# Draft Airspace Modernisation Strategy 2022–2040 consultation

## NATS Supplementary Detailed Comments

The following comments are a supplement to NATS' core response to the consultation questions. These are provided to (a) build on the core response with further details and examples, and (b) address areas not specifically asked by the consultation questions.

### AMS Objectives – Environmental Sustainability

The objective for Environmental Sustainability states *'Airspace modernisation will deliver [the government's Air Navigation Guidance],'* but this is too simplistic. The AMS scope can only be part of the delivery of the Air Navigation Guidance (ANG) target, it cannot deliver it in its entirety, so the wording should be 'will contribute to'. Also, the ANG does not capture all drivers that the AMS should, such as climate adaptation and Net Zero Carbon.

2.37, If we are truly going to find environmental, noise and capacity benefits from airspace modernisation there needs to be clarity on the 4000' to 7000' 'unduly impacted' statement in the ANG so that ACP sponsors and impacted stakeholders can understand the criteria to design to.

2.47 states that '*a significant proportion of the emissions reductions will come from improving the efficiency of the existing aviation system, including aircraft, airports and airspace*'. However, NERL's NR23 submission sets out that airspace is a relatively small contributor to net zero, aligned with industry roadmaps at UK (Sustainable Aviation), European and global (IATA/ATAG) level. These all cite ATM's contribution being c5% overall so the AMS should be updated to reflect this.

2.49 states, '*Airspace modernisation is expected to result in a further reduction in the average noise levels per flight*'. NATS suggests the measurement should be on noise impact rather than noise levels, as impact is a better predictor of response to the noise source. The ANG cites reduction in noise impact as the metric.

### AMS Objectives – Roles & Responsibilities

One of the three key recommendations NATS identified in our core response is, 'Roles and Responsibilities need to be defined for the future operation'

- The AMS must define the responsibilities and priorities between network and aerodrome Queue & Capacity Management, of which Collaborative Decision Making (CDM) is a part, considering the conflicting requirements of airspace users, airports and the network.
- The AMS must define who will be responsible for airspace safety in an integrated airspace environment. NATS expects to take a major role in this but, as there is no clarity in the AMS on whether there will be a centralised or federated traffic management model, it is impossible to determine the scope.
- NATS' preferred long-term solution would be a framework that enables competing UTM providers to offer services, while a market-neutral airspace manager ensures equal access to airspace and provides a common information service.

## AMS Objectives – Policy & Rules

One of the three key recommendations NATS identified in our core response is, 'Policies and Rules for the new operating environment need to be defined'

- Consideration must be given for targeted data sharing requirements that are relevant for each airspace user and work between different users whilst maintaining data security (one size does not fit all).
- NATS supports universal compatible Electronic Conspicuity as this enables the integration of all airspace users into one common airspace, where conflict management no longer relies on 'See & Avoid' but rather 'Detect & Avoid' supported by appropriate ground services.
- 2.23 states that space launches are, '*likely to place restrictions on other airspace users, albeit infrequently and for relatively short periods of time*'. NATS suggests that the second half of this sentence (from 'albeit…') be removed. A successful spaceflight industry will require regular significant blocks of airspace within the life of the AMS, including dynamically switchable airspace to protect other airspace users from falling debris, which will require a degree of integration and engagement not in current planning horizons. Engagement with launch operators has also shown that the times of operation of their desired closures are operationally significant to other airspace users.

## AMS Drivers

2.67 states, '*the CAA and Department for Transport have formed a task force, working with manufacturers, to develop and publish common specifications enabling interoperability between airspace users and service providers'*. As well as a common specification, the AMS must support development of a roadmap for the deployment of electronic conspicuity, with the addition of either user incentivisation or regulations to ensure equipage.

2.70-72, NATS agrees that segregation of airspace is required for Defence activities that are not compatible with other airspace users (i.e. cannot be integrated safely). However, coherent AMS delivery will only be achieved if all stakeholders have an understanding of the forecast demand driving the greater airspace requirements over the next 10 years and whether there are any changing safety requirements as a result of new weapons and technologies. This should be given in the AMS. For example, a forecast demand for Defence similar to the Civil airline operator/network forecast.

3.26, references Contrails, with the footnote, '*There is uncertainty over the exact climate impact of contrails. We will keep under review the evidence of their impact and potential means of mitigation.*' However, such non-$CO_2$ aspects should also be a driver in section 2, subject to the caveat in the footnote.

## Modernising through ICAO GANP

3.4, Note that the dates shown for the ASBUs are out of date. ICAO has moved them to the right by 1-2 years so the AMS should be updated to reflect this.

3.25, '*Future-proofing new airspace designs*', is not allowed under the current CAP1616 ACP process. Undertaking airspace design for potential future benefits based on something which doesn't yet (and may not ever) exist does not seem to be justifiable within an ACP under the current process. This statement must be clarified or removed.

## Delivery Elements

Table 4.3, Additional detail around the '*UK Space-Based Augmentation System initiative'* is needed, particularly in terms of geographical system coverage and planned interoperability with current navigation systems.

Table 4.3, The AMS must reflect all expected uses by aviation of safety related spectrum, i.e. that some uses may continue independent of the AMS. Specific examples are safety systems on board aircraft for which there are no ICAO type interoperability requirements, e.g. Radio/radar altimeter, ground based primary radar systems that are both essentially independent and non-cooperative in their natures and certain systems use in the airport environment, such as ILS.

UK-ABN/1, The AMS should define the technical ATM system capabilities required to share trajectory-based information, between ANSPs, and for CNS (strictly, communications).

UK-ABN/3, Given the need for larger SUA to accommodate emerging military systems and the UK's continued membership of NATO, the strategy should include cross-border SUA.

UK-ABN/1, '*structured performance-based navigation routes at lower levels'*, are not trajectory based, so should sit only in element UK-ABN/2 (Terminal Airspace).

UK-ABN/1, '*flexible access airspace structures that allow for low level integration of different users*', should sit in Airspace Management delivery as it pertains to airspace structure management, not trajectories.

UK-ABN/1, '*Initial Free Route'* needs to be defined in the text.

UK-ABN/1, Dynamic Sectorisation is an ATM response to traffic demand rather than an FUA capability, so should be under UK-ABN/3

UK-ABN/4, Current HAPS proposals include balloons at 130,000ft, fixed-wing services c.FL600 and airships. Added to the mix will be flown space returns and sub-orbital spaceplanes. Development of high-altitude airspace and associated services (aeronautical info, FIS, network ops, collaborative surveillance and separation) is a significant development area which is captured extensively in the ICAO GANP and must also be reflected in the AMS, either as a delivery element or within the swim lanes of UK-ABN/4.

UK-ABN/4, Standards and Regulatory needs must be represented in the Part 2 swim lanes, e.g. milestones under UK-ABN/4 for 'UK-ICAO Alignment'. If these are yet to be determined, then the expectation of their need should be cited as part of the delivery elements and a column added to the Part 2 database (e.g. next to the UK Regulatory column D) to capture the expected need for ICAO SARPs.

UK-ABN/4, Cross-border FRA should be linked to a full surveillance capability, to address current surveillance (and communication) gaps which exist in UK airspace, and SWIM for enhanced data transfer to support trajectory management between ACCs

UK-AM/8, Clarification is needed on which systems or architecture migrate from predominantly ground-based CNS to predominantly space-based CNS. Some ground-based systems are remaining with space-based CNS as a backup, for example, ILS, or where there is no viable space-based alternative, e.g. primary radar.

UK-AM/9, The categories of radio spectrum considered as being appropriate for use by Electronic Conspicuity devices need to be defined. The risks of saturating the data communications channels used here in a "surveillance" context must be fully considered, especially where the same frequencies may be used simultaneously for other aeronautical purposes.

## Use Cases

Use Case 1, NATS agrees that switching on/off airspace volumes would improve access for GA, but the AMS must define who gives the notification, when this should occur and how an airspace user would know it was happening.

Use Case 1, The CAA needs to develop the regulatory process so as to be able to adjust the airspace classification when traffic through an airport increases to a point that a requires a higher classification.

Without clarity on the future policy and rules, or timescale, Use Case 1 risks setting misleading expectations. For example, it is unclear whether this is a change in guidance from classifying airspace based on traffic density. This must be resolved.

Use Case 1, States '*Increased use of class E with a TMZ in other areas to enable ATC provision to IFR while minimising impact to VFR'.* However, the airborne user community is changing with increasing numbers of new entrants and a widening gap in speed profiles across a range of aircraft types. This increased usage and performance disparity is increasing the risk of collision in Class E Airspace as users are less able to use see and avoid effectively. Therefore, the extension of use of Class E airspace must be subject to a detailed safety assessment before inclusion within the AMS to avoid a repeat of Airprox 2011085 or a more severe outcome.

## Definitions

Advanced Flexible Use of Airspace refers to FUA in the glossary which says it (FUA) is being replaced by AFUA. 'AFUA' has multiple interpretations historically so requires definition or reference to the AFUA Concept.