CAA Assessment Meeting – 22/07/22

Integrating Unmanned with Manned Aviation in Class G Airspace

Air Navigation Solutions and Skyports

Agenda (on TEAMS)

1.	Introduction	CAA
2.	Statement of Need (discussion and review)	All
3.	Issues and opportunities arising from proposed change	Change Sponsor
4.	Process requirements	CAA
	- Trial Plan	
	- Stakeholder engagement	
	- Noise impact assessment	
	- Safety assessment	
5.	Provisional process timescales	All
6.	Next Steps	All
7.	AOB	All

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Section 1
Introductions

ANSL & Skyports

ANSL

- [redacted] – Head of Innovation & ATM Solutions
- [redacted] – ATM Operations Specialist - Airspace & Sustainability Lead

Skyports

- [redacted] – Head of Technology
- [redacted] – Chief Regulatory Officer
- [redacted] – Technical Operations Lead
- [redacted] – Regulatory Affairs Associate

About the Consortium

ANSL

- At the forefront of air traffic management, Air Navigation Solutions (ANSL) delivers air traffic control and engineering services at some of the world's busiest and most complex airports. We provide bespoke air traffic management solutions. Working in collaboration with our customers, we design solutions that are flexible to their needs, finding innovative approaches.
- We are re-imagining the way air traffic is managed and safety is the bedrock upon which we operate. Based at Gatwick Airport, we provide Tower services at Gatwick Airport and Tower and Radar services at Edinburgh Airport. We also manage contracts at other airports to provide specific services such as airspace change, safety & compliance support, tailored solutions (for example Radar in The Tower) and project management.

Skyports

- Skyports uses highly automated unmanned aircraft systems (UAS) to capture business critical data and deliver goods to hard-to-reach places. We use unmanned aircraft for delivery, survey and surveillance. Skyports also designs, builds, owns, and operates networks of vertiports, enabling safe and efficient urban air transport in major markets around the globe.
- Based in London, United Kingdom, Skyports has projects operating in multiple continents, including in Asia, Africa, Australia, Europe, Middle East and North America. Skyports investors include Deutsche Bahn Digital Ventures, Groupe ADP, Irelandia Aviation, Levitate Capital, Solar Ventus, The Goodman Group, Kanematsu Corporation, Ardian, F2i and GreenPoint.

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Section 2
Statement of Need

Statement of Need

- Approval is sought for a volume of airspace over the west coast of Scotland, in Class G airspace, for a six-month period in which to investigate the feasibility of the creation of an electronic conspicuity (EC) mandated zone (ECMZ) in low-density airspace over rural areas that would enable the safe integration of unmanned aircraft systems (UAS) beyond visual line of sight (BVLOS) operations with other airspace users.

- A non-operational trial is not possible, neither is a trial within an existing structure, like a (T)DA. A live trial in the proposed location is necessary owing to the unique operating environment and the need to build a comprehensive surveillance picture, enabled by the positioning of ground sensors across the area, that will support operational use cases in the area as part of the trial and potentially beyond.

- A TDA is not suitable, as one key objective of the ACP is equitable use of the airspace and integration of other airspace users, which a TDA does not achieve.

ANSL and Skyports have been onboarded into the CAA Regulatory Sandbox with this project.

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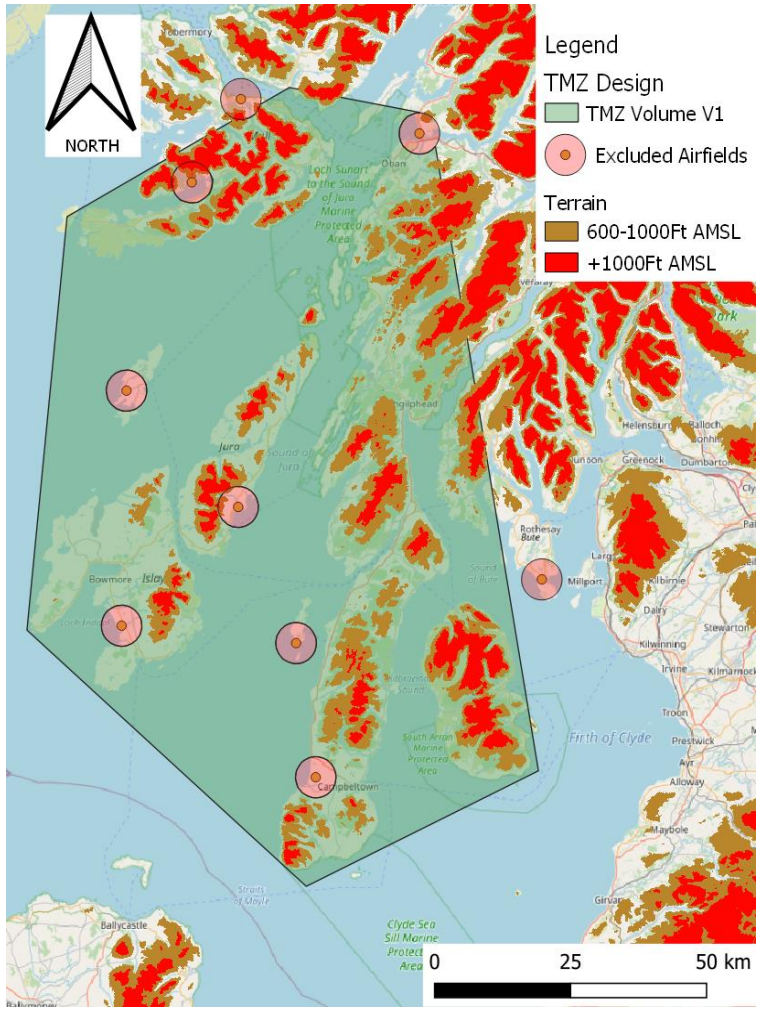
Proposed Very Low Level EC Mandated Zone (ECMZ) Solution



Airspace characteristics:

- 0-500ft AMSL over sea
- 0-1,000ft AMSL over land
- No separate airspace blocks leveraging simple operating procedures instead
- Existing airfields are excluded from EC Mandated Zone to allow manned non-EC aircraft to access airfields
- Creation of a known traffic environment through network of ground sensors
- UAS operators responsible for self-separation management
- Use of foundational UTM services to enable equitable access

EC Mandated Zone airspace accessibility requirements

Ground sensor network

ANSL will establish VLL ground sensor surveillance capability across the EC Mandated Zone

Conspicuous Aircraft

- Have an ADS-B transceiver on-board
- No access request required
- Follow basic airmanship principles

Non-conspicuous aircraft

- Contact ANSP to request an access slot (online / phone)
- Receive flight authorisation from ANSP
- ANSP to provide access by issuing a TFR to UAS operators

UAS

- Submit 4D flight plan
- Receive flight authorization from ANSP
- Connect UAS telemetry to UTM platform
- Demonstrate operable ADS-B
- Receive take-off authorisation from ANSP

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Section 3
Issues and Opportunities

ECMZ Challenges & Proposed Solution

Challenges:

- Operating in an ECMZ will require all airspace users operating in the zone to be suitably conspicuous
- Other airspace users need to be aware of the equipage requirements for operating in the ECMZ
- Proposed airspace volume coincides in parts with airspace used by general aviation in case of weather induced constraints (e.g. Low clouds)

Proposed Solution

- Access will be granted to aircraft without respective equipment through an online or phone request and approval solution ensuring that all airspace users can utilise the airspace
- An ECMZ augmented with foundational UTM services provides an elegant approach that does not exclude anyone from the use of the airspace
- By proposing an ECMZ rather than commonly used TDAs, we ensure that the airspace can be accessed by anyone for any appropriate reason and purpose without constraints or limitations, simply by broadcasting position data using suitable equipment

Regulation and Policy context

The proposed ECMZ is consistent with the aspirations and objectives contained within overarching legal, policy and regulatory strategies and other current national aviation documents and initiatives:

- **Advancing Airborne Autonomy (2022):** “Government and the CAA have been working closely on assessing the current landscape for electronic conspicuity and considering what the future approach should be, including the possibility of using Transponder Mandatory Zones (TMZ) to integrate all airspace users.”

- **Draft Airspace Modernisation Strategy 2022-2040 (2022):** “A vital aid to better sharing and access among different users of airspace is full electronic conspicuity of UK airspace users between each other and with air traffic management service providers, to ensure that this integrated air operation is safe. Electronic conspicuity allows airspace users to detect all others and be detected by all others. Airspace users will include crewed operations as well as remotely piloted and advanced air mobility operations.”

- **Flightpath to the Future (2022)**: “A key component of the plan for Future of Flight will be to set out the next steps to create a modern and flexible regulatory framework…This work is underway, the Government will work with the CAA to support innovation and to ensure new technology can be integrated in a safe, secure and sustainable way.”

- **Future Airspace Integration Working Group (2022)**: The FAIWG “brings together stakeholders from industry to help provide input and insight to government strategy and regulatory policy for integrating these new vehicle types in UK airspace” including “uncrewed aircraft systems and drones”

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Section 4
Process Requirements

Trial Plan

- What the trial involves
- What the trial is aiming to investigate, prove or validate
- Before and after descriptions
- What data and outcomes we need in order to prove or otherwise that the trial has been a success
- How we have considered and assessed the likely noise impact of the proposal and how this will inform the level of stakeholder engagement required
- Confirmed start and end date
- Safety assessment

Noise complaint monitoring process and reporting

Stakeholder Engagement

- Stakeholder Engagement Plan
  - 7 phases
  - Already conducted informal engagement
- Objective of engagement is to determine that the trial will be safe and operationally viable (para 317, page 93), not Consultation
- Engagement is with:
  - Airspace users (including full NATMAC list)
  - Community representatives
  - Aviation stakeholders
  - CAA
  - Media

  We will engage with airspace stakeholders throughout the ConOps and OSC development phase in 2022

Noise Impact Assessment

- A trial sponsor is required to consider and undertake an assessment of the noise impacts of a trial
- Scale of impacts to guide the level of information about the trial (reasonable and proportionate)
- This trial does not affect traffic distribution, therefore a qualitative statement will be provided

Safety Assessment

- HAZID session took place on the 6th July with ANSL and Skyports.
- For the identified hazards, the associated risks have been initially assessed qualitatively by providing an estimation of the severity and likelihood of the hazard occurring with consequences of varying severities. This is in line with the CAP 760 seven-step risk assessment and mitigation process.
- Estimation of the severity of the consequences of the hazard occurring and, estimation/assessment of the likelihood of the hazard consequences occurring were all assessed.
- The risk classification is presented for each hazard scenario and has been assessed twice:
  - without considering safety barriers (pre-barrier)
  - considering the addition of various safety barriers (post-barrier).

  This is to provide an initial indication of the requirement for risk reduction mechanisms to control the risks associated with the identified hazards.
- This work feeds into the overarching OSC that runs alongside the concept of operations.

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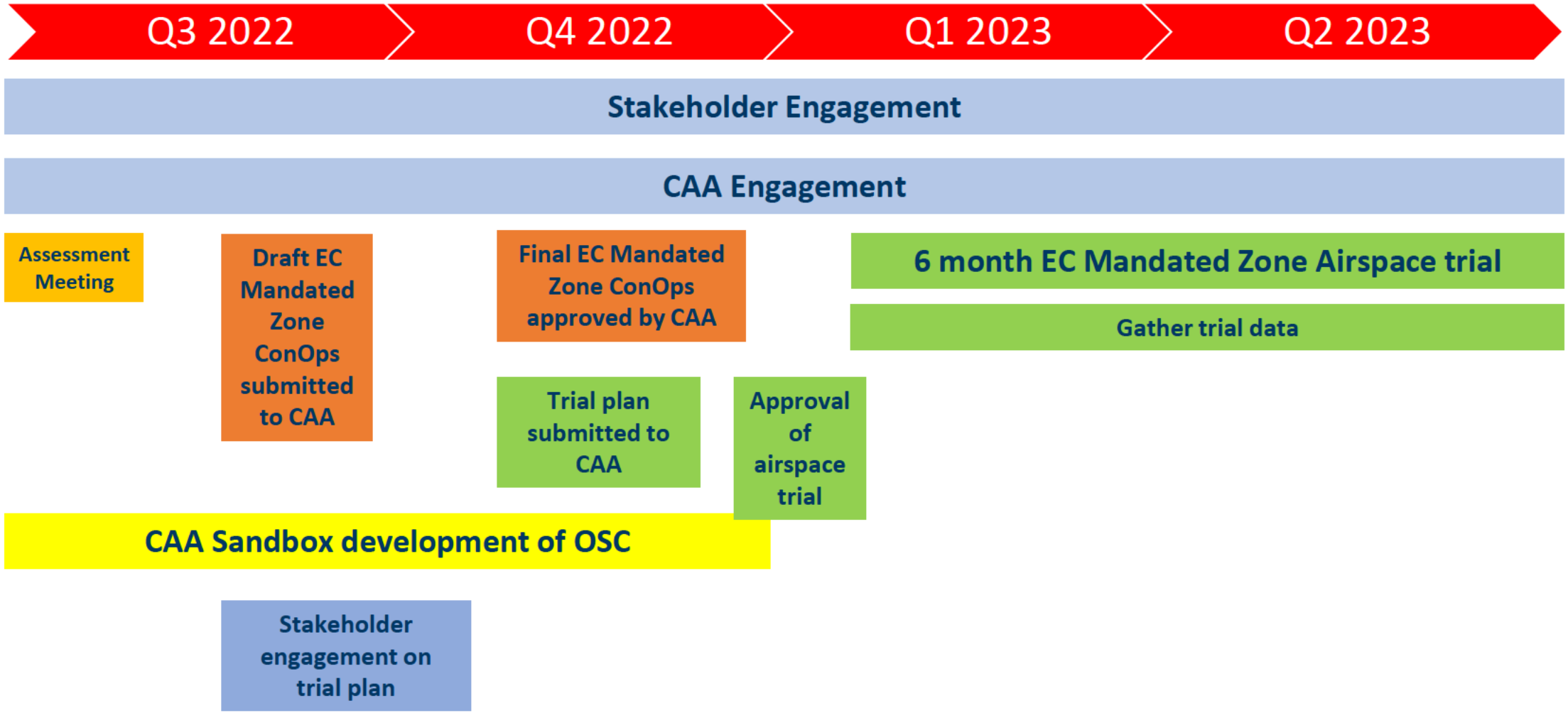
Section 5
Provisional process timescales

Project Timeline



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Section 6
Next Steps

Next steps

- OSC development - current
- ConOps development – current
- Stakeholder engagement - current
- Data assessment of PilotAware ground sensors – August 2022
- Drafting Trial Plan – Q3
- Trial Plan engagement – Q4 2022

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Section 7
AOB