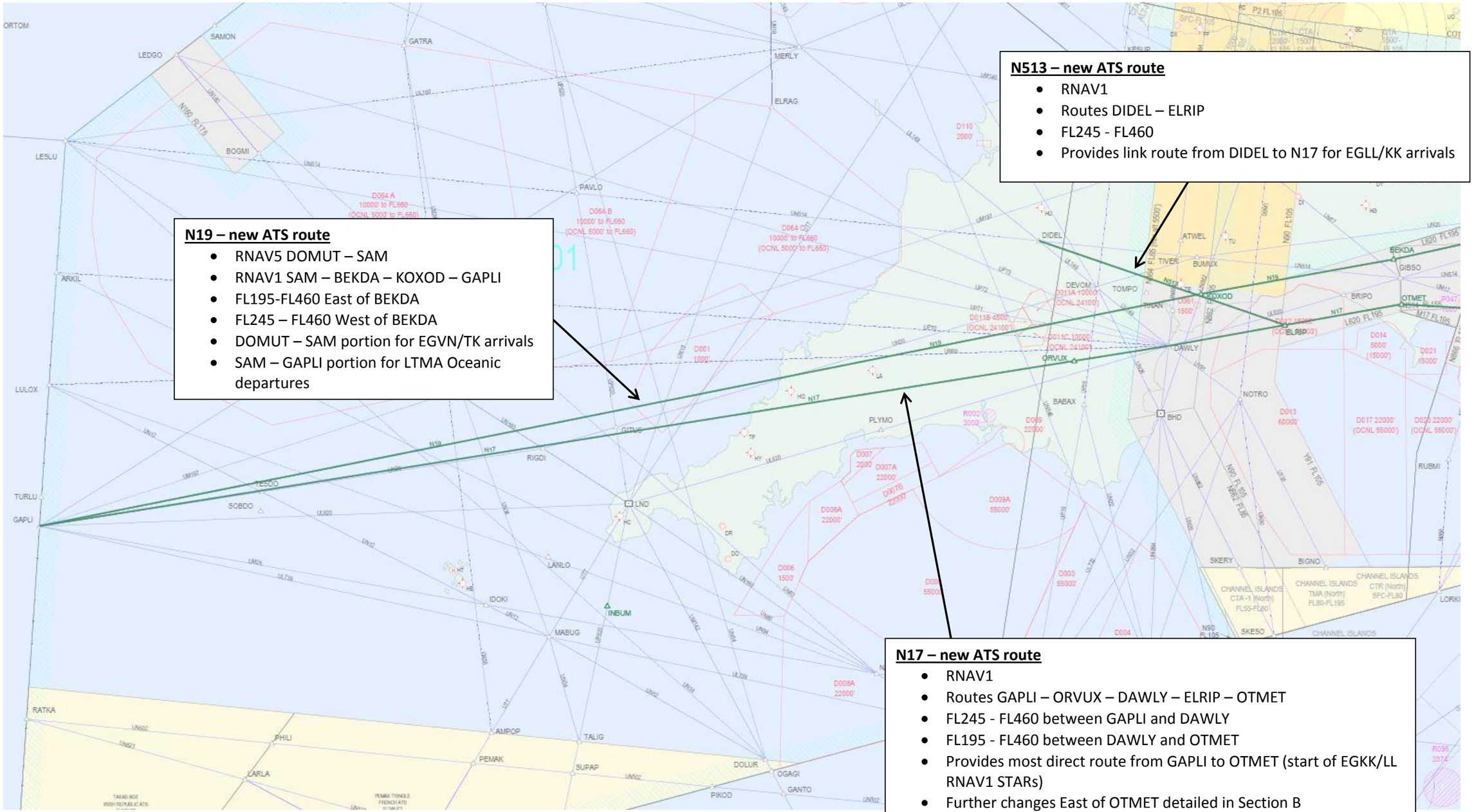
Y113 – new ATS route

- RNAV1
- FL195-FL460
- Routes ORIST – ERGUM
- Provides route connectivity to L982 when Portsmouth danger areas are active

(U)P87 – modified ATS route

- No longer routes to DOMUT
- Becomes RNAV1
- Routes BOLRO – ROXOG
- No other changes
- Used for EGLL arrivals (EGLL STAR starts at ROXOG)

Extract from NATS consultation material
(with permission from NATS)



Extract from NATS consultation material
(with permission from NATS)

N514 – modified ATS route

- Becomes RNAV1
- Routes GASGU – EVTES – EXARO – BEKDA – DIDEL
- FL195 – FL460 East of BEKDA
- FL245 – FL460 West of BEKDA
- 2nm spacing from TRA002

Y321 – modified ATS route

- Extended to route PEPIS - EXARO
- RNAV1 between PEPIS and EXARO
- FL245 - FL460 between PEPIS and EXARO

M195 – modified ATS route

- Extended to route SAM – MARUK – LORKU
- Becomes RNAV1
- FL195 - FL460 between SAM and MARUK
- FL245 - FL460 between MARUK and LORKU
- Retains existing CDR status between MARUK and LORKU

(U)M185 – modified ATS route

- Moved to route LUGIS – ADLOG – TELTU – MID…
- No changes North of MID
- RNAV1 between LUGIS and MID
- 7nm spacing from (U)N863/(U)M184
- FL195 – FL460 between LUGIS and MID
- CDR 1&3 subject to D037, D038 and D039

(U)N6 – new ATS route

- Routes PILIP – TELTU
- RNAV1
- CDR subject to D037 and D038, to be managed identically to (U)N863/(U)M184

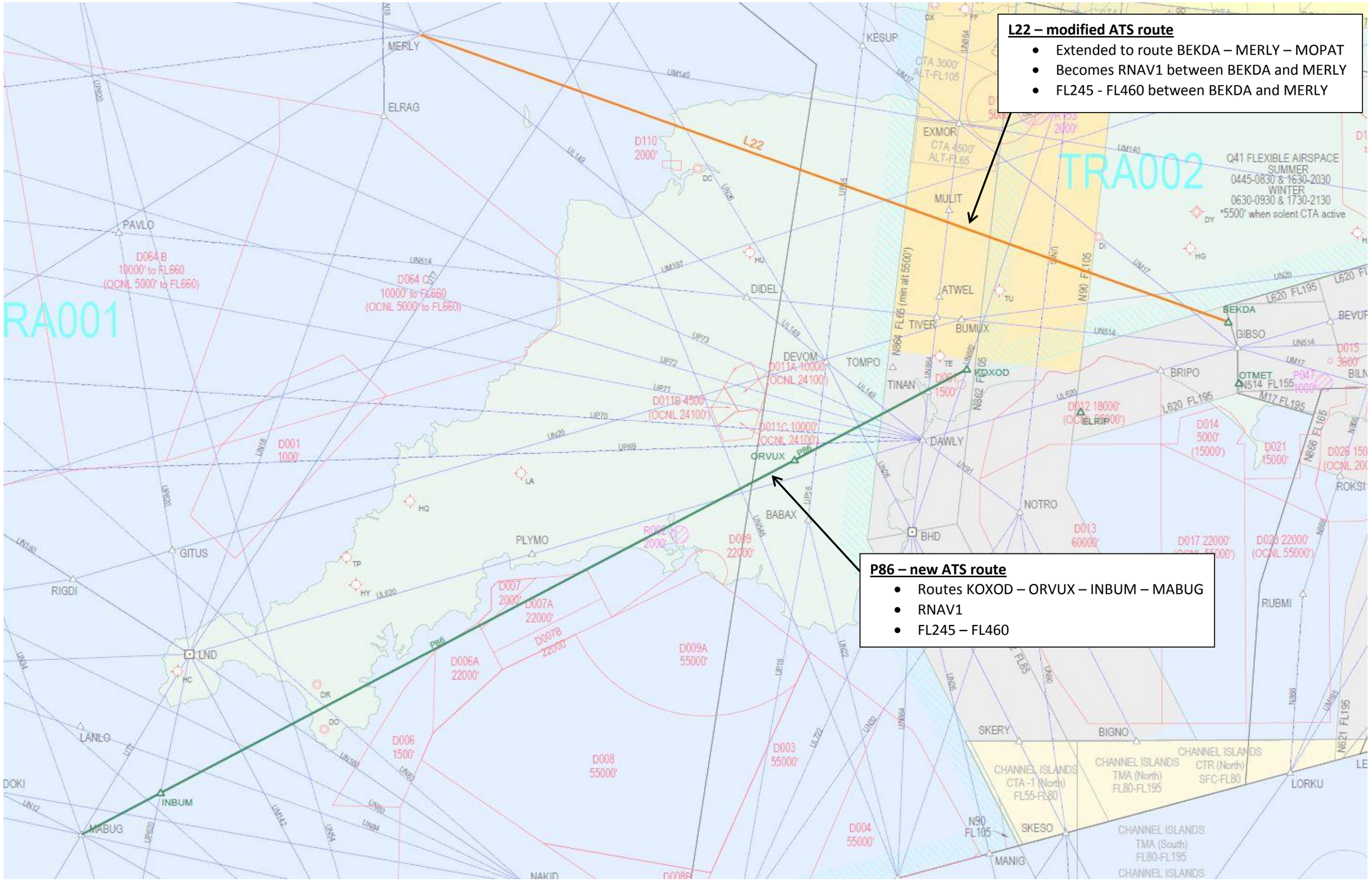
N63 – modified ATS route

- Moved from KAPEX – LORKU to route SAM – LELNA
- Becomes RNAV1
- FL195 - FL460
- Loses D023 CDR 1&3 status
- Becomes a new CDR1&3 subject to D036 activity. When (U)P87/(U)P88 are closed, N63 must also close. This is because there is not sufficient spacing between N63 and the Portsmouth Danger Area offload routes, (U)Y110 and (U)L980.

(U)N867 – modified ATS route

- Moved to route GARMI – VASUX – AVANT
- Becomes RNAV1
- Retains existing CDR status between GARMI and VASUX

Extract from NATS consultation material
(with permission from NATS



Extract from NATS consultation material
(with permission from NATS)

APPENDIX B TO SWANWICK AIRSPACE IMPROVEMENTS PROGRAMME AD 1 AIRSPACE CHANGE DECISION DOCUMENT

SAIP AD1 - CONDITIONS FOR AIRSPACE CHANGE APPROVAL

August 2017

Serial No	Operational Report Reference	CAA Regulatory Requirement (references to RSAD stated where applicable)	CAA Use
1	2.17[1]	Pending any change to current CAA airspace containment policy, NATS is to ensure that controllers take due consideration of traffic operating outside CAS into account when aircraft are flying on RNAV1 ATS routes positioned 2NM from adjacent airspace structures, and that controllers take appropriate action to ensure safety of traffic within CAS is not compromised by traffic operating in the adjacent airspace structure, i.e. TRA002, Class G or the Portsmouth Danger Area complex as applicable.	
2	2.18	**RSAD 3.1 / 3.2** – See 2.17	
3	2.18	**RSAD 3.4** 1. Radar monitoring required; NATS controllers are to ensure there are no infringements of TRA002/ Class G airspace at the EXARO turn. 2. See 2.17.	
4	2.18	**RSAD 3.5.** See 2.17	
5	2.18	**RSAD 3.6.** See 2.17	
6	2.18	**RSAD 3.7.** 1. NATS controllers are to ensure there are no infringements of D037/038 when notified as active.	
7	2.18	**RSAD 4.1**. See 2.17.	
8	2.18	**RSAD 4.2.** See 2.17.	
9	2.18	**RSAD 4.3.** See 2.11.	
10	2.20	NATS is to ensure appropriate procedures are in place to ensure controllers apply the appropriate vertical separation above the following danger areas when the atmospheric pressure is low and activity	

[1] (Note – this RR entered in Op Report Section 2.17 by error – relevant to Section 2.16 but left as is in for editorial reasons)

		is raised as notified by NOTAM: N17 overflight of D012 (ocnl 25,000ft amsl) and D026 (ocnl 20,000ft amsl). N19 overflight of D011A/B/C (ocnl 24,100ft amsl). N513 overflight of D012 (ocnl 25,000ft amsl).	
11	5.1.c	NATS should ensure that appropriate briefing is provided to controllers and the correct joining instruction methods captured in the MATS Part 2 to ensure that instructions to hold at any of the 'floating holds' at BILNI, KATHY and DOMUT Holds are given in a timely manner to ensure crews are able to engage the appropriate hold in the aircrafts' FMS without proceeding beyond the hold in question.	
12	5.1.c	NATS is to ensure an appropriate entry regarding En-Route holding is included on all STAR charts as applicable, including a note to indicate that pilots may be instructed to carry out a right-hand hold at KATHY only when instructed by ATC.	
	Additional compliance requirements		
13	1	The NATS/FOST LoA is to be updated and agreed with the MOD (FOST) to reflect procedures to be applied to the new and existing ATS routes and STARs (including L980 and N859) when segregated operations take place within the FOST danger areas. The agreed Draft LoA is to be provided to SARG prior to implementation.	
14	3	NATS to provide SARG with the appropriate evidence to assure the provision of a satisfactory navigational infrastructure.	
15	4	NATS to acknowledge and comply with CAA PIR data collection requirements (to be issued prior to change implementation).	