

# Regulators' Pioneer Fund

*Drone Demonstrations in Argyll and Bute*



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## Executive Summary

In November 2022, the UK Government awarded Argyll and Bute Council a grant of £250,000 via the Regulators' Pioneer Fund to deliver West Coast of Scotland Trial for Integration of Manned and Unmanned Air Space, which finished in August 2024. The RPF is a grant-based fund to enable UK regulators and local authorities to help create a UK regulatory environment that encourages business innovation and investment. The current £12m round is being delivered by the DSIT.

This document encompasses the closure of the trial flights led by Argyll and Bute Council under the Regulators Pioneer Fund.

Submitted to the Argyll and Bute Council for approval, this report serves to detail the drone demonstrations conducted within Argyll and Bute.

### Argyll and Bute Council Engagement

The council have appointed the services of Skyports Drone Services to assess the feasibility of establishing a volume of airspace over the west coast of Scotland whilst conducting a series of Uncrewed Aerial Systems (UAS) demonstrations within the region.

The project is split into three phases, covering the following items:

- i. Regulatory Pioneering
- ii. Delivery Operations
- iii. Survey Demonstrations

### Report Overview

The project aims to assess the feasibility of integrating Uncrewed Aerial Systems with general aviation within the west coast of Scotland. The primary objective is to carry out a series of flight demonstrations and inspections to explore how drone services can benefit remote communities and businesses in the area. By establishing the benefits drones bring to Argyll & Bute, this contributes to the necessity of establishing a permanent drone base such as the Advanced Air Mobility Hub in Oban Airport.

The report commences with an overview of the delivery demonstrations that were conducted followed by the surveillance demonstrations. The report covers the user needs, the user's background, criteria the flights are being assessed under, and outcomes of the flight demonstrations.

A critical aspect of the report involves outlining the benefits and impacts drone services can

bring to remote island communities and seeing how regulations can help enhance the expansion of drone networks within these regions. The report then outlines the effort put into the Temporary Reserved Area (TRA) Policy Concept Sandbox which would expand the scalability of drone operations. The report also discusses the Proposed Civil Aviation Authority (CAA) Policy on Atypical Air Environments which would be beneficial for future surveillance operations.

The study also defines other potential use cases that the council would be interested in exploring that would have an impact in providing efficiency, enhanced safety, and reduced cost within council services. The study concludes with the future outlook of drone operations that can be provided for the council such as the use of heavy-payload drones. The future regulatory outlook which would guide future planning and expansion of drone operations within the West Coast of Scotland is also assessed.

### Key Findings

Based on the project conducted, the following can be concluded:

- Delivery Operations: There is a strong use case for drone-enabled deliveries which

- would provide a significant time-savings aspect for end users. Increased payload weight and further distances are keen to be explored to establish the feasibility of expanded operations. Temperature control is a key component for a handful of end users; this would need to be further explored prior to integrating with day-to-day operations.
- Survey Demonstrations: Drone-enabled inspections provide a significant health & safety benefit together with time-savings brought about by the remote nature of
- drone operations. Council services would benefit the most for inspection use cases mainly for council owned infrastructure.
- Regulatory Innovation: The regulatory landscape is continuously changing, and it is necessary for regulatory bodies, airspace users, and operators to collaboratively work together to work toward demonstrating the safe integration and operation of drones within the United Kingdom.

### Next Steps

- Continue collaborating with the Argyll and Bute Council to explore use cases that would allow the council to enhance its operations and services with the use of UAS'.
- Additionally, continue engaging with the CAA on briefings and engagement meetings for policies being formed that would impact drone operations.

## Table of Abbreviations

AAE	Atypical Air Environment
ACP	Airspace Change Proposal
ADS-B	Automatic Dependent Surveillance–broadcast
AGL	Above Ground Level
AI	Artificial Intelligence
AMS	Airspace Modernisation Strategy
AMSL	Above Mean Sea Level
ANSL	Air Navigation Solutions
ANSP	Air Navigation Service Provider
ATC	Air Traffic Control
ATS	Air Traffic Service
BVLOS (VM)	Beyond Visual Line Of Sight With Visual Mitigation
CAA	Civil Aviation Authority
CONOPS	Concept Of Operations
DSIT	Department For Science, Innovation & Technology
FIS	Flight Information Service

FLARM	Flight Alarm
LiDAR	Light Detection And Ranging
LoA	Letter Of Authorisation
MO-FIS	Manual Of Operations Flight Information Service
NHS	National Health Service
OSC	Operating Safety Case
SME	Subject Matter Experts
SSEN	Scottish & Southern Electricity Networks
SSEN	Scottish & Southern Electricity Networks
TMZ	Transponder Mandatory Zones
TOI	Temporary Operating Instructions
TOLP	Take-off And Landing Point
TRA	Temporary Reserved Areas
UAS	Uncrewed Aerial Systems
UK	United Kingdom
USO	Universal Service Obligation

# PROJECT OVERVIEW & OBJECTIVES

01

## 1.1 PROJECT OVERVIEW & OBJECTIVES

### Introduction

On 19 July 2022 the Department for Science, Innovation & Technology (DSIT) launched the third round of the Regulators’ Pioneer Fund wherein regulators and local authorities could apply for grants that would help create a United Kingdom (UK) regulatory environment that encourages business innovation and growth.

DSIT awarded the Argyll and Bute Council (ABC) £250,000 for ‘West Coast of Scotland Trial for Integration of Manned and Unmanned Air Space’ wherein they will be working with drone specialists Skyports Drone Services (Skyports) to explore the feasibility of creating a dedicated ‘blanket’ of air space over rural areas for Uncrewed Aerial Systems (UAS). The project likewise includes a series of flight demonstrations and inspections to explore how drone deliveries can benefit remote communities and businesses in the area

### Project Overview

To meet the program goals, the project was divided into three core project phases namely:

- i. Regulatory Pioneering
- ii. Delivery Operations
- iii. Survey Demonstrations

### REGULATORY INNOVATION



### DELIVERY OPERATIONS



### SURVEY DEMONSTRATIONS



### OBJECTIVE

- Implement a solution that enables scalable uncrewed aircraft systems (UAS) operations in the UK
  - Support beyond visual line of sight (BVLOS) UAS operations in rural areas
  - Demonstrate integration of UAS in Low Density Class G ‘uncontrolled’ airspace
- 
- Engage with potential end-users and determine the most suitable use-cases within Argyll and Bute to conduct delivery operations that align with the program goals
  - Identify suitable take-off and landing points (TOLPs) to safely conduct the flight demonstration
  - Conduct a 4-week demonstration of Beyond Visual Line of Sight with visual mitigation (BVLOS VM) inter-island delivery services within Argyll and Bute
- 
- Engage with potential end-users and determine the most suitable use-cases within Argyll and Bute to conduct survey operations that align with the program goals
  - Identify suitable take-off and landing points (TOLPs) to safely conduct the flight demonstration
  - Conduct a 4-week demonstration of survey and inspection services within Argyll and Bute
  - Monitor air traffic during the survey demonstrations to potentially contribute to the Atypical Air Environment (AAE) policy concept being formed by the Civil Aviation Authority (CAA)

# DRONE DELIVERY USE CASES

02

## 2.1 Mail Distribution with Royal Mail

Following interviews with multiple stakeholders within the Argyll and Bute region, Royal Mail emerged as one of the most suitable partners to participate in a drone-based delivery demonstration. Today, as part of its commitment to serving the public, Royal Mail adheres to a Universal Service Obligation (USO). This mandate requires the organization to provide a universal and uniform service to all UK addresses, regardless of location or difficulty of access. The USO ensures that every citizen in the UK has access to postal services six-day-a-week at affordable and consistent rates. Royal Mail's distribution requirements include even the most remote and challenging areas, guaranteeing that everyone can receive mail and parcels regardless of their geographic location.

The main outcome for Royal Mail in this demonstration is to assess whether a drone-enabled mail distribution service would be feasible to assist in meeting their USO within remote areas. After several discussions, the project team identified Islay and Jura to be suitable locations for the demonstration. The table below summarises the key criteria Royal Mail will assess as part of the outcomes of the project.

### Demonstration Criteria

Weight and cargo capabilities achievable

Collection, analysis, and provision of operational flight metrics including:

- Flight duration
- Flight frequency
- Up-time
- Downtime





## Demonstration Outcomes

The Royal Mail demonstration was scheduled from 1<sup>st</sup> – 26<sup>th</sup> July 2024 to cover four weeks for delivery demonstrations; with the first week dedicated to onsite test flights.

Throughout the four weeks with Royal Mail, inconsistent 4G connectivity with the aircraft resulted in one day of downtime and was a noted issue brought about by the remote nature of the location. This was resolved by using alternative network providers. Likewise, during the demonstration, there were four days where no air mail was received in Jura brought about by an ongoing change within Royal Mail's air network. Skyports and Royal Mail noted that this proof-of-concept demonstrates the feasibility of a potential drone network to assist with Royal Mail's future logistics. Test flights were conducted to simulate business continuity and to demonstrate the drone's capability to be integrated into Royal Mail's local operations.

Days for test flights onsite: 5 days

Days attempted mail delivery: 15 days

Days mail successfully delivered: 10 days

Flights completed: 37 flights

Distance flown: 148km

Cargo Delivered: 61.53kg

## Mail Distribution - Chain of Custody Royal Mail



## 2.2 Medical Deliveries with NHS Highlands

For medical use cases, NHS Highlands emerged as one of the most suitable partners to participate in a drone-based delivery demonstration. As part of the constitution that establishes the National Health Service's (NHS) principles and values, the NHS must be committed to providing comprehensive service to all, irrespective of gender, race, disability, age, sexual orientation, religion, belief, gender reassignment, pregnancy and maternity or marital or civil partnership status. NHS Highland is the health board responsible for providing healthcare services to the people of the Scottish Highlands and Islands, including Argyll and Bute. Many of the islands within the NHS Highland area are sparsely populated and can be difficult to logistically reach, especially in adverse weather conditions. Costs and recruitment challenges likewise arise when serving smaller populated areas.

The main outcome for NHS Highlands in this demonstration is to assess whether a drone-enabled medical deliveries would be feasible based on the capabilities for the drone cargo to maintain a target temperature range for the transport of medication which is 18-25°C. This is based on commonality of Drug Manufacturers using this temperature range during development, stability and production of medicines. After several discussions, the project team identified Islay and Jura to be suitable locations for the demonstration. The table below summarises the key criteria NHS Highlands will assess as part of the outcomes of the project.

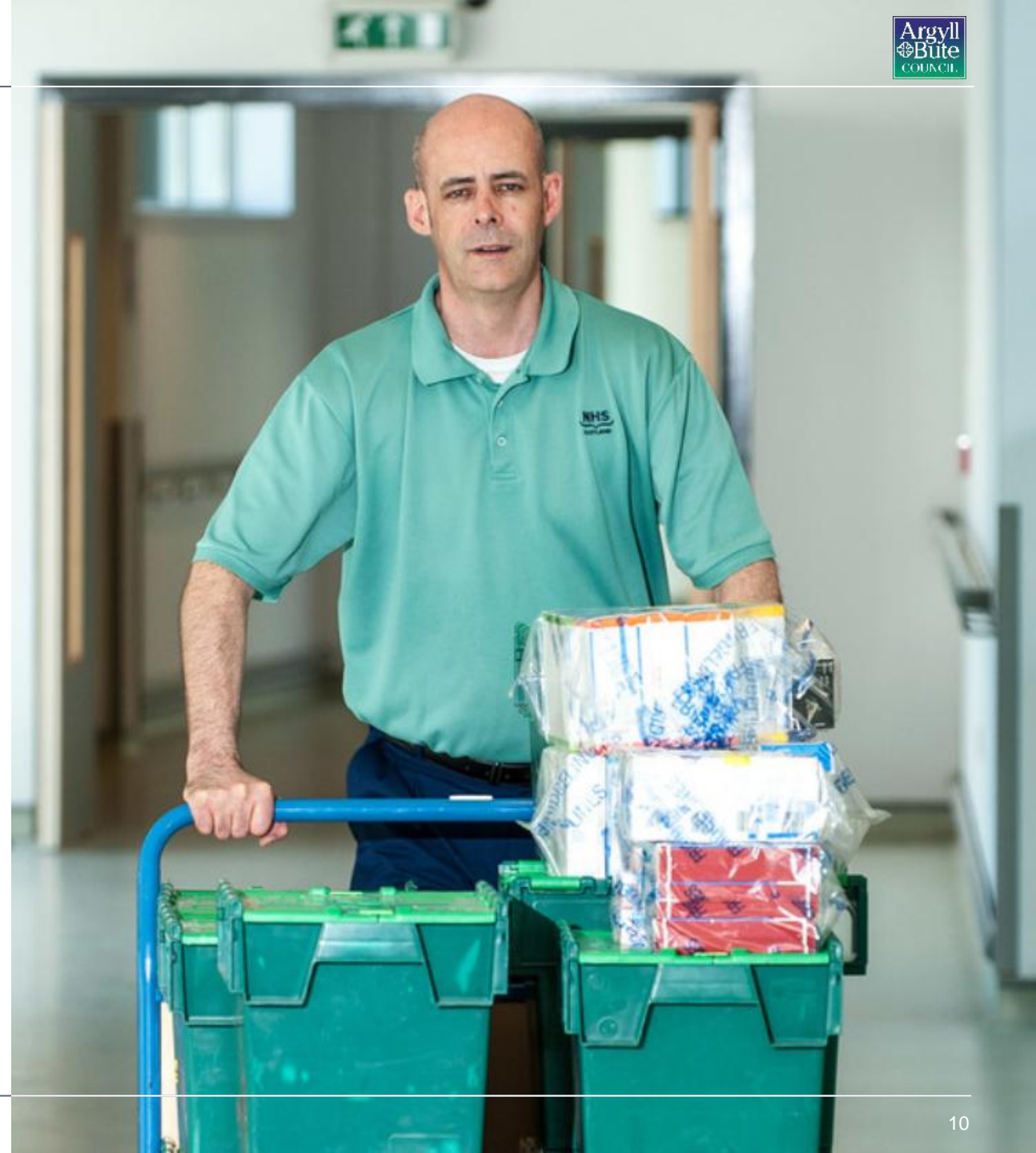
### Demonstration Criteria

Weight and cargo capabilities achievable

Temperature monitoring results of several medicines

Collection, analysis, and provision of operational flight metrics including:

- Flight duration
- Flight frequency
- Up-time
- Downtime



### Demonstration Outcomes

The NHS Highlands medical demonstration was scheduled from 22<sup>nd</sup> – 26<sup>th</sup> July 2024 to assess the feasibility of temperature-controlled drone-enabled medication delivery.

During the trials, temperature fluctuations were observed within short intervals, indicating inadequate insulation for maintaining a consistent temperature throughout the flight. While ambient temperatures between 18-25°C generally do not pose a significant risk to most medications, extreme temperatures can compromise medication stability, expiration dates, and packaging integrity.

Despite these challenges, the proof-of-concept demonstration successfully demonstrated the viability of drone-based medication transport. However, modifications within the logistical process will be necessary to ensure consistent temperature maintenance within the required range of 18-25°C.

Days attempted medical delivery: 5 days

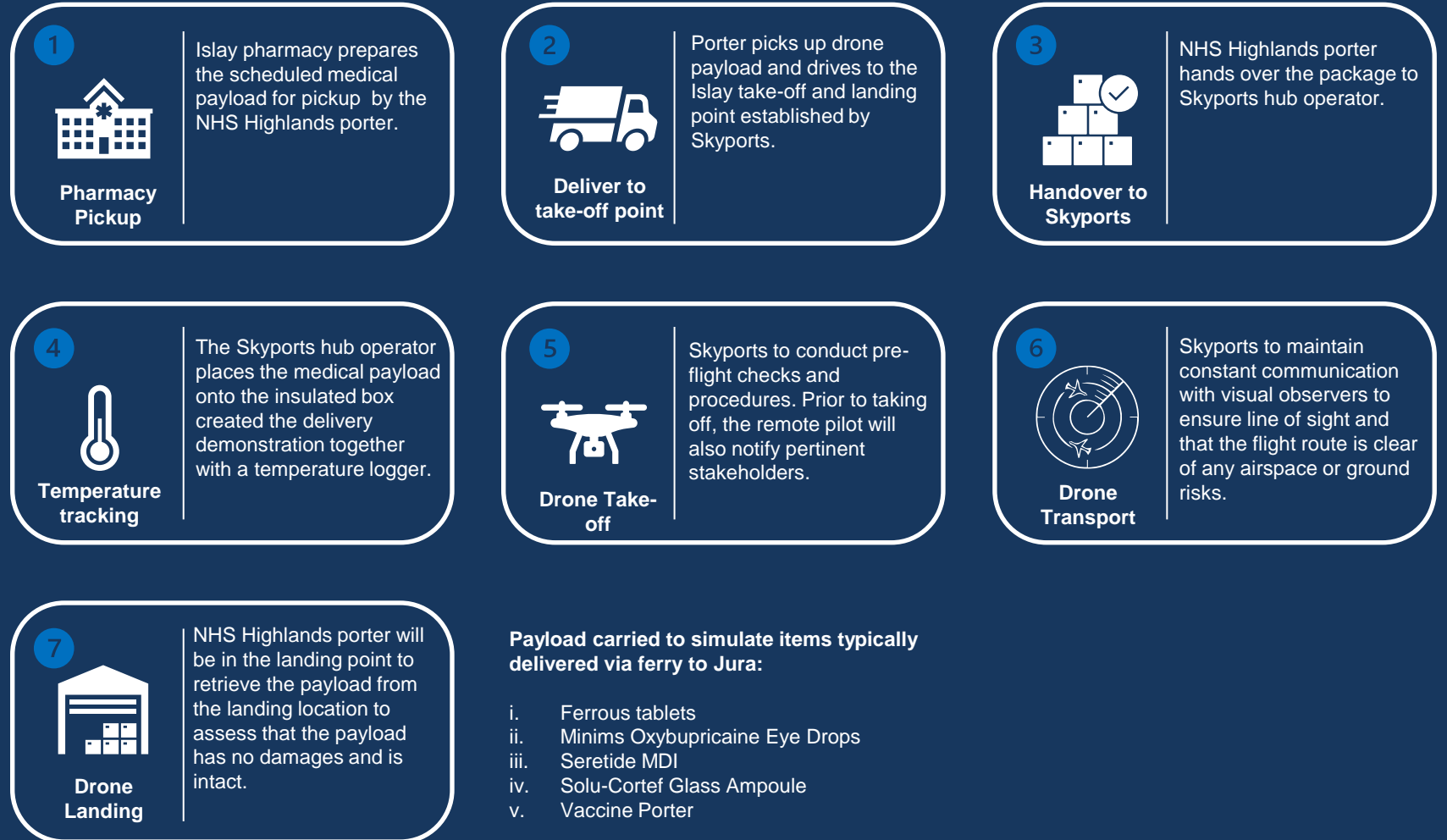
Days successfully delivered: 5 days

Flights completed: 10 flights

Distance flown: 40km

Cargo carried: 12.3kg

## Medical Deliveries - Chain of Custody NHS Highlands



### 2.3 Water and Food Sample Transportation with Argyll and Bute Council

The geography of Argyll and Bute similar with other remote island communities, poses considerable challenges for the environmental health service in ensuring that any monitoring samples are taken and transported to the Public Analyst laboratory in Glasgow. This is particularly challenging for chemical and microbiological samples from private water supplies and food samples which require transportation under appropriate temperature-controlled conditions and within a specified timescale. 14% of Argyll and Bute’s population obtains its drinking water from private supplies (Scottish average is 3%) which originate from various sources such as lochs, burns, springs, wells, and even rainwater collection where they are either untreated or have specific treatment works which are not operated by Scottish Water. The quality of these supplies is variable which makes them more susceptible to contamination. As part of the statutory sampling program, the Council routinely tests private water supplies to identify and address potential contamination issues to ensure that residents and visitors have access to safe and reliable drinking water that is free from contamination such as fecal matter from human sewage, animal droppings or even chemical sources from fertilizers or pesticide run-off from fields. Similarly, food samples are taken to ensure that the food manufactured in Argyll land Bute meet statutory requirements and is safe to consume. Food sampling is also conducted as part of investigations into outbreaks of foodborne illnesses.

The main outcomes for the Argyll and Bute Council in this demonstration is to assess whether drone-enabled deliveries can feasibly maintain a temperature under 5°C from dispatch to delivery and whether the samples could be transported undamaged.

Demonstration Criteria
Weight and cargo capabilities achievable
Temperature monitoring results of food and water samples
Collection, analysis, and provision of operational flight metrics including:
<ul style="list-style-type: none"> <li>• Flight duration</li> <li>• Uptime</li> <li>• Downtime</li> </ul>



### Demonstration Outcomes

The Argyll and Bute Council demonstration was scheduled on 23<sup>rd</sup> July 2024 to evaluate the feasibility of temperature-regulated drone deliveries. A Skyports Drone Services payload box was used to transport food and water samples, and its thermal performance was continuously monitored for 24 hours post-flight.

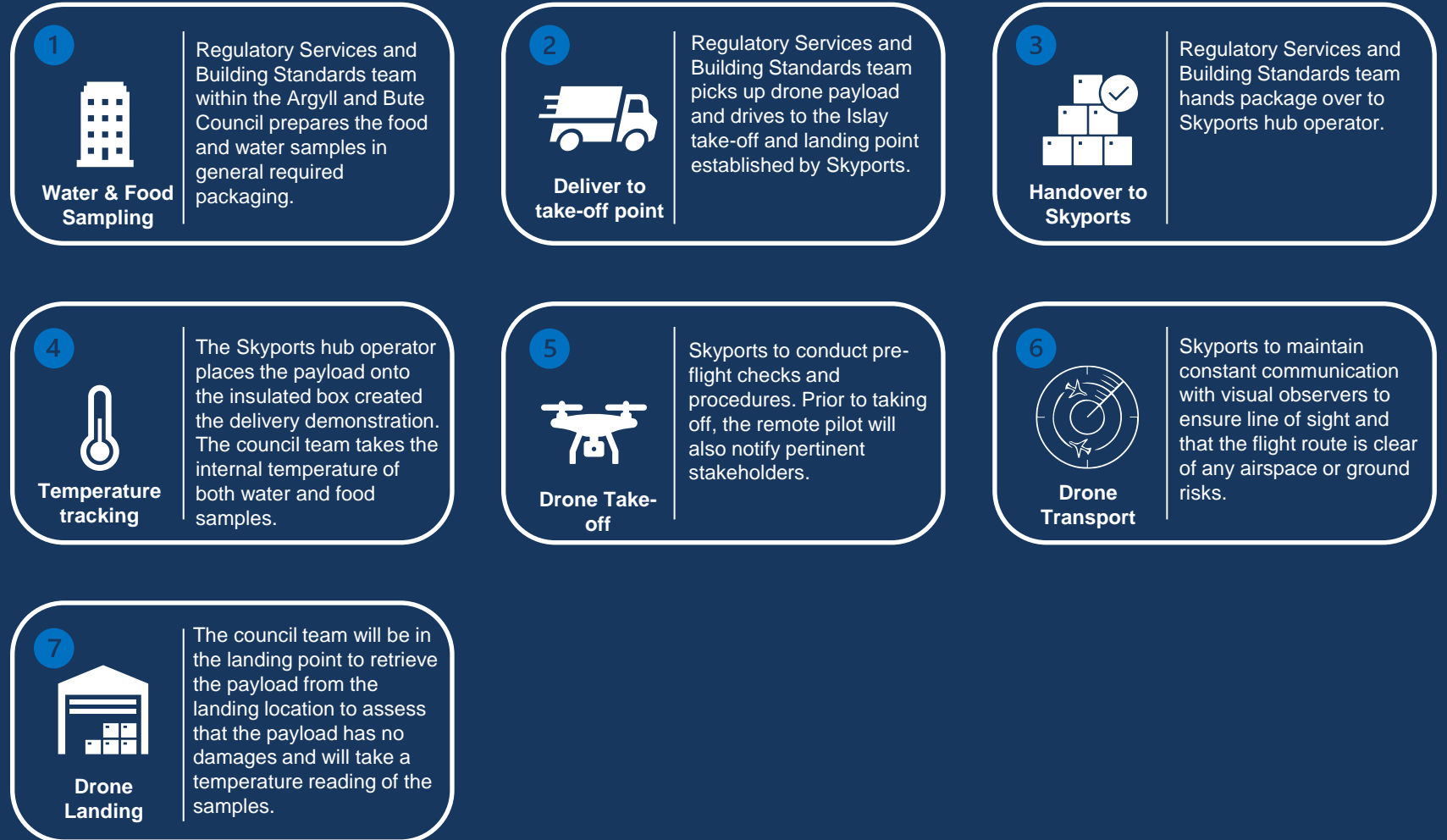
The results were promising, with both food and water samples maintaining a temperature well below the prescribed 5°C threshold. Likewise, there was no evidence of damage to the packaging or the payload following the drone flights.

Additionally, after further observation conducted by the Regulatory Services team, the payload box showed an ability to sustain the required temperature for 12 hours post-flight. This suggests that drone-based delivery could be a viable solution for transporting temperature-sensitive samples, particularly in remote areas. This would alleviate the logistical burden on council members who currently collect and deliver samples from the 23 inhabited island of Argyll and Bute to the Glasgow Scientific Services within a 24-hour timeframe all while ensuring compliance with temperature requirements.

Distance flown: 4km

Cargo carried: 3.7kg

## Council Deliveries - Chain of Custody Argyll and Bute Council



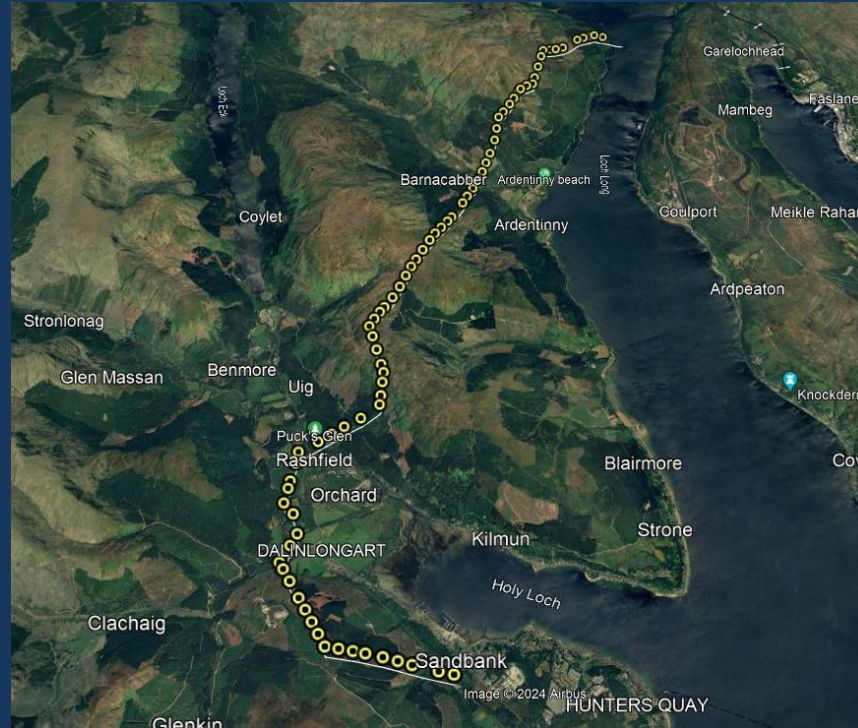
# SURVEY USE CASES

### 3.1 Powerline Inspection with SSEN Transmission

The Scottish & Southern Electricity Networks (SSEN) Transmission is a key player in the Scottish energy landscape, responsible for operating and maintaining the high-voltage electricity transmission network in Northern Scotland. Their network spans a vast area, connecting renewable energy generators to the national grid and delivering electricity to homes and businesses. With a focus on safety, reliability, and sustainability, SSEN Transmission plays an important role in supporting Scotland's transition to a net-zero carbon future.

Drone-enabled powerline surveys can provide detailed inspections of overhead lines, substations, and other infrastructure, identifying potential faults, defects, or hazards that would compromise the network's reliability. These surveys can be conducted more efficiently and cost-effectively than traditional methods, reducing the need for personnel to access potentially dangerous areas. Additionally, drones can capture high-resolution images and data that can be used for asset management, maintenance planning, and identifying areas for network upgrades or improvements. Lastly, UAV's present a more cost-efficient and greener alternative to helicopters which would typically be used for powerline vegetation surveys. By leveraging drone technology, SSEN Transmission can enhance the safety and efficiency of its operations while ensuring a reliable supply of electricity to its customers.

## Target Survey Area for SSEN Transmission



**3**  
Powerlines

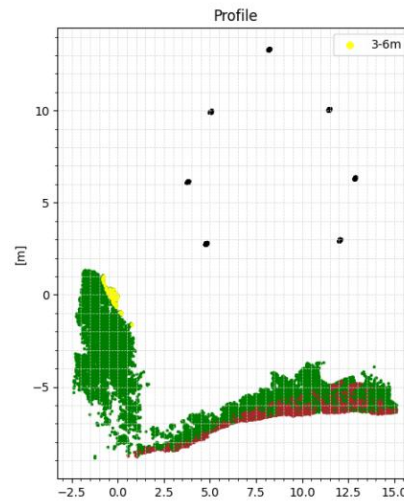
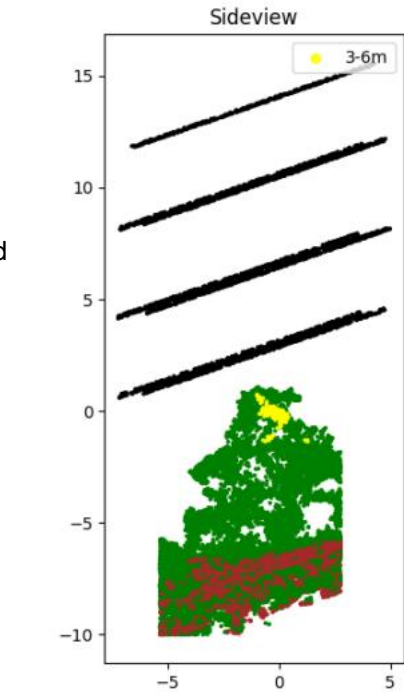
**184**  
Towers

**10**  
Operational Days

## Survey Outcomes

### What SSEN achieved through powerline surveys:

- Asset inspection and vegetation survey performed concurrently
- List of priorities for de-vegetation delivered in a Light Detection and Ranging (LiDAR) Artificial Intelligence (AI) Report
- Using high-resolution imagery to identify components, tag assets and identify defects
- Reduced manual work in mountainous areas
- Rapid insight into vegetation that could create wild-fire risk in Summer months



GL1GL2\_64

Not ready  Incomplete  Ready  Inspected  Filter  New ticket  Mark as inspected

Low High

Asset inspection RGB and Thermal

2024-05-15  
2024-05-15  
2024-05-15  
2024-05-15

SSE - Transmission 24507-8 WGS 84

Map & Oblique

Layers

- Measurements
- Annotations
- Indoor
- Street
- SSE\_24507-8
- Skyports POC 24509
- Skyports POC 24507-8
- Open Street Map
- Ortho WMTS

Syncing

Viewer to sync: Map & Oblique

Events: center

Vegetation Encroachment and fall-risk

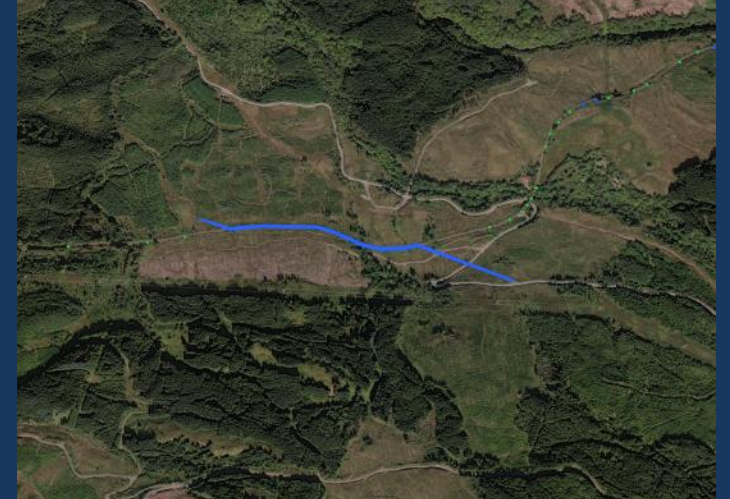
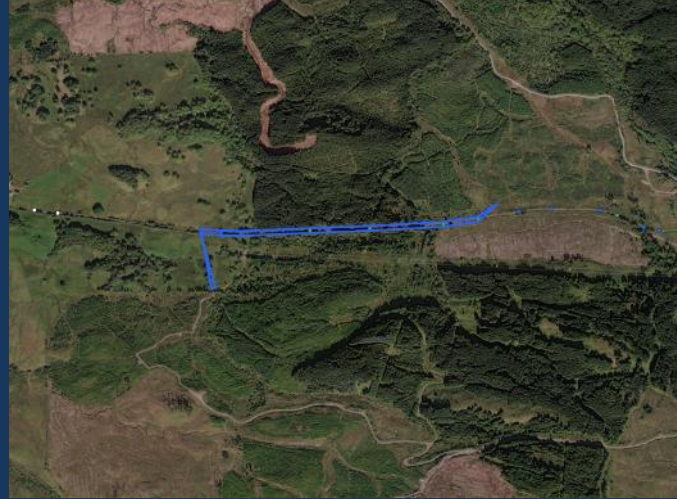


### 3.2 Railway Inspection with Network Rail Scotland

Network Rail Scotland is responsible for owning and maintaining the country's railway network. With over 107 million annual passenger journeys and a focus on freight services, the company plays a role in connecting communities, supporting businesses, and contributing to the economy.

Drones can provide detailed inspections of multiple infrastructure, identifying potential faults, defects, or hazards that may compromise safety or disrupt services. These surveys can be conducted more efficiently and cost-effectively than traditional methods, reducing the need for personnel to access potentially dangerous areas. Additionally, drones can capture high-resolution data that can be used for asset management, maintenance planning, and identifying areas for infrastructure improvements. By leveraging drone technology, Network Rail Scotland together with Ground Control who conduct utility and railway vegetation management services can enhance the safety and reliability of its operations, improve efficiency, and ultimately provide a better service to its customers.

## Surveyed Area for Network Rail – East Side of Dalmailly Station



**1**  
Live Railway

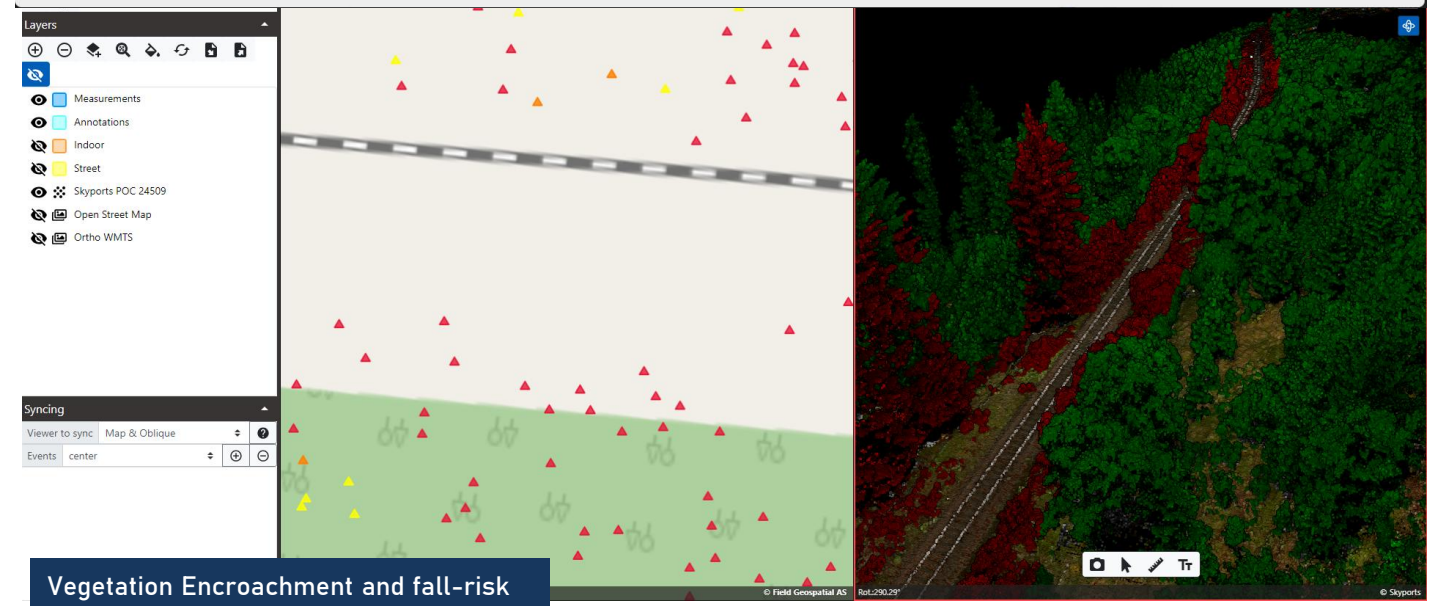
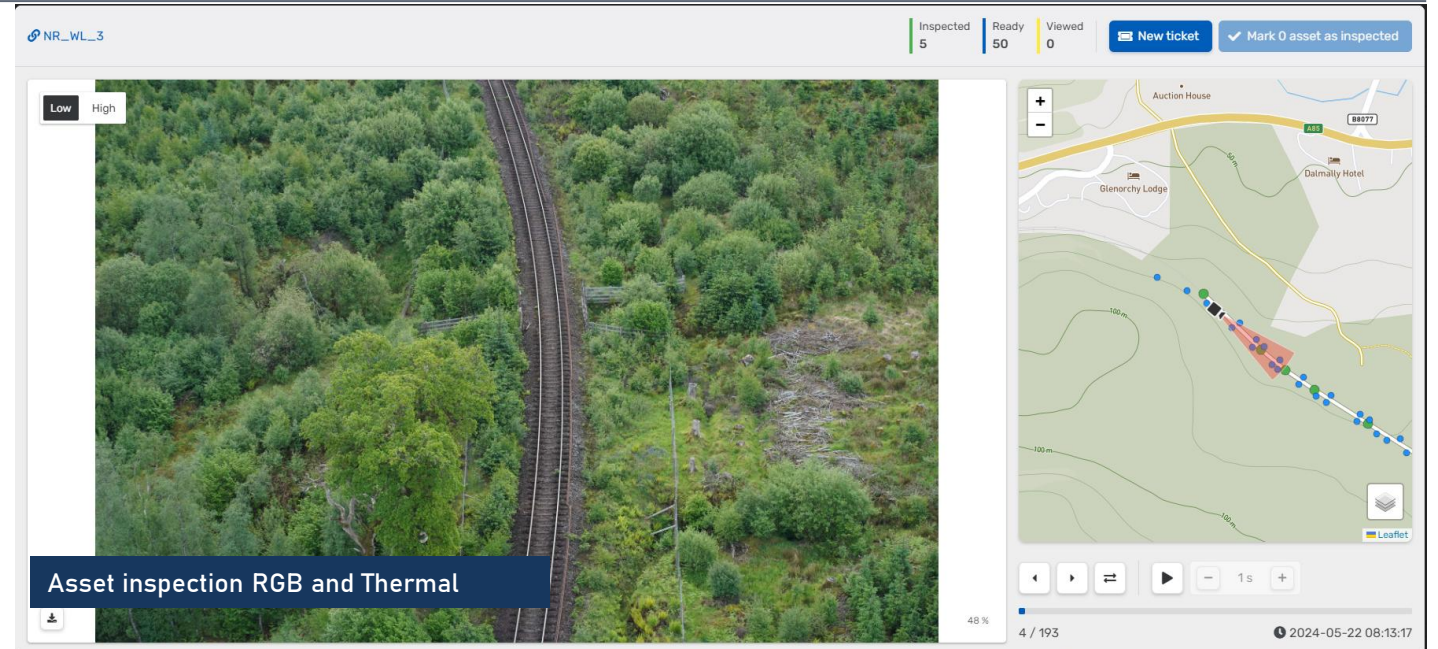
**12.4**  
kilometers

**5**  
Operational days

## Surveillance Outcomes

### What Network Rail achieved through powerline surveys:

- Complete Asset inspections include defect tagging and ticketing.
- Use Geospatial data enabling vegetation encroachment analysis.
- Mapping of habitats
- Reduce the need for boots on ballast and track possessions, thus improving rail services for end users
- Conducted a live demonstration for team members to see how Skyports pilots plan and operate



### 3.3 River Inspection with Argyll and Bute Council

Argyll and Bute Council covers a large geographic region in the west of Scotland. The council is responsible for a wide range of services, such as education, housing, social care, environmental services, planning and development, and transportation.

The Infrastructure Design team of the council saw the potential with UAS to map out rivers within Argyll and Bute. By having detailed maps of river courses, and floodplains, the council can identify flood-prone areas, assess the impact of infrastructure projects and plan for flood mitigation.

Using UAS can significantly reduce the time and cost required for river mapping, enabling the council to make more informed decisions about infrastructure planning and development. Since the council currently lacks comprehensive river mapping data, the use of drones would greatly enhance its ability to assess and manage the risks and benefits associated with rivers and their surrounding areas.

On 3<sup>rd</sup> May, the surveillance demonstration for river inspections was conducted along the River Ba, in the Isle of Mull.

## Target Survey Area for Argyll and Bute Council – River Ba, Isle of Mull



**1**  
River

**9.6**  
kilometers

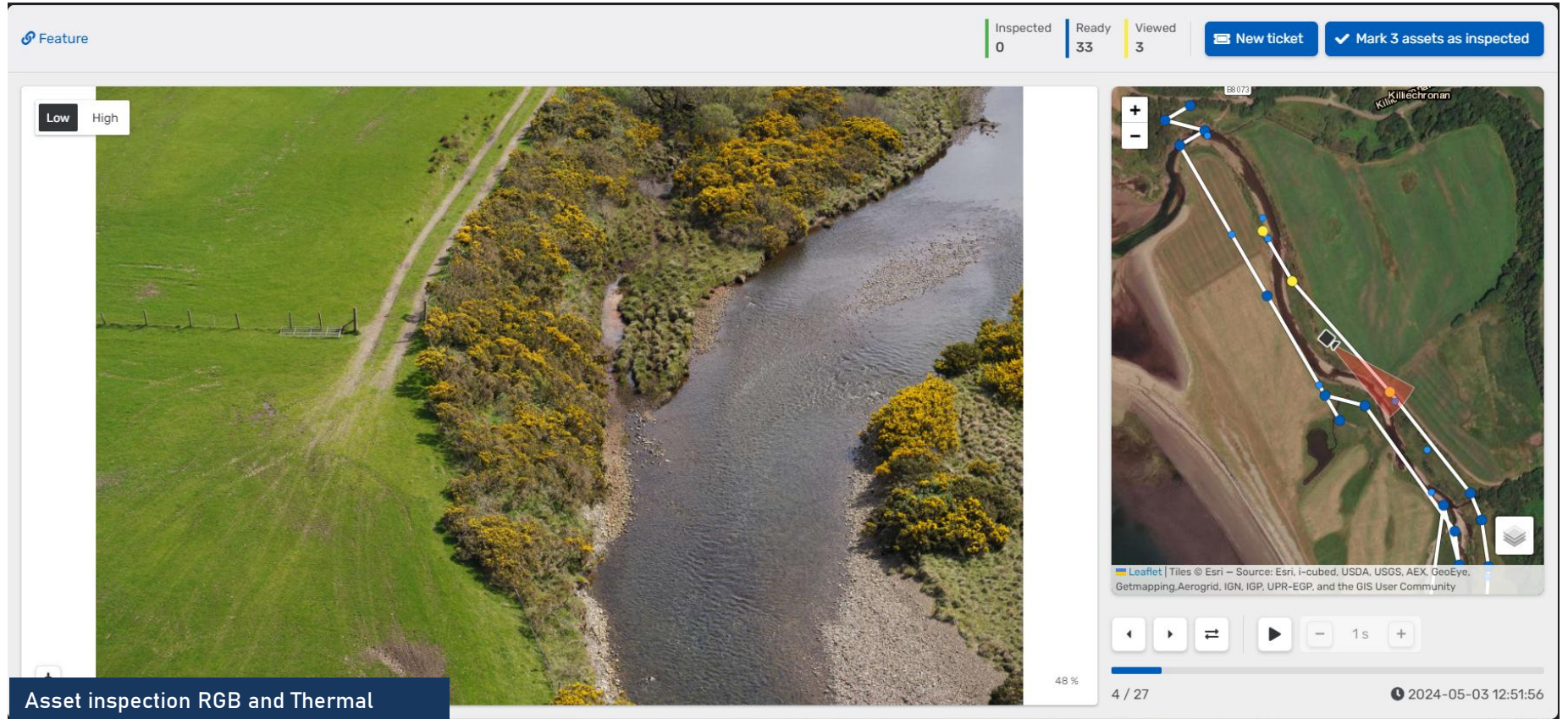
**10**  
Operational Days

## Surveillance Outcomes

The Argyll and Bute Council demonstration provided insights into the potential of drone technology to enhance river mapping efforts. While the initial focus was on asset inspections using RGB and thermal imagery, the platform offers a broader range of capabilities that could be beneficial for the council.

The ticketing system could be used to create an asset register for council assets located along rivers, allowing efficient tracking and management. Additionally, the software platform can be used to mark potential flood risks along river routes, providing valuable information for flood prevention and mitigation planning.

By utilizing this platform, the council can gain deeper insights into their river networks which would be important for making decisions about land use planning, flood management, and environmental protection.



# REGULATORY PIONEERING

## 4.1 TRA Regulatory Sandbox

The CAA's Regulatory Sandbox for beyond visual line of sight (BVLOS) Accommodation Airspace Policy Concept is a framework designed to safely integrate uncrewed aerial systems (UAS) into unsegregated airspace. Through a series of trials and experiments, the Civil Aviation Authority (CAA) aims to validate technologies, procedures, and policies that enable the coexistence of UAS and crewed aircraft. The Sandbox methodology involves iterative testing and learning cycles to accelerate policy development and ensure safety.

The objectives of the sandbox according to the CAA are to:

- Demonstrate technologies, airspace management procedures and Air Traffic Service (ATS) provisions, and flight operation procedures that may enable the safe and managed integration of BVLOS UAS and crewed aircraft.
- Enable participants to progress beyond segregation towards integration of BVLOS UAS flights with crewed aircraft and deliver integrated use of airspace.
- Enable the CAA to validate the use of the airspace policy concept with real world use cases to evidence how it supports and enables the accommodation phase.

Skyports Drone Services together with Air Navigation Solutions (ANSL) jointly participated in the Sandbox to design a

solution that aims to leverage existing aviation principals and regulatory frameworks to provide a short-term route to permanent commercial UAS BVLOS Operations through the project plan detailed below:

- ANSL will propose to establish a volume of airspace centred on the Westcott Venture Park in Buckinghamshire for a six-month trial period to create a Temporary Reserved Area (TRA) that would enable the safe integration of Uncrewed Aircraft Systems (UAS) BVLOS operations with other airspace users. The TRA will be set up in line with the CAA policy concept (CAP2533) and will be designed to accelerate progress towards establishing a TRA in the West Coast of Scotland.
- Skyports co-sponsoring the airspace change proposal (ACP), will contribute to stakeholder engagement exercises, and concept of operations (CONOPS) and trial plan development.
- A successful project will test and validate the proposals in support of the CAA's policy concept for the use of TRA's as an 'accommodation' phase that will see the use of appropriate procedures and/or technology to accommodate the operation of UAS in unsegregated airspace;

and complete a foundational step towards unlocking a concept of operations to support the extension of BVLOS operations as an integrated airspace management solution in line with the Airspace Modernisation Strategy (AMS).

The foundational principals of the project were:

### UAS Operators responsible for All Deconfliction

- Pilot-In-The-Loop Conflict Avoidance
- Onboard Automated Collision Avoidance
- Non-Certified layered safety argument
- Compliant with SERA 3201 and 3205

### Create a Known Traffic Environnement

- All Aircraft inside Transponder Mandatory Zones (TMZ) to be equipped with ADS-B or FLARM
- Ground based sensor network to provide full airspace coverage
- Airspace managed by certified air navigation service provider (ANSP)

### Operate in Low Density Airspace

- Not Operating to Airfields
- Operations below 400ft AGL
- Historic Data used to identify lowest density routing / operations areas

### Goals for Participation in TRA Sandbox

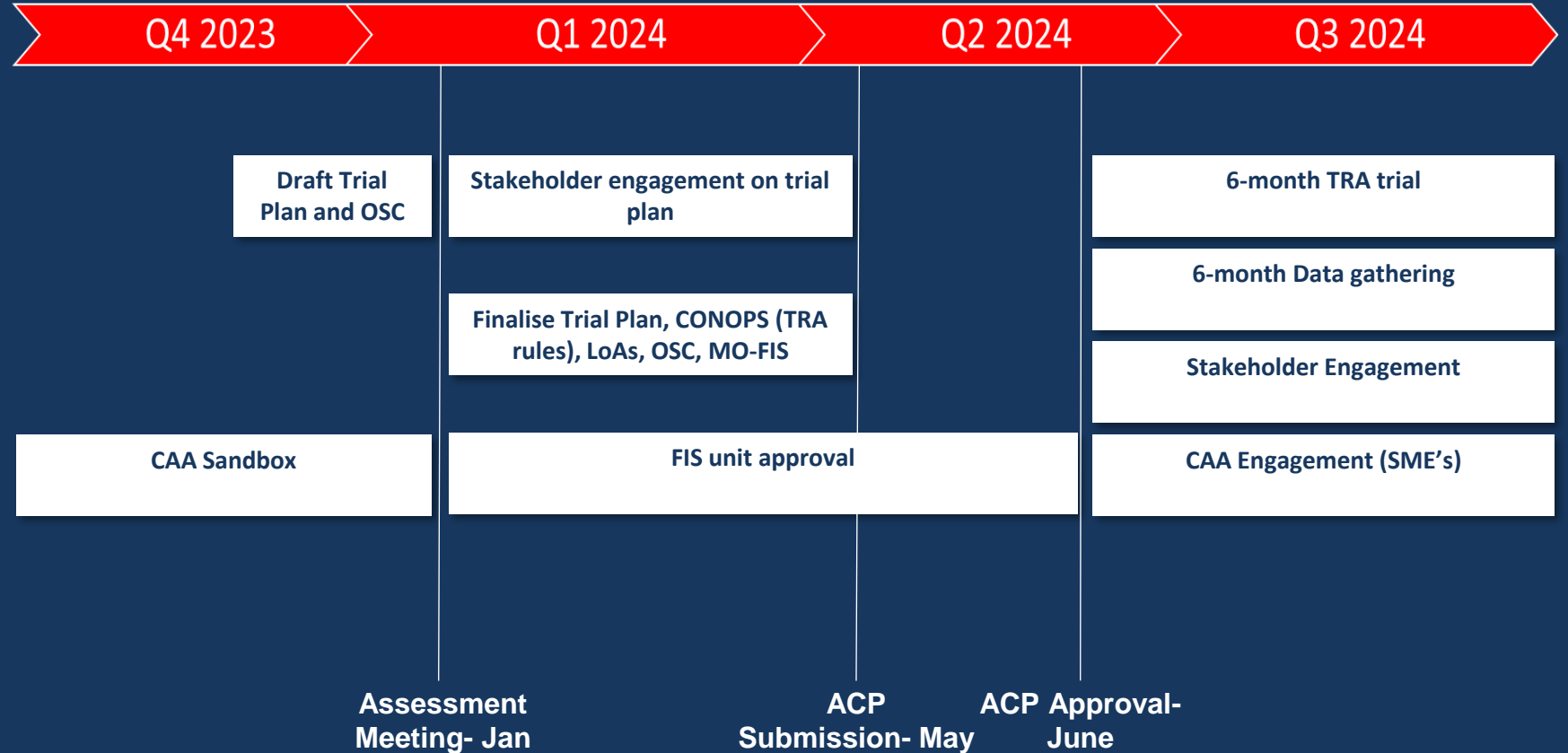
- Implement a solution that enables scalable UAS operations in the UK for the next 2 years
- Support BVLOS UAS Operations in rural areas
- Demonstrate integration of UAS in Low Density Class G 'uncontrolled' airspace

## 4.2 Planned Work

Skyports together with ANSL proposed a timeline that the consortium worked towards and was approved by the CAA however due to the challenges listed on the following slide, these were not all achieved on time.

Milestones achieved within the project timescales include:

- Consortium trial plan drafted
- Airspace change proposal drafted
- Operating procedures were drafted and established
- Operating Safety Case (OSC) drafted and approved by the CAA
- ACP assessment meeting conducted with the CAA
- Meeting conducted with CAA subject matter experts (SMEs) to discuss alternatives approaches for service provisions for the TRA



### 4.3 Challenges and Risks

Over the course of the project, Skyports and ANSL have jointly invested in the development of a concept, solution, procedures and safety assurance for scalable and safe integration of drones with conventional air traffic. However, the consortium faced several challenges which prevented progress toward the intended objectives to permanently scale commercial BVLOS operations in uncontrolled airspace.

Ambiguity of the TRA policy concept required a comprehensive framework for operational implementation. To address this, the consortium initiated extensive collaboration efforts with the CAA to establish the clear requirements for a safe airspace implementation. The policy did establish extensive requirements for aircraft surveillance infrastructure which were primarily designed for operations near aerodromes with existing air traffic control (ATC) services. Skyports' proposal involved utilizing low-density airspace where this equipment was not required or already installed. Therefore, requiring the installation of additional equipment. This proved to not only be costly and time consuming but also presented regulatory hurdles that required adaptations to existing CAA policy, further delaying progress.

Lastly, internal processes and expertise within the CAA presented challenges. The CAA Innovation Team provided valuable guidance; however, their expertise did not align with various technical requirements in the project. This necessitated enhanced collaboration and knowledge sharing between regulatory bodies and subject matter experts (SMEs). Often feedback from the SMEs within the CAA was slow and disjointed from information previously shared by the innovation team, further hindering project progress.

Whilst the participation in the sandbox faced hurdles, the challenges highlighted the need for consistent communication between the regulators and airspace users to establish clear requirements and potential alternative means of compliance when forming new policies in an innovation-led industry.

### Proposed Temporary Reserved Area

#### Airspace Characteristics:

- 0-1000ft AMSL over land
- 3 Airspace Sectors to enable dynamic activation and deconfliction
- Staged Integration of Airspace Users
- Avoids established airfields deconfliction with farm strips by temporary operating instructions (TOI)
- Creation of a known traffic environment through network of ground sensors
- UAS operators responsible for self-separation management



Airspace surveillance equipment deployed in Argyll and Bute



#### 4.4 Proposed CAA Policy on Atypical Air Environments

The Civil Aviation Authority (CAA) is proposing a new policy framework to recognize and regulate operations in Atypical Air Environments (AAE). This policy aims to support operators seeking to operate Unmanned Aircraft (UA) beyond visual line of sight (BVLOS) within these environments.

The recognition of AAEs can enhance the safety and efficiency of BVLOS operations. By defining AAEs as areas with reduced conventional air traffic due to proximity to ground infrastructure, the policy provides a framework for operators to implement appropriate safety mitigations

The series of flight demonstrations Skyports conducted in Argyll and Bute as part of this project contributed as a data gathering opportunity to assess air traffic patterns within areas of operations for the identified use cases –particularly for the powerline inspection with SSEN Transmission.

Following the flights conducted under the Regulators' Pioneer Fund and ongoing surveillance projects, Skyports will be joining the CAA's briefing on the key aspects of the AAE policy concept. By understanding the policy and its implications, operators can effectively plan their UAS operations within these environments.



# FUTURE OUTLOOK

## Future Potential Use Cases

This section provides an overview of other use cases the Argyll and Bute Council would be interested in exploring:

- School Meal Deliveries
- Dangerous Building Surveys
- Roads, Bridges, and Ports Maintenance
- Fire and Rescue Trials
- Emergency Response Plans for the future Oban Drone Port
- Topographical 3D-survey for private water supplies
- Ballot collection

Training council staff to be hub operators who conduct aircraft maintenance and aid drone risk onsite would be a viable next step with integrating drone operations into council services.

## Future Outlook – Heavy Lift UAV

The trial has showcased that mail, medical supplies, food and water samples can be delivered by drone; however current UAVs are still limited in its payload and range capabilities. Notably, technology in the UAV industry is rapidly advancing, with more feasible solutions becoming market ready. Skyports has onboarded of a heavy-lift UAV solution in the short to medium term, which can transport of payloads of up to 180kg, a drastic increase from the currently payload capability of the Speedbird DLV-2.

The Pyka Pelican Cargo (Pyka) is a fully electric fixed wing UAV which is deemed the

most suitable from a mid- and long-term perspective for Argyll and Bute Council and the area surrounding Oban Airport. Despite being fully electric, the Pyka can cover distances of up to 320km. Unlike the Speedbird DLV-2,

it requires a short runway to take-off and land of 150m. This can be paved, gravel, dirt, or grass. Furthermore, its 180 kg payload can be completely loaded and/or unloaded within 5 minutes.

## Future Outlook – Regulatory Landscape

**The Atypical Airspace policy concept** by the CAA aims to safely enable uncrewed aerial vehicle (UAV) operations in areas of airspace that are rarely used by other aircraft. These operations, such as infrastructure inspections and monitoring, are typically constrained to low altitudes and within specific boundaries. The CAA will provide a briefing on the policy application process which Skyports are keen on participating to enhance the company's survey and surveillance efforts.

**The TRA policy concept** aims to establish a consistent regulatory framework for the integration of beyond-visual-line-of-sight (BVLOS) unmanned aerial systems (UAS') into UK airspace. The TRA sandbox serves as a testing which will provide a roadmap for a future CAA policy.





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