

# CAELUS2

NHS GRAMPIAN

ACP-2022-102

TARGETED AVIATION  
STAKEHOLDERS ENGAGEMENT



# CAELUS



PROJECTCAELUS.CO.UK



# Introduction

Dear Stakeholder,

You are receiving this briefing pack because your organisation was **identified as an Aviation Stakeholder that might be impacted** by the 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) Aberdeen Royal Infirmary with Dr Gray's Hospital b) Dr Gray's Hospital with Raigmore 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 25 March 24** with any questions/requests or a confirmation that you are happy with the proposal and have no objections to it. The deadline of 25 March 2024 is there to make sure that we have sufficient time to discuss stakeholder needs and **adjust our proposals as required by 8 April 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,

Project Caelus2

# Background

- 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 Scotland's Chief Scientist's Office (CSO) 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-2022-102: Project Overview

- 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.
- CAELUS intend to develop a concept of operations around airspace structure and use that is scalable and sustainable which could be used to inform the CAA in development of CAP1711 Airspace Modernisation Strategy.

# Statement of Need

ACP-2022-102: Healthcare opportunity

- 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 Grampian and Highlands region representing use cases for the NHS North of Scotland 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 28 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.

# 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 equality of 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

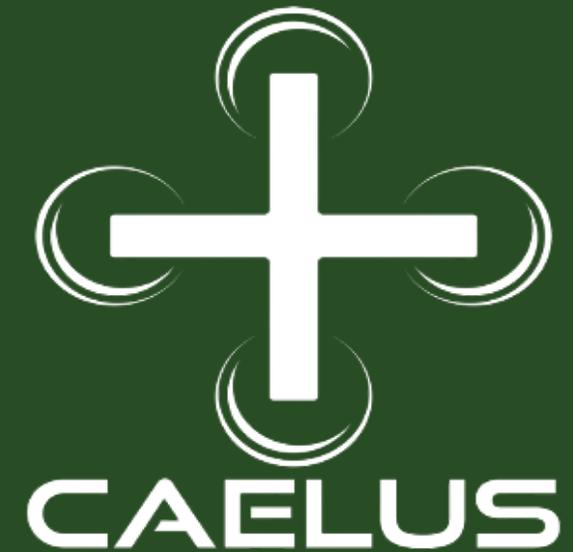
- Faster emergency treatment.
- Better patient outcomes.
- More efficient use of blood products.

## 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.



# TIMELINE

<b>Stakeholder Engagement</b>	12 Feb 24	25 Mar 24
<b>ACP Submission</b>	8 Apr 24	
<b>CAA Response</b>	6 May 24	
<b>AIC Published</b>		27 Jun 24
<b>Flight Trials 28 days between</b>	1 Jul 24	28 Aug 24

# UAV AIRCRAFT



## SWOOP KITE EVTOL

**RANGE:** 160 KM

**CRUISE:** 68 KTS IAS

**MTOW:** 22.5kg/26.4kg As agreed in the OSC

**MAX WIND SPEED:** 30kts with gusts up to 44kts

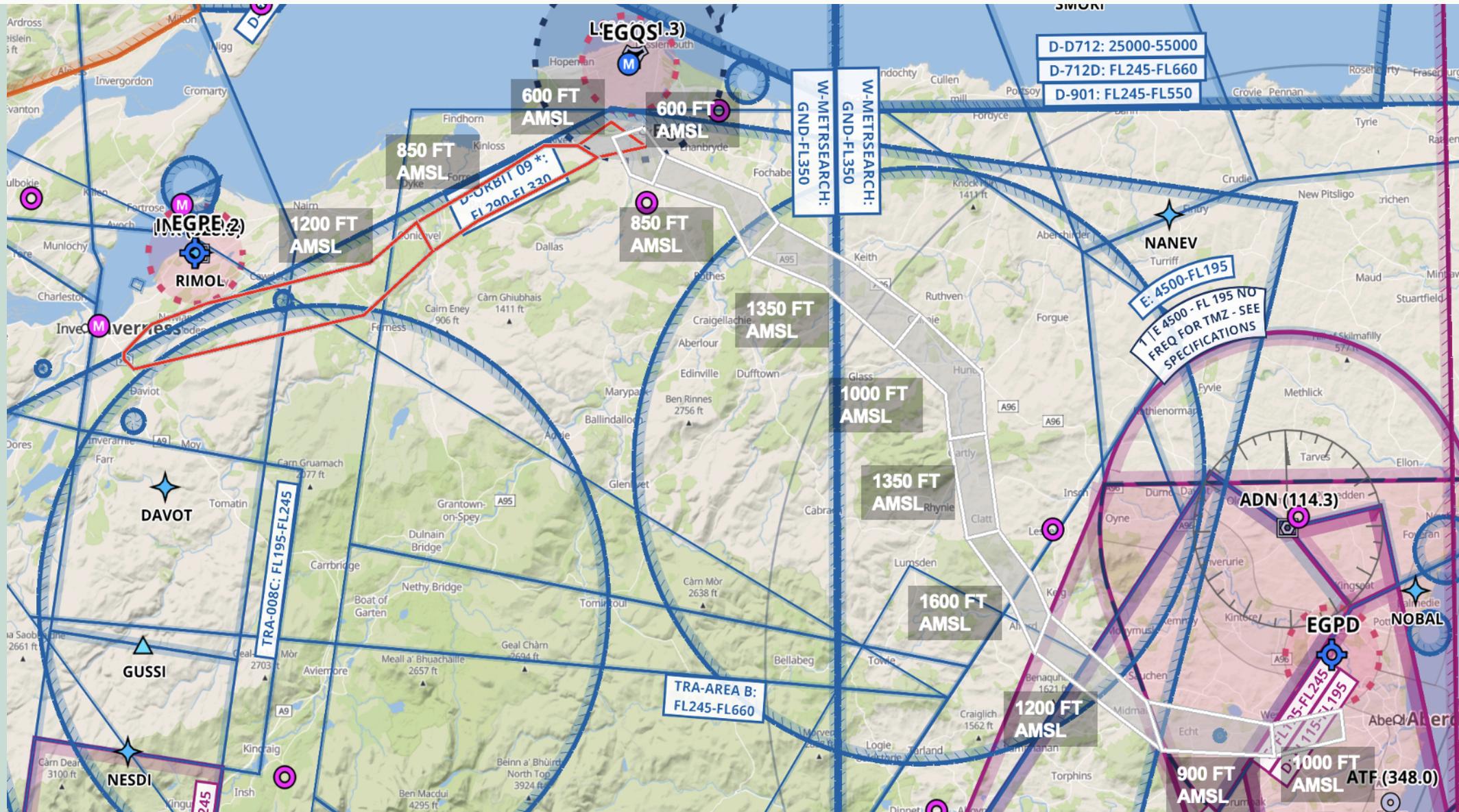
**PRESIPITATION:** Moderate rain (10mm per hour) up to 30 minutes, light rain (less than 2.5mm per hour) indefinitely

**TEMPERATURE RANGE:** -10 degrees Celsius to 50 degrees Celsius

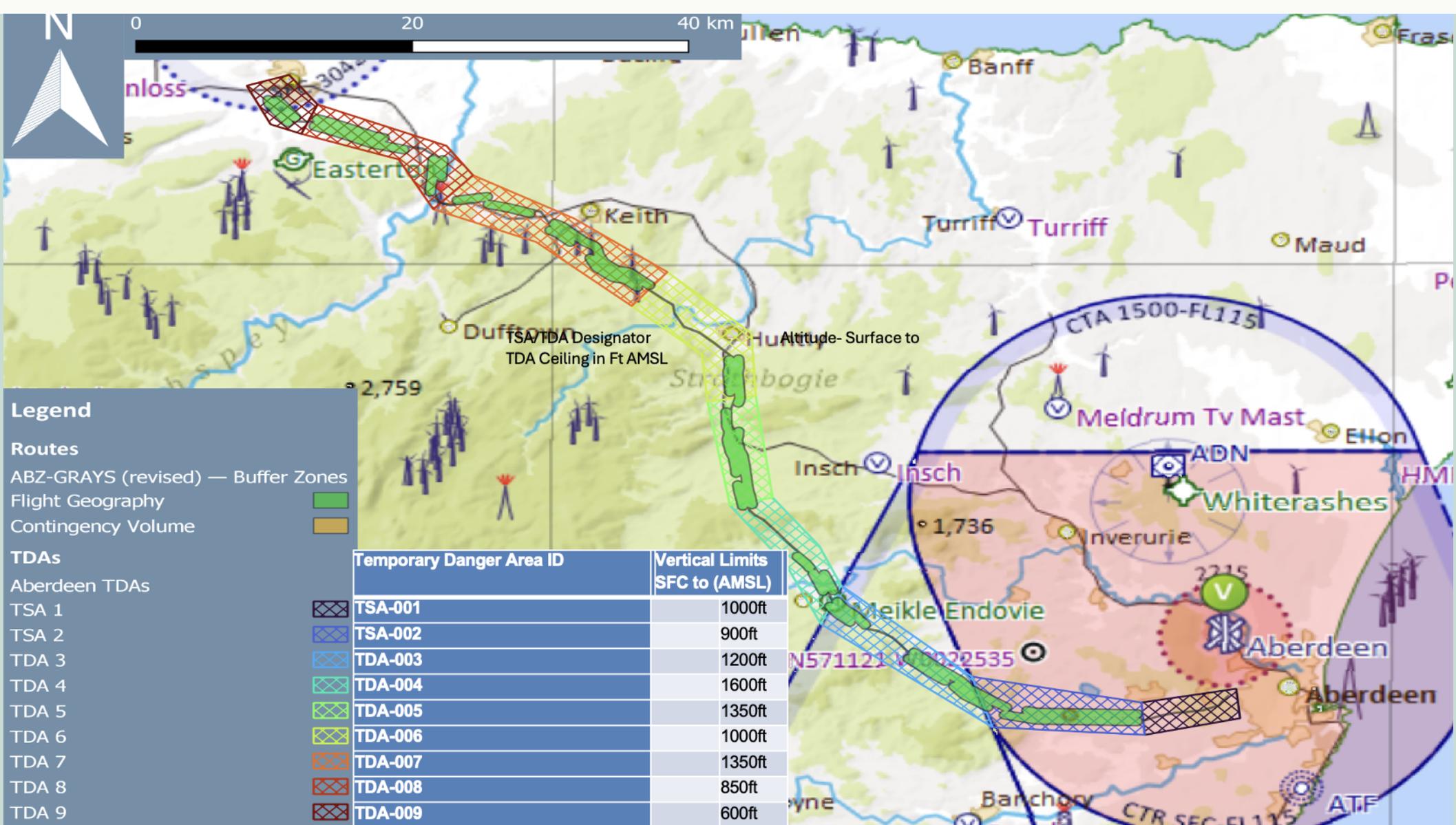
**OTHER EQUIPMENT:** Transponder 1090ES ADS-B Out and ADS-B IN , which can process uncertified ADB-B signals and Mode S; NAV Lights

# N1 (GRAMPIAN) ROUTE

PROPOSED ROUTING	Aberdeen Royal Infirmary to Dr Grays Hospital (Elgin) Dr Grays Hospital (Elgin) to Raigmore Hospital (Inverness)
REQUIRED AIRSPACE AND DIMENSIONS	TSA + TDA: ~2-4 km wide along the route from surface to a maximum altitude of 1600ft AMSL from Aberdeen Royal Infirmary to Dr Grays Hospital, 600 ft AMSL in the immediate vicinity of RAF Lossiemouth and a maximum altitude of 1200 ft between Dr Grays Hospital and Inverness Raigmore. Designs will be fully finalised after engagement.
REQUIRED WINDOW OF OPPORTUNITY	28 Days flying within an 8 week window of opportunity. 2 Flying windows for 3-4 hours flying each per 24hr period. The project intention will be to fly for 28 consecutive days once flying has commenced.
ACTIVATIONS	Activation by NOTAM for short periods up to twice a day.

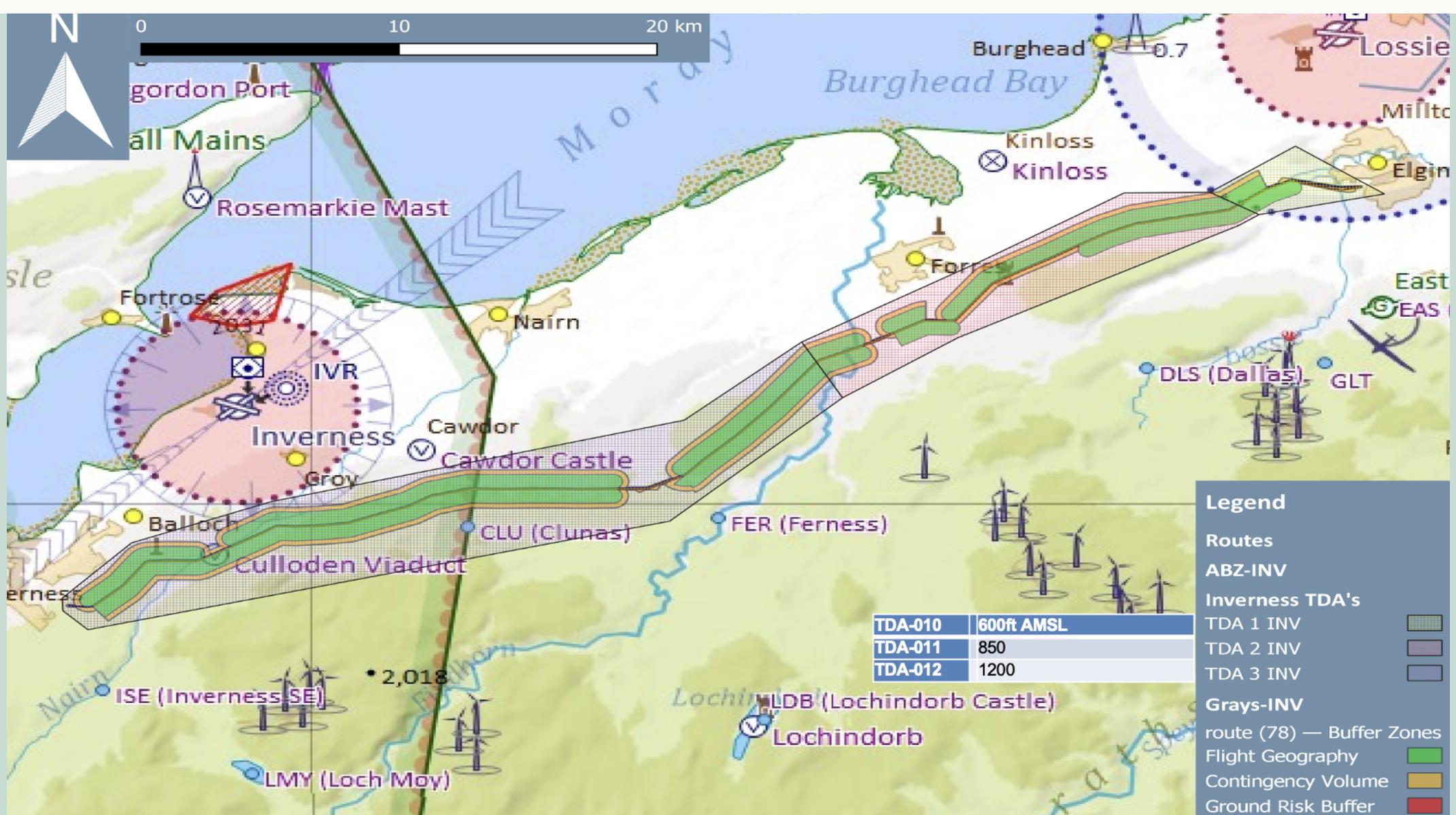


N1: Proposed Route + TDA/TSA on Airspace Map  
 KML could be downloaded using [Dropbox Link](#)



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# PROPOSED OPERATING TIMINGS

	Activation	COMMENTS
<b>WEEK 1</b>	Total of 3-4 Hours between 08:00L and 20:00L	Only one period of flying, 3-4 Hours with evening activity preferred (dependent on weather).
<b>WEEK 2</b>	Total of 6-8 Hours between 08:00L and 20:00L	2 times 3-4hr flying periods between 08:00L and 12:00L and between 16:00L and 20:00L
<b>WEEK 3</b>	Total of 6-8 Hours between 08:00L and 20:00L	2 times 3-4hr flying periods between 08:00L and 12:00L and between 16:00L and 20:00L
<b>WEEK 4</b>	Total of 6-8 Hours between 08:00L and 20:00L	2 times 3-4hr flying periods between 08:00L and 12:00L and between 16:00L and 20:00L
<b>NOTE 1:</b>	Activation periods described above are maximum durations and could be reduced on particular days if not operationally required. Timings may be reviewed in light of Stakeholder Engagement	
<b>NOTE 2:</b>	Contact details for information as to the activation status of the TDAs will be promulgated via the AIC. We will endeavour to arrange for Danger Area Information or Danger Area Crossing Service from a local ATSU if possible, but this has not yet been confirmed and cannot be relied upon.	
<b>NOTE 3:</b>	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

N1: Aberdeen Royal Infirmary - Dr Grays (Elgin) - Raigmore Inverness

Aerodromes in Immediate Vicinity & ANSPs	Smaller airfields, GA Airfields and flying clubs	Emergency services	Other Aviation Stakeholders	Other Non-Aviation Stakeholders
Aberdeen Airport/Aberdeen ATC (NATS)	Alexander Air Flight Training	MCGA	Dallachy Aeromodellers	NHS-Scotland
RAF Lossiemouth	Aberdeen (Culter)	Babcock (Police & SCAA)	Inverurie & District Model Flying Club	Aberdeen Royal Infirmary
Inverness/Inverness ATC (HIAL)	Insch / Grampian Microlight and Flying Club	GNAA (Helimed)	Aberdeen Aeromodellers Flying Club	Dr Grays Hospital
	Aboyne Gliding Site/Deeside Gliding Club	BRISTOW (Coastguard)		Raigmore Hospital
	Highland Gliding Club / Easteron airfield	GAMA (Helimed)		
	Shempston Strip	OHS Rescue		
	Dornoch	Police Scotland		
	Easter	Other helicopter operators		
	Newhall Mains	PDG		
	Culbokie	Airtask		
	Knockbain Farm	2Excel		
	Highland Aviation	NHV		
	SMPC	CHC		
	AHPC			
	Highland HG & PG Club			
	Scottish Aero Club (Perth)			

# NATIONAL STAKEHOLDERS IDENTIFIED

N1: Aberdeen Royal Infirmary - Dr Grays (Elgin) - Raigmore Inverness

GA (NATMAC) 1/2	GA (NATMAC) 2/2	GA (NON-NATMAC)	Defense and safety critical organisations	COMMENT
GAA	ACOG	BHPA	DAATM	
LAA	AOPA	BMFA	UKFSC	
HCGB	AOG	SHPF	UKAB	
HCAP	AOA	GASCO	NATS	
GATCO	PPL/IR Europe		BAE	
BRITISH SKYDIVING	DRONE MAJOR		MAA	VIA DAATM
BMAA			NAVY COMAND HQ	VIA DAATM
BHA			USVF	VIA DAATM
BGA			AIR COMMAND	VIA DAATM
BBGA				
BBAC				
BALPA				
ARPAS-UK				

# How to Respond

ACP-2022-102

If you **received** this briefing pack **directly from CAELUS2AIRSPACE@TRAXINTERNATIONAL.CO.UK** over email, then please **respond** in the **same thread before 25 March 2024** 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 whether you are **representing an organisation** (if so – what organisation) or if you are an **individual**.

We would really appreciate if in your response you confirm if:

- You have no objections to the proposal.
- You feel that you will be impacted by the proposal – if so, please say how and any mitigations that could help.
- Depending on your feedback, we will either reply to questions via email or schedule an online conference call.
- Also, please feel free to propose additional stakeholders that you think are relevant to this engagement



**PRIMARY  
CONTACT**

@ CAELUS2AIRSPACE@traxinternational.co.uk

# Abbreviations

AGL	Above Ground Level
ATZ	Aerodrome Traffic Zone
BVLOS	Beyond Visual Line of Sight
CAT	Commercial Air Traffic
CTR	Control Zone
EVTOL	Electric Vertical Take off and Landing
FFC	Future Flight Challenge
FRZ	Flight Restriction Zone
GA	General Aviation
NATS	National Air Traffic Services
MTOW	Maximum Take Off Weight
RPAS	Remotely Piloted Aircraft System
UA	Unscrewed Aircraft
UAV	Unscrewed Aerial Vehicle
UKRI	UK Research and Innovation
SAS	Scottish Ambulance Service
TDA	Temporary Danger Area
TOLP	Take off and Landing Point
TSA	Temporary Segregated Area