

## Notes from presentation to introduce LAMP2 to local community representatives on 3rd November 2017

### Objectives

1. The objectives of the presentation were to:
  - Further introduce the second phase of the London Airspace Management Programme (LAMP2) initiative (over that provided to NMB in Aug/Sept 2017) and explain the linkage to the Future Airspace Strategy (FAS).
  - Outline the programme objectives.
  - Explain some of the design concepts that may be included.
  - Outline how the programme may help to address local concerns, on a range of issues.

This summary assumes a basic level of familiarity with aviation terms, airspace design concepts and previous sight of LAMP2 introductory notes to the NMB /GATCOM.

### Background to Strategic Airspace Change

2. At the instigation of the DfT, our colleagues in NATS are leading a future airspace initiative in the south of the UK, known as LAMP2 with input from all airports including Gatwick. This forms part of the Future Airspace Strategy initiative (FAS) which is sponsored by the CAA as part of its statutory responsibilities to government to ensure the modernisation of UK airspace.
3. The airspace capacity, across South East UK, is rapidly approaching the limits of its design. This design creates pinch points which lead to delay and introduce operational inefficiency. The airspace design above Flight Level 90 (FL90)<sup>1</sup> limits the extent of possible change below this level. As further demands are placed on the airspace structures the local consequences could become more prevalent and acute. Key points to note include:
  - 1 in 3 aircraft are expected to be delayed for greater than 30mins by 2030<sup>2</sup>; delays will not only impact departures. Aircraft will need to hold in overland stacks for longer, using more fuel, and as a consequence, the length of the operating day could extend.
  - Our airspace is a critical element of the UK's strategic infrastructure and it is widely acknowledged that it is long overdue a major overhaul. The Future Airspace Strategy (FAS) originally scheduled for this to be complete by 2019.
  - The objectives of LAMP2 further the ambitions of the FAS by seeking to develop and implement an efficient airspace design that has the capacity to meet forecast changes in demand. FAS aims to accomplish this whilst balancing the needs of all stakeholders, maintaining UK regulator safety levels and reducing environmental impacts. Some of the envisaged benefits following implementation of a future design could include the following:
    - Increased aircraft safety
    - Reduced flight time, delay and cancellations
    - Reduced emissions per flight
    - Reduced noise impact and
    - Simpler, more flexible structures better suited to airspace sharing and change.

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<sup>1</sup> Flight Level 90 is similar in altitude to 9000' above mean sea level.

<sup>2</sup> Upgrading UK Airspace – Strategic Rationale, DfT, 2017

- The second phase of the London Airspace Management Programme (LAMP2) has set an aspirational completion date of 2023/24. LAMP2 is primarily concerned with the re-design of airspace above FL90; airspace changes below this will be managed and coordinated by each of the 15 airports/airfields effected by the redesign. The objectives of LAMP2 are different from the LAMP1A Modules.
- NATS En Route Ltd (NERL), part of NATS Holdings, have been asked by DfT to lead the initial concept design phase. FAS Deployment Steering Group (FAS DSG) is tasked with coordinating the implementation of the FAS Deployment Plan on behalf of the UK aviation sector.

### Programme Timeline (envisaged)

- Nov 17- Mar 18 Airport engagement with NERL on application of design concepts
  - Apr - May 18 NERL engagement with DfT to present concept design study results
  - May - Nov 18 Detailed design of airspace above FL90
  - 2018 - 2020 NERL led consultations and system integration analysis
  - 2019 - 2022 Airport consultations leading to agreement on final design
  - 2022 - 2023/24 Readiness for, and implementation of, new airspace designs.
4. There are a range of design principles that NERL may wish to incorporate into a future design, these in turn could enable changes below FL90; some of the potential principles and the envisaged benefits to communities could include the following:

Design Principle	Delivers/ Enables	Potential Community Benefits
Climb outs at 6° or greater	Steeper, continuous climbs; consistent application of optimum Noise Abatement Departure Procedure. Potential for improved SID design	Aircraft climb at faster rate with smaller noise footprint; low & slow SID transits <7000' eliminated.
Airport exclusive departure 'tubes' providing safe and segregated climb from FL90 to free route airspace (> FL310)	Removes flow constraints and pinch points; traffic deconfliction built in.	Allows increased departure route variance and better management of departure routes
Time based operations to separate arrivals & removal of routine use of overland stack holds	Better management of arrival traffic; sequencing of traffic through different gates (at FL90)	No overland holding or low/slow transits from holds to final approach; reduced visual impact
Arrival 'tubes' to airport entry gates (at FL90) linked to procedural (PBN based) continuous descent approaches	Continuous descents at variable descent angles;	Consistent, quieter approaches, with reduced visual impact and significantly reduced vectoring (previously used to create separation)
PBN based routes and procedures	Greater choice of route options (above 3000') to intercept final approach, avoid sensitive locations, concentration & dispersal	Increased opportunity to bring increased balance to noise dispersal / concentration on departures and arrivals [Noise Preferential Routes to remain]
Shorter, trajectory based routing	Reduced proximity to airport and reduced fuel burn	Reduced visual impact and emissions at lower altitudes

### Application of Technology & Programme Integration

5. The application of the design principles will require a wide range of system integration across commercial airline fleets, ANSPs, airports and cross border airspace managers; in addition, the changes will require full agreement on aircraft management and operating procedures. Whilst most of these have been applied as part of point solutions, the scale and extent of integration required significantly increases the complexity of the programme. NERL and the major airports are alert to these challenges and developing a schedule that reflects these challenges and recognises the importance of community and other stakeholder engagement.

### **Summary of Discussions**

6. LAMP2 lies as the cornerstone of the fundamental redesign of our route airspace; an infrastructure asset of vital strategic importance to the UK. The current design is at the limit of its capacity, is increasingly inefficient and prevents airspace changes at lower altitude of benefit to communities. Future designs are still conceptual, however, ambitions reflect the system's needs and the potential benefits to stakeholders. The scale and complexity of this programme necessitates that the agreed solution remains fit for purpose for the next 50 years. Critical to achieving this ambition will be close collaboration and an openness to compromise, so that a single, comprehensive design can be implemented successfully, without further delay, and benefits realised quickly.

### **Recommended further reading and relevant links**

- Future Airspace Strategy website <http://futureairspace.aero> – 2 videos outlining why airspace change is necessary and introducing some of the potential design concepts
- Upgrading UK Airspace – Strategic Rationale, DfT, 2017
- CAP1378 – Performance Based Navigation, CAA, 2016
- CAP1520 – Airspace Design Guidance (Draft), CAA, 2017 (expect re-issue by end 2017)

**Questions arising from the introduction meeting:**

1. **What are the design criteria for the airspace design above FL90?** The design criteria is still being developed, but will aim to create airport exclusive tubes to allow aircraft to transit, climb and descend unimpeded through airspace above FL90. Management and separation of aircraft will be systemised to maintain safety standards.
2. **How will the NATS airspace model accommodate increasing passenger demand?** Future models will remove pinch points and make more efficient use of the available airspace; this will create additional capacity. System demands will become governed by airport and airline operating efficiency.
3. **Does Gatwick's future air traffic projections include a second runway?** Yes. Gatwick has consistently maintained that it continues to offer a credible and deliverable solution in the form of a second runway. We have therefore asked that the work undertaken (by Gatwick) as part of the Airports Commission be considered by NERL in their design considerations.

We believe that any future airspace design needs to take a long term view and accommodate ATM growth well into the future and provide as much certainty as possible to local communities, in a similar way to the Government's recently published Aviation Strategy (call for evidence) which looks out to 2050 and beyond.

4. **What will guide the application of airspace design below FL90?** We anticipate that airport procedures will endeavour to include features including: climbing aircraft at steeper gradients, to reduce their noise footprint, use GPS based departure and arrivals routes to minimise noise and environmental impact and to systemise arrivals to eliminate the need for vectoring to provide safe separation between aircraft.
5. **What will be the impact of the removal of VORs (MAY and MID)?** The vast majority of VOR beacons are being withdrawn from service. All new airspace design will use space based navigation devices. Aircraft may in a future design still route close to the location of a beacon, but the use of GPS based navigation techniques will enable greater variety in the placing of navigation reference points.
6. **Will there be any changes to the NPRs?** We currently do not envisage the need to vary the existing NPRs and our intent is that departing traffic will remain in the existing NPR swathes until they climb above the NPR altitude limit (3-4000').
7. **Will future airspace design include stack holds?** The design principles restrict the creation of holds only over the sea and at higher altitudes (compared to today's design), and their use is only intended by exception.
8. **How might arrivals work without the use of stack holds?** The range of options are numerous and make use of modern data link technology and aircraft navigation and avionic capabilities. It is envisaged that future arrival management will use time based operations to separate and sequence arriving aircraft.

## Programme Management and Implementation

9. **What terms of reference are NATS working under?** NERL have been asked by DfT to investigate concept designs that could accommodate anticipated future traffic flows beyond 2040. It is expected that they will report their findings to DfT in the spring of 2018.
10. **When will LAMP2 be implemented?** The aspirational ambition is for the new airspace design to be fully implemented by 2024; the ability to deliver to this timeframe will depend on many factors and it is premature to set any firm milestones.
11. **Can elements of airspace design be introduced early?** This may be possible but until we understand how the final design is constructed it is not possible to identify which aspects could be adopted early.
12. **How will airspace design below FL90 be decided?** Firstly, airspace design below FL90 will be informed by, and be considered in parallel to, the design above FL90; changes to the latter may be introduced as a result of safety or operational requirements and/or as a result of consultations. Secondly, the airspace design below FL90 will be governed by the regulators airspace change process which requires airports to present the case for change, design principles and options to the community. Final decisions will be decided by the CAA and/or DfT ministers in accordance with government policy.
13. **What will the consultation process be?** The consultation process will follow the revised airspace change process, which we anticipate will be issued by the CAA before the end of 2017. We expect that airports will collaborate and hold joint consultations of communities potentially affected by multiple airport operations.
14. **How will airspace design overlap between airports be managed?** The close proximity of London's major airports means that there will be considerable overlap between desired procedures. Potential conflicts above FL90 will be managed and resolved by NERL in their future design. Below FL90 the airports have made a commitment to work collaboratively on design options and we expect that these options will be presented to communities under joint consultations.
15. **How many arrival tracks will there be?** It is premature to offer any numbers, but we anticipate that by moving to GPS based routes and time based operations we should be able to create an arrival management system with multiple arrival routes which will offer greater predictability and enhanced management of traffic, all of which should offer benefits to communities and residents impacted by current procedures.

**Meeting Attendees**

Dominic Nevill	ESCCAN
Kevin Chandler	ESCCAN
Ruud Ummels	To70
Sally Pavey	CAGNE
Mike Ward	Plane Wrong
Angus Stewart	TWAANG
Irene Fairbairn	TWAANG
James Lee	Consensus Agreement (Aligned to GON)
David Howden	TWANSG (Consensus Agreement)
Atholl Forbes	PAGNE
Ian Hare	APCAG
Liz Kitchen	West Sussex DC
Richard Streatfeild	HWCAAG
Douglas Moule	EZY
Peter Barclay	GACC
David Fenwick	GANN (Consensus Agreement)
Andy Sinclair	GAL
Lee Howes	GAL/NaTMAG
Andy Kenyon	ANS
Vicki Hughes	GAL/NMB
Graham Lake	NMB