

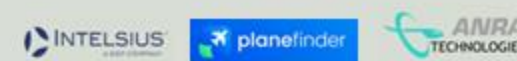
# CAELUS2

LOTHIAN AND BORDERS  
ACP-2022-104  
TARGETED AVIATION  
STAKEHOLDERS ENGAGEMENT



# CAELUS

 [PROJECTCAELUS.CO.UK](https://PROJECTCAELUS.CO.UK)



# Introduction

Dear Stakeholder,

You are receiving this briefing pack because your organisation has been identified as an aviation Stakeholder that might be interested or potentially impacted by the Beyond Visual Line of Sight (BVLOS) RPAS flights (and associated temporary segregated airspace) planned as part of CAELUS2 Future Flight Challenge project. The flight route this pack refers to has two legs, which connect a) The Royal Infirmary of Edinburgh with the Borders General Hospital b) The Royal Infirmary of Edinburgh with the East Lothian Community Hospital.

Consideration of other airspace stakeholders requirements have been applied when creating this proposal so that the impact on your organisation and members is minimised through adjustment of the segregated airspace designs and timings of our operations. We appreciate that there are specific needs you might have that we are not yet aware of, therefore we kindly invite you to a dialogue and we will see if there are any further reasonable adjustments we can make to our proposals or specific agreements that can be achieved between Project CAELUS2 and your organisation.

We would really appreciate if you could carefully review the following material with the appropriate members of your team and get back to us as soon as possible, but **no later than 2 February 24** with any questions/requests or a confirmation that you are happy with the proposal and have no objections to it. The deadline of 2 February 2024 is there to make sure that we have sufficient time to discuss stakeholder needs and **adjust our proposals as required by 12 February 2024, when the engagement is completed and the ACP is due to be submitted**. We will, however, remain available beyond that date and throughout our planned period of operations in case your circumstances change or should we require to update you on our plans. Information will be also regularly updated on the UK CAA [portal](#).

As required by the ACP process any comments and consequent replies will be included in the ACP submission pack to the CAA and shown on the ACP Portal however all personal details will be redacted.

Kindly note, that some stakeholders may require a signed Letter of Agreement and/or arrangement of special procedures. If you believe that LoA is required for your organisation and you don't hear from us within 1 week of receiving this pack – please reach out to us and we will be happy to assist.

Regards

CAELUS Project

# Statement of Need

ACP-2022-104: Project Overview

The CAELUS (Care & Equity – Healthcare Logistics UAS Scotland) **consortium is led by AGS Airports Ltd on behalf of NHS Scotland** and the consortium partners and part **funded by Innovate UK through the Industrial Strategy Challenge fund, Future Flight** competition. The project which brings together AGS Airports, NHS Scotland, NATS, ATKINS, Cellnex, Connected Places, Catapult and 10 other companies who are working together to demonstrate the viability of a national drone network that can transport essential medicines, bloods and other medical supplies throughout Scotland. The project will deliver a Concept of Operations (**CONOPS**) **for the transition to fully integrated UAS operations** at a national level. This specific workstream, led by NATS will develop and publish a phased approach outlining proposed airspace constructs and detailing regulatory and technology gaps required to enable the transition. **Elements of this CONOPS will be validated** through live flight operations, differentiating CAELUS from other projects by seeking to move the industry forward by proposing and validating a method of operations that are fully integrated and sustainable.

# Statement of Need

ACP-2022-104: Healthcare opportunity

With approximately **26% of Scotland's population living in remote or rural areas** spread across 69% of the land mass, service delivery can encounter constraints which contributes to treatment inequity. NHS Scotland encompassing the Territorial Boards and Scottish Ambulance Service (SAS) views the adoption of Unmanned Aircraft Systems (UAS) or drones as an opportunity to **transform the patient experience** and reduce the impact of traffic congestion and CO2 emissions. Key to this is the driver of the NHS Scotland Recovery Plan (2021) which highlights the essential need for research, innovation and redesign as integral to the recovery of NHS Services. **For both SAS and NHS Scotland equity** in the delivery of healthcare **is a key driver** for involvement in this project as NHS Scotland considers how to remobilise and redesign services to address the needs of Scotland's health and social care challenges. A current strategic directive for SHIP (Scottish Health Industry Partnership) is to grow the economy (community wealth building) and **support remobilisation, accelerating the adoption of Innovation into NHS and Social Care** (Life Sciences in Scotland, 2022). A drone-based network has the potential to **reduce mileage and produce significant time saving opportunities** improving patient experience, outcomes and equity in care delivery. As a formal partner of the consortium, NHS Scotland via lead board NHS Grampian, are providing a joined-up approach bringing input and expertise from **health boards and SAS under the "Once-for Scotland"** banner. The NHS will define and support at ground level the clinical use cases that will be flown or simulated in the live and digital demonstrations.

# Statement of Need

ACP-2022-104: Informing Regulation

Today, most beyond visual-line-of-sight (BVLOS) UAS operations can only be conducted within segregated airspace. The most common way to achieve this is to establish temporary danger areas (TDAs) for the UAS to operate within. Current regulation is designed to consider on a per flight basis without means to provide a scalable solution. Recognised detect and avoid capabilities are basic. CAELUS intend to **validate a developed concept of operations around airspace structure and use that is scalable and sustainable.**

# Statement of Need

ACP-2022-104: Proposed Operations

We aim to utilise volumes of segregated airspace across Scotland in a total of 5 locations to enable us to prove elements of our proposed future concept of integrated airspace. For this proposal, we intend to fly in the Lothian and Borders region representing use cases for the NHS South-East Innovation Hub.

The use cases will require volumes of segregated airspace to be in place for a maximum of 8 weeks with expected flying during 20 days of those weeks. Our proposal is that we activate this for limited duration. The segregated airspace dimensions and duration of activation will be informed by stakeholder feedback. This segment of flying will be undertaken by Skyports.

A system of ADS-B Receivers will be deployed to demonstrate an additional layer of situational awareness to the UAV pilot along the flying routes and contribute to the Detect and Avoid solutions that will form part of the demonstrations.

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# CAELUS2 Background

Part-funded by Innovate UK Future Flight Challenge

## 16 Partners

Led by AGS and supported by NHS-Scotland.

## Airspace Integration

ConOps created by NATS and will be validated through trials and aims to gather data that could be used for safe integration of RPAS in the future.

## NHS Need

Serve real-life use cases across urban and rural environments.

Improve equity of access to healthcare in remote and rural areas.

## "Once for Scotland"

Access differing service delivery models provides the ability to more rapidly spread learning and benefits across the regions

Explore reducing the need for patient travel in 3 NHS innovation regions.



# NHS Use Cases

CAELUS would enable samples and supplies to be delivered rapidly, within a time controlled window with medical grade, temperature controlled and monitored packaging

## Local Chemotherapy/Oncology products Administration

Reduces patient travel time, stress and cost by removing the need to travel to specialist centres.

## Faster blood product cross-matching

- Faster emergency treatment.
- Better patient outcomes.
- More efficient use of blood products.

## Faster Lab Testing

Earlier start of targeted medications in a patient's treatment.

Potential reduction in antibiotic resistance.

- Better patient outcomes.
- Shorter hospital stay

## Faster Emergency Medicine

- Better patient outcomes.
- Shorter hospital stay.





# UAV AIRCRAFT-Rigitech EIGER



## Rigitech Eiger

- Size Wingspan 2.68m; Height 0.42m
- Weight (MTOM) 19kg
- Maximum payload weight 3kg
- Maximum flight time (MTOM) 46 mins
- Maximum range (MTOM) 80km
- Wind limitations (On-Route) 15m/s
- Rain limitation Light rain
- Icing limitation Out of operating limitations
- Fog limitation Out of operating limitations

## Electronic Conspicuity

- ADS-B OUT
- MODE S Transponder

# TIMELINE

|                               |           |            |
|-------------------------------|-----------|------------|
| Stakeholder Engagement        | 14 Dec 23 | 2 Feb 24   |
| Prep for CAA AR Submission    | 2 Feb 24  | 12 Feb 24  |
| CAA Response                  | 12 Feb 24 | 11 Mar 24  |
| AIC Published                 |           | 22 Mar 24  |
| Flight Trials 20 days between | 2 May 24  | 28 June 24 |

# N3 (LOTHIAN and BORDERS) ROUTE

– DEP/ARR: ROYAL INFIRMARY of EDINBURGH

– ARR/DEP: BORDERS GENERAL HOSPITAL  
– ARR/DEP: EAST LOTHIAN COMMUNITY HOSPITAL

## REQUIRED AIRSPACE AND DIMENSIONS

TSA + TDA: ~2-4 km wide along the route from surface to ceiling of 1000 ft AMSL for the Edinburgh to East Lothian leg and short segments of 1000ft AMSL, 1400ft AMSL and 1650ft AMSL depending on terrain on the Edinburgh to Borders leg.  
Designs will be fully finalised after engagement.

## REQUIRED WINDOW OF OPPORTUNITY

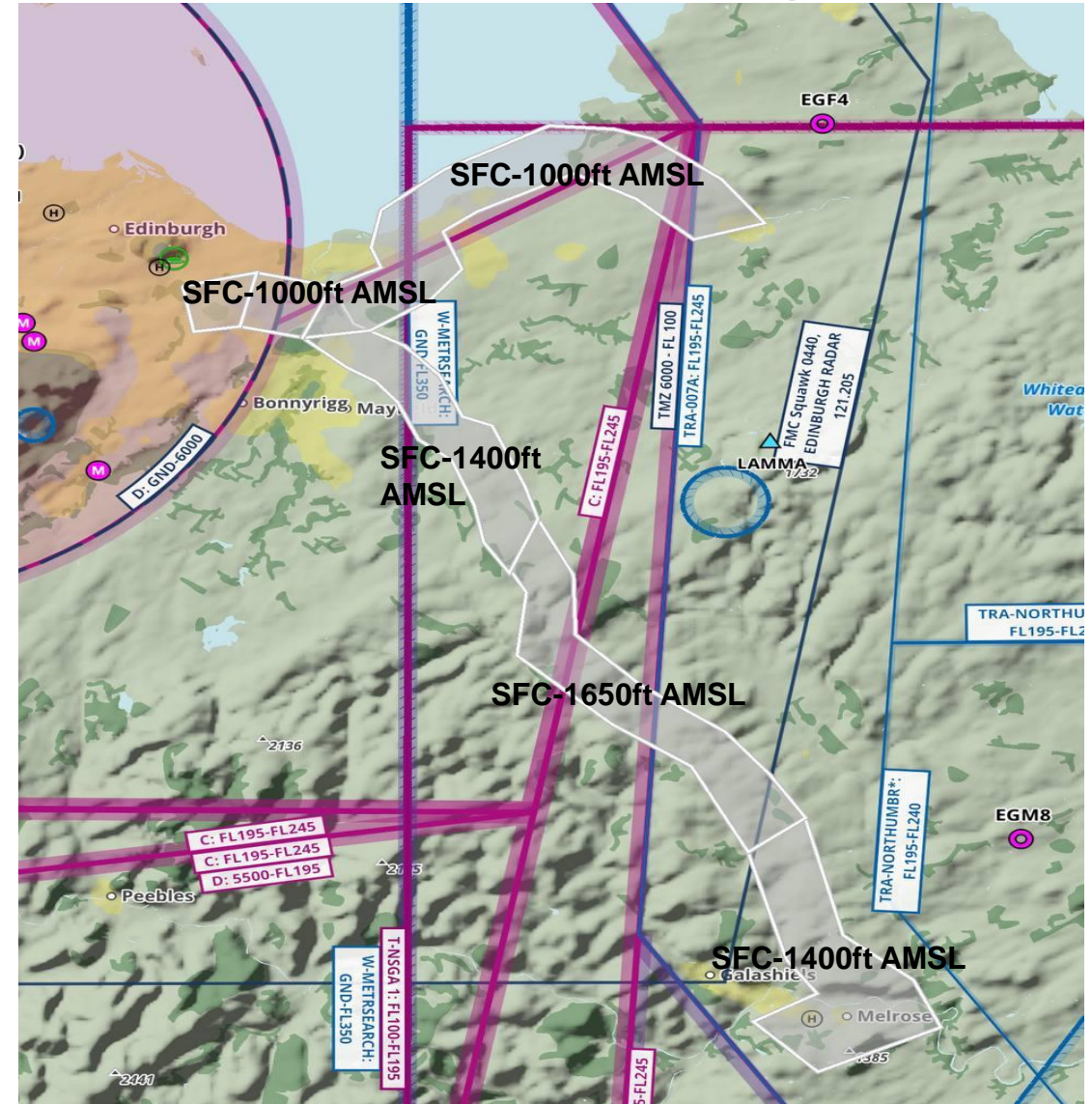
Operations to be conducted over 20 working days once started. It is proposed that the period will commence on the 02 May 24. However, for feedback purposes please consider any impact this proposal may have on your operations up to Aug 24. This will allow for any approval process or mitigation for any significant operations idetidelay in the CAA fied during the engagement process. Final dates will be promulgated in the AIC.

## ACTIVATIONS

Activation by NOTAM for short periods up to twice a day. See detailed proposed schedule on following slides.

# Proposed Temporary Danger Areas/Temporary Segregated Area Edinburgh to Lothian Community Hospital and Borders General Hospital

- TSA + TDA: ~2-4 km wide along the route from surface to ceiling of 1000 ft AMSL for the Edinburgh to East Lothian leg and short segments of 1000ft AMSL, 1400ft AMSL and 1650ft AMSL depending on terrain on the Edinburgh to Borders leg.
- Designs will be fully finalised after engagement.



# PROPOSED PERIODS OF ACTIVATIONS

|               | AM Activation        |     | PM Activation        | COMMENTS   |
|---------------|----------------------|-----|----------------------|--|
| <b>WEEK 1</b> | <b>07:00-10:00 L</b> | OR  | <b>13:00-16:00 L</b> | <ul style="list-style-type: none"> <li>– Only one period of flying with morning activation preferred dependent on weather. Only one appropriate NOTAM with min 24 hours notice will be activated</li> <li>– 3-6 one-way flights are expected to be completed (1-2 flights per hour)</li> <li>– Only one TDA route will be activated at a time</li> </ul> |
| <b>WEEK 2</b> | <b>07:00-10:00 L</b> | AND | <b>13:00-16:00 L</b> | <ul style="list-style-type: none"> <li>– Afternoon activation will be planned in addition to the morning one</li> <li>– We will be aiming for 2 return flights per hour</li> <li>– Only one TDA route will be activated at a time</li> </ul>   |
| <b>WEEK 3</b> | <b>07:00-11:00 L</b> | AND | <b>13:00-16:00 L</b> | <ul style="list-style-type: none"> <li>– Morning activation is increased from 3 to 4 hours,</li> <li>– Both TDA routes could be active between 0700-0900</li> </ul>  |
| <b>WEEK 4</b> | <b>07:00-11:00 L</b> | AND | <b>13:00-17:00 L</b> | <ul style="list-style-type: none"> <li>– Both morning and evening activations are increased to 4h</li> <li>– Both TDA routes could be activated for the whole duration of the morning and afternoon activation</li> </ul>  |

**NOTE 1:** – Activation periods described above are maximum durations and could be reduced on particular days if not operationally required.

**NOTE 2:** – Danger Area Activity Information Service (DAAIS) will provide information on the status of the TDAs. Danger Area Crossing Service (DACs) from a local ATSU may be possible but is subject to ongoing discussions.

**NOTE 3:** – Skyports will promulgate the TDA activation times and contact details of the Flight Operations Team by NOTAM at least 24 hours before the planned use.

# LOCAL STAKEHOLDERS IDENTIFIED

N3: Royal Edinburgh of Infirmary – East Lothian Community Hospital - Borders General Hospital

| <u>Aerodromes and ANSPs</u>           | <u>GA Airfields, clubs and Unlicensed Sites</u> | <u>Other Aviation Stakeholders</u> | <u>Other Non-Aviation Stakeholders</u> |
|---------------------------------------|---|------------------------------------|--|
| Edinburgh                             | Portmoak  | Penicuik HLS                       | Borders General Hospital               |
| Edinburgh ATC (ANSL)                  | Kirknewton                                      | Scottish Aero Club                 | Royal Infirmary of Edinburgh           |
| Royal Infirmary of Edinburgh Heliport | Fife  | Sherrifhall Areodrome              | East Lothian Community Hospital        |
| Borders General Hospital Heliport     | Cumbernauld                                     |                                    |  |
|                                       | Lanark and Lothian Soaring Club                 |                                    |  |
|                                       | East Fortune Airfield                           |                                    |  |
|                                       | East of Scotland Microlights                    |                                    |  |
|                                       | Archerfield                                     |                                    |  |
|                                       | Midlem  |                                    |  |
|                                       | Lempitlaw                                       |                                    |  |
|                                       | Charterhall                                     |                                    |  |
|                                       | Nether Huntlywood                               |                                    |  |
|                                       | Latch Farm                                      |                                    |  |

# NATIONAL STAKEHOLDERS(CAA NATMAC LIST)

|  |  |  |  |  |  |
|--|--|--|--|--|--|
| Association of Remotely Piloted Aircraft Systems Ltd (ARPAS –UK) |  | British Skydiving  |  | Drone Major                                  |  |
| Airport Operators Association (AOA)                              |  | British Airline Pilots Association (BALPA)               |  | General Aviation Safety Council (GASCO)      |  |
| Airport Operators Group  |  | British Ballon and Airship Club                          |  | General Aviation Alliance (GAA)              |  |
| Aircraft Owners and Pilots Association(AOPA)                     |  | British Business and General Aviation Association (BBGA) |  | Guild of Air Traffic Control Officers(GATCO) |  |
| Airspace Change Organising Group(ACOG)                           |  | British Gliding Association (BGA)                        |  | Honourable Company of Air Pilots(HCAP)       |  |
|  |  | British Helicopter Association                           |  | Helicopter Club of Great Britain (HCGB)      |  |
|  |  | British Microlight Aircraft Association (BMAA)           |  | Light Aircraft Association(LAA)              |  |
|  |  |  |  |  |  |

# NATIONAL STAKEHOLDERS

|                                |  |                 |  |  |  |
|--------------------------------|--|-----------------|--|--|--|
| Babcock                        |  | PDG Helicopters |  |  |  |
| BRISTOW SAR                    |  |                 |  |  |  |
| GAMA HELIMED                   |  |                 |  |  |  |
| UK Police                      |  |                 |  |  |  |
| OHS Rescue Helicopter          |  |                 |  |  |  |
| Great North Air Ambulance      |  |                 |  |  |  |
| Maritime and Coastguard Agency |  |                 |  |  |  |
|                                |  |                 |  |  |  |
|                                |  |                 |  |  |  |
|                                |  |                 |  |  |  |



# NATIONAL DEFENCE AND SAFETY CRITICAL ORGANISATIONS

|                                      |           |             |           |  |  |
|--------------------------------------|-----------|-------------|-----------|--|--|
| MoD DAATM                            | Via DAATM | Air Command | Via DAATM |  |  |
| Military Aviation Authority (MAA)    | Via DAATM |             |           |  |  |
| Navy Command HQ                      | Via DAATM |             |           |  |  |
| United States Visiting Forces (USVF) | Via DAATM |             |           |  |  |
| BAE Systems                          |           |             |           |  |  |
| UK Airprox Board (UKAB) (UKAB)       |           |             |           |  |  |
| UK Flight Safety Committee (UKFSC)   |           |             |           |  |  |
| NATS                                 |           |             |           |  |  |

# How to Respond

ACP-2022-103

If you received this briefing pack directly from CAELUS2AIRSPACE@TRAXINTERNATIONAL.CO.UK via email, then please respond by the same method before **2 February 24** or if you were forwarded this briefing pack by somebody else – please email us your comments, but also do not forget to include your name and the organization you represent or if you are an individual please state this.

We would really appreciate if in your response you confirm if you have **no objections** to the proposal or share your **comments/concerns/suggestions** that are relevant **specifically to the proposed ACP** and operations described in this pack. Depending on your feedback, we will either reply to questions via email or schedule an online conference call.

If you represent a national level organisation, you might have been previously invited to a pre-engagement briefing session on the project overall. Questions raised at these sessions have been combined into a single document, but some are still awaiting review by Subject Matter Experts. Please expect that a file with complete set of responses could be downloaded using this [Dropbox link](#) by 1st week of March 24 and/or you receive a personal email response.



**CAELUS**

# **PRIMARY CONTACT**



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