

Report to Partnership Meeting 7 February 2025

Research and Strategy Delivery

SATE PROJECT

PURPOSE OF REPORT

To update Members on developments in the Sustainable Aviation Test Environment (SATE) Programme.

BACKGROUND

Part-funded by UK Research and Innovation (UKRI) through the Industrial Strategy Challenge Fund, SATE created the UK's first operationally based, low-carbon aviation test centre at HIAL's Kirkwall Airport in the Orkney Islands. Launched as part of UKRI's Future Flight Challenge, which supports the development of greener ways to fly, the first phase started in November 2020 and ended in July 2022. The second phase kicked off from July 2022 and is currently due to end in March 2025 following an approved extension.

PROJECT UPDATE

Demonstration Flights and Technology Updates

Following Windracers 9 weeks of trials in the Orkney Islands between Eday, Westray and North Ronaldsay with their self-flying cargo aircraft, the next set of trials is planned for the Shetland Islands starting from May 2025, pending CAA approvals. The aircraft has a cargo capacity of 700L, a payload capacity of 100kg, and a range of up to 600km.

Operating across the Orkney Islands allowed Windracers to gain knowledge and experience of operations in remote locations and brings the technology closer to commercial applications. Also, a study on seabird colonies found no signs of disturbance as a result of the drone flights.

Windracers integrated its flight schedule with the existing logistics network to establish potential opportunities. Streamline Shipping Group, which handles 90% of last-mile deliveries to the Scottish islands of Orkney and Shetland, used its electric van as part of the sustainable transport journey. As part of their path to net zero, Streamline state that drones present an opportunity to make more regular deliveries and collections of locally-produced goods from island communities.

Use cases are being developed to further provide insight into how the technology can improve connectivity and services. Stakeholder events are being planned in Shetland to offer local businesses and stakeholders an opportunity to see the aircraft up close and gain wider information on the programme.



ARC Aerosystems are continuing to develop the C600 aircraft from its initial tethered Visual Line of Sight (VLOS) flight in 2023 at Wick John O’Groats Airport. Recent positive engagements with the CAA provide confidence that incremental untethered VLOS flights can take place from early February 2025, moving to full power flights in March using Wick John O’Groats Airport as the test location.

Loganair has produced a report detailing zero emissions aircraft technology for Highlands & Islands operations, providing an overview assessment of the core concepts and potential applicability for commercial use in the region.

Airport Infrastructure & Operational Systems

Cranfield Aerospace Solutions are leading on the work package dedicated to airport infrastructure and operational systems, working closely with EMEC, Cranfield University, UHI, HIAL and the CAA. Several documents have now been completed to help inform hydrogen operations in the future at smaller regional airports and aerodromes. These include a Concept of Operations (CONOPS) for the technological, operational and logistical challenges of fuelling hydrogen powered aircraft, and fuel assurance procedures and risk assessments covering different forms of hydrogen fuel for aviation.

Events

Recent events where SATE has featured include the Orkney Aviation Festival - an annual event to showcase the past, present and future of aviation in Orkney that took place from 12th-14th September. SATE held an open day plus an evening of presentations featuring HITRANS, Cranfield Aerospace, HAV, Windracers, HIAL & Egis.



We delivered a keynote presentation at Transport Smart Classes event in Glasgow, highlighting how emerging aviation technologies can aid connectivity across the Highlands & Islands. We also gave a presentation at the latest meeting of the Cross Party Group on Aviation in the Scottish Parliament, highlighting the ways we're developing and testing sustainable aviation solutions for real-world uses to support the sector in moving to net zero emissions.



We also recently presented to SEStran's logistics and freight forum, and to the Future Flight Challenge Advisory Group.

In January, we joined Windracers for the launch of the ULTRA MK2 aircraft, increasing capacity to 150kg and 50% less fuel use per kg of weight. HITRANS also featured at the Future Flight Challenge Celebration Event, participating in a panel discussion on 'Decarbonising Aviation – Pathways to a Sustainable Future', joined on the panel by fellow SATE partners Cranfield Aerospace and Loganair. At the event, SATE and Windracers each received recognition awards for their achievements in the Future Flight Challenge. SATE received an award for widest range of vehicles used in a Future Flight Challenge project.



Development of a Dedicated Test Environment Airspace

SATE has been continuing its work with the CAA as one of six projects under the Integration Sandbox that will help safely integrate drones flying beyond visual line of sight (BVLOS). HIAL and Windracers have partnered for the Sandbox trial that will see operations across Orkney. The SATE airspace trial will facilitate the establishment and cost-effective uncrewed aviation operations on a commercial scale within Orkney that will fulfil key use cases around logistics, survey and inspection. Learnings from the six trials will support the CAA's ongoing development of policy and regulations to enable drone flights to be fully integrated with other airspace users.

Impact and Policy

Several reports have been completed in recent months, including a High-Level Impact Assessment by Connected Places Catapult to establish the potential impacts of SATE and its contributions to the advancement of sustainable aviation, and a Supply Chain Mapping report by UHI, focusing on Kirkwall Airport and the relevant supply chain of emerging sustainable aviation technologies.

Awards

SATE received the Urban Air Mobility Award at the 2024 CiTTi Awards which celebrates innovation in the effective movement of people, goods and materials through urban environments.



BUDGET

HITRANS receive 100% funding based on the organisation classification within the UKRI programme. HITRANS current budget sits at £1,051,130. The overall project budget is £14M.

RISK REGISTER

RTS Delivery

Impact – Positive

Comment – The SATE project supports several RTS objectives, particularly in the field of low carbon transport.

Policy

Impact – Positive

Comment – The SATE project contributes to policy development by helping to meet the Government target of the Highlands & Islands becoming the world's first net zero aviation region.

Financial

Impact – Positive

Budget line and value – The SATE project attracts high intervention rates, with SATE phase 1 funded at 70% and SATE phase 2 at 100%.

Equality

Impact – Positive

Comment – The SATE project delivers environmentally sustainable aviation and therefore helps to ensure lifeline transport options are sustainable in the long-term.

RECOMMENDATION

Members are asked to:-

1. Note the report.

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Date: 23rd January 2025