Integrated BVLOS operations trial at Kirkwall Airport
ACP-2024-041

CAA Assessment Meeting

22 October 2024

Assessment Meeting Agenda

- Introductions
- Statement of Need
- Issues or opportunities arising from the proposed change
- Process requirements
  - Trial Plan
  - Stakeholder engagement
  - Noise Impact Assessment
  - Safety Assessment
- Provisional process timescales
- Next steps
- AOB

Meet members of project delivery team

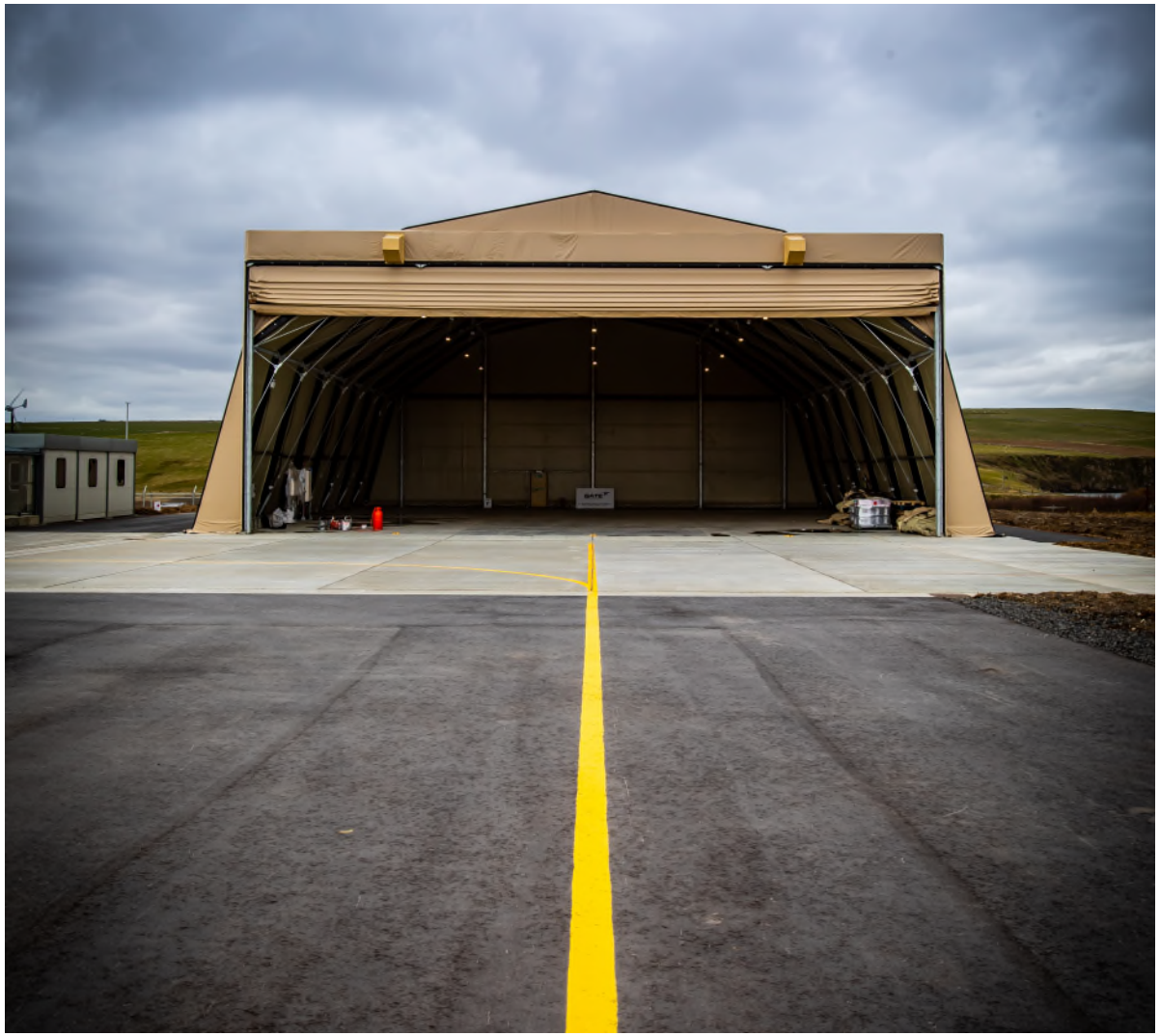
[redacted]	ATM Advisor, WP5 Lead	HIAL
[redacted]	Director of Airport Operations	HIAL
[redacted]	Regulatory Lead	Windracers
[redacted]	Project Director & Safety Lead	Egis
[redacted]	Airspace Change Lead	Egis
[redacted]	PMO	Egis

About SATE

Led by the Highlands and Islands Transport Partnership (HITRANS), SATE brings together a consortium of industry partners, public sector bodies, and academia which work with regional businesses and stakeholders to apply state-of-the-art aviation technology solutions to deliver targeted socio-economic growth.

The Highlands and Islands region presents an ideal environment within which to test new for emergent aviation technologies, enabling demonstration of practical solutions to address regional connectivity and logistic challenges, whilst at the same time creating the potential for job creation.

SATE is at the forefront in progressing UK and Scottish government aviation and environmental aspirations. SATE has already delivered new airport infrastructure, demonstrated hybrid-electric aircraft, and UAS BVLOS operations.



About SATE

- **Future Flight Challenge** (FFC) – UK Research & Innovate funded project.
- Create the UK's first low-carbon **Aviation Test Centre** to be located at a commercial airport.
- 7 Work Packages, **HIAL** in partnership with **Windracers**, and with the support of **Egis** will deliver **Work Package 5** – Creation of a **trial airspace test environment** and associated ATC Procedures.
- A trial airspace test environment, referred to as the **Trial Orkney Test Zone (TOTZ)** will be established in the Orkney Isles to facilitate a range of uncrewed aircraft **Beyond Visual Line of Sight (BVLOS)** trials and operations.
- The trial will test the feasibility of **integrated** crewed/uncrewed aircraft operations in **unsegregated** airspace within the TOTZ based on operations from Kirkwall Airport.
- Kirkwall Airport will be the **controlling authority** for the TOTZ and will provide the Air Traffic Service within the TOTZ.
- SATE has been part of the **CAA 'BVLOS Integration' Sandbox** since May 2024

SATE SUSTAINABLE AVIATION TEST ENVIRONMENT

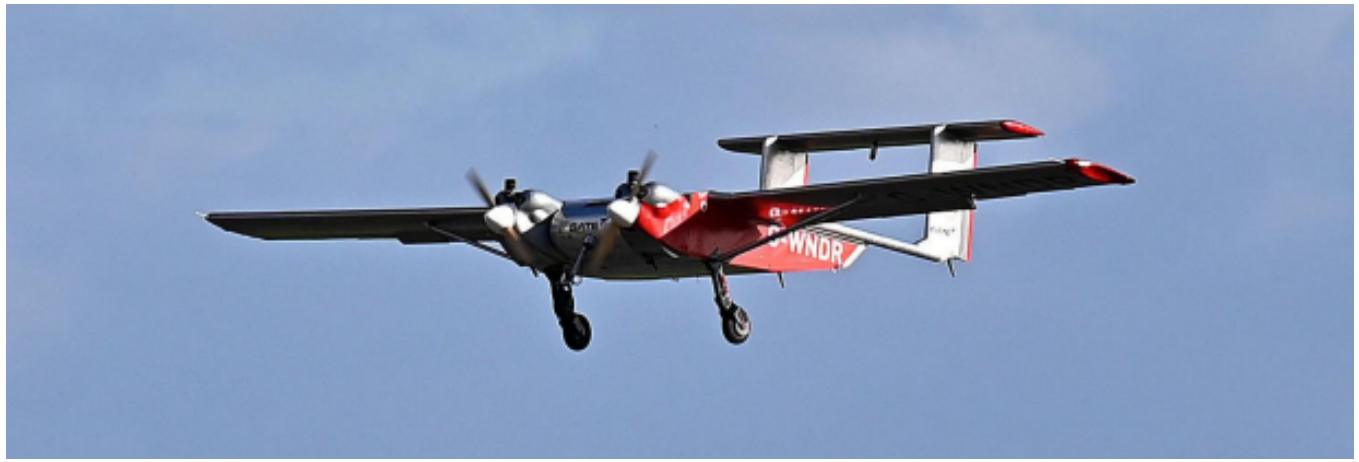
Introductions

The Consortium

Introductions	Statement of Need	Issues or opportunities arising from the proposed change	Process requirements	Provisional process timescales	Next steps	AOB

Windracers ULTRA

Proven highly-automated platform with minimal operating costs



Highlights:

- Designed for robustness with broad wind and weather limits
- First flight in May 2019
- Extensive flight testing (hundreds of operating hours)
- Highly reliable autopilot/avionics system
- Multiple BVLOS operations in the UK
- EC – Mode S + ADS-B IN/OUT

Parameter	Design Goals
Range	550Nm (+45min reserve)
Payload	100 – 150kg
Empty weight	270kg
Maximum take-off weight	450kg
Payload volume	700L
Cruise speed	75kts
Take off and landing	150m (Nil wind)
Maximum endurance	12+ hours
Electrical power	350W or 2kW
Runway	Dirt, grass, tarmac

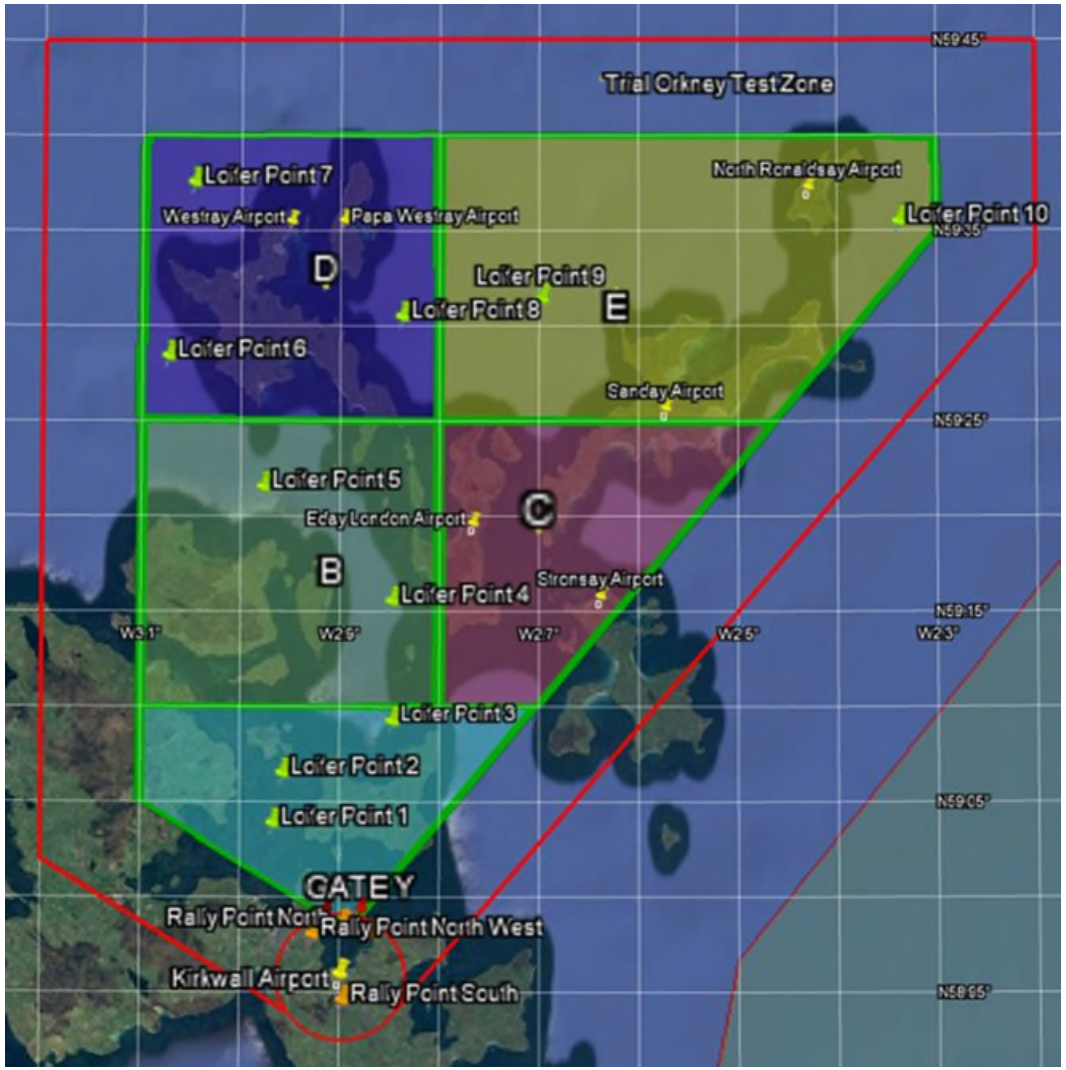
The Statement of Need was submitted 23 August 2024

- HIAL proposes an airspace change aimed at exploring, developing, and implementing a trial airspace test environment in unsegregated airspace in the Orkney Islands. This will be known as the Trial Orkney Test Zone (TOTZ) and will be overlaid on the existing Class G airspace to facilitate a range of uncrewed operations by Windracers Ltd, particularly Beyond Visual Line of Sight (BVLOS) operations, in unsegregated airspace based on safe integrated operations from a commercial airport, Kirkwall Airport.
- The airspace will take the form of a Temporary Reserved Airspace (TRA) specifically designed for Uncrewed Air Systems (UAS) operations and will incorporate a Transponder Mandatory Zone (TMZ) and an associated Radio Mandatory Zone (RMZ).

Key Trial Objectives

- Demonstrate safe and efficient operations of BVLOS during integrated operations from a Commercial Airport in unsegregated airspace.
- Test UAS Detect and Avoid (DAA) capability.
- Demonstrate the suitability of an ADS-B based FID to provide improved situational awareness in support of the provision of a FIS within a TRA.
- Obtain real-time data to assess the operational performance of UAS during BVLOS.

Trial Orkney Test Zone Operational Area



The TOTZ is situated within Class G airspace. This will not change when the TOTZ is activated. Therefore, the provisions regarding Class G airspace operations within the Standard Rules of the Air (SERA) are unaffected.

It has a perimeter of 124 nautical miles and an area of 989 square nautical miles, from Sea Level (SL) to a maximum altitude of 3,500' Above Mean Sea Level (AMSL).

SATE
SUSTAINABLE AVIATION TEST ENVIRONMENT

Issues or opportunities arising from the proposed change

Opportunities offered by the TOTZ

Operational Efficiency

Enhance the efficiency of air traffic management by utilising advanced technologies such as FID and ADS-B.

Technological Innovation

A controlled environment within which to test and validate new aviation technologies and operational concepts, including BVLOS operations.

Environmental Impact

By facilitating low-carbon UAS operations, the trial supports environmental sustainability goals. The initiative aligns with Scottish Government environmental strategy and HIAL's ambition to decarbonise its operations by 2040, contributing to the UK's broader environmental objectives.

Economic Opportunities

The successful implementation of the TOTZ and the associated Sustainable Aviation Test Centre at Kirkwall Airport has the potential to drive economic growth in the Orkney Islands. It will attract investment, create jobs, and stimulate local businesses.

Regulatory Alignment

The trial follows the CAA's CAP1616 process for airspace trials, ensuring compliance with regulatory requirements. The data and insights gained from the trial will inform future airspace change proposals and support the establishment of a permanent airspace test environment.

Issues or opportunities arising from the proposed change

Issues:

Innovation in an established and licensed operating environment

Challenges:

- **Alignment with emerging and evolving CAA Airspace, ATS and RPAS policies**
- **Stakeholder engagement**
- **Environmental (Noise, HRA)**
- **Risks (i.e. weather, dependencies)**

Process Requirements

Trial Plan

- In line with CAP1616 Appendix G
- Within CAA Innovation Sandbox
- Document including: CONOPS, Safety Case, Stakeholder Engagement, Data, Environmental, Objectives and Outcomes and Timeline.

Stakeholder engagement (building on existing stakeholder engagement)

- Stakeholder Mapping & Register
- Who, What, When, Where and Why
- Engagement Summary
- Comms Plan

Process Requirements

Noise impact assessment

- Drone Noise Footprint
- Noise Impact Statement

Safety assessment

- Development of Safety Argument (coherence across Airspace, ATS and RPAS ORA)
- ALARP demonstration given capability limitations of RPAS with respect to existing rules of the air including demonstration of see and avoid capability
- Use of a FID to an extended range beyond the vicinity of the aerodrome

Provisional Timescales

Aug 24
- Submission of the Statement of Need (SoN)
- **23/08/2024**

Oct 24
- CAA Assessment Meeting
- **22/10/2024**

Nov 24
- Stakeholder engagement period
- Including 1-1 meetings

June 25
- Trial ACP Submission Pack (including 4-part Safety Case)
- At maturity and ready for submission

July – Nov 25
- WP5 Phase 5
- Submission and approval of the ACP package

Nov 25 – May 26
- WP5 Phase 6
- Trial implementation

Next steps

1. Draft Minutes of meeting and send to CAA for approval
2. Upload minutes and presentation (redacted) to portal
3. Continue work on ACP Regulatory Pack including Airspace Design, Concept of Operations, Trial Plan, Operational Documentation and Safety Case
4. Windracers will continue work on Concept of Operations, Operational Procedures and ORA
5. Key stakeholder engagement (1-to-1 meetings), briefings to GA and HIAL Kirkwall Airport staff, and an information pack for additional targeted stakeholders
6. Further engagement with CAA SMEs across a range of policy areas, including the suitability of a FID to support the provision of a FIS within the TOTZ

AOB

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