

# Space Launch and Orbit Group

## Launch Session

July 2022



# Welcome

## Agenda

### Welcome

### Current challenges

- Applications update
- Airspace - NATS
- Marine Licensing - MMO
- AEE update

### Future opportunities

- Launch liability and insurance update - DfT

### Hot topics

- LCOLA
- Payload licensing for foreign operators
- Q&A / feedback

### AOB



# Welcome

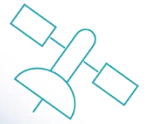


## Housekeeping

- Please mute microphones
- Please use chat or raise Teams hand to ask any questions
- We will publish the slides and actions from this meeting, not verbatim minutes, on our website at [caa.co.uk](https://caa.co.uk)



# Applications

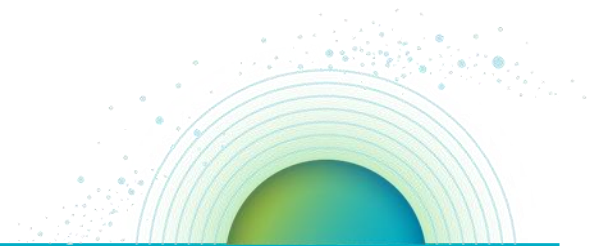


# Continuous improvement

We're taking an 'agile' approach to delivering improvements

## Why are we doing this?

- This is new to us and to you we're all learning
- To incorporate your feedback as quickly as we can
- Working in shorter focused periods of time (2–3week sprints) enables workload to be prioritised, developed and delivered



# Continuous improvement

We're taking an 'agile' approach to delivering improvements

## Examples of work delivered so far:

- Enhanced pre-application process
- Introducing online inspections
- Reviewing and improving our guidance and website content

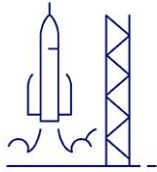
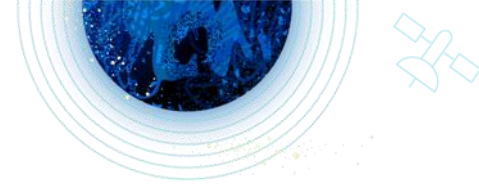
## Examples of work in the pipeline:

- Reviewing the AEE within the wider licensing process
- Review our oversight guidance and processes
- Updating our guidance for pre-application



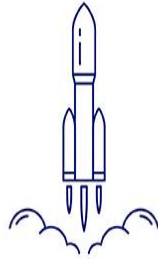
# Applications

All licence applications received



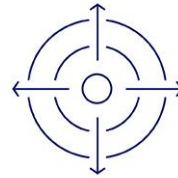
**Spaceport**

**2**



**Launch**

**5**



**Range**

**2**

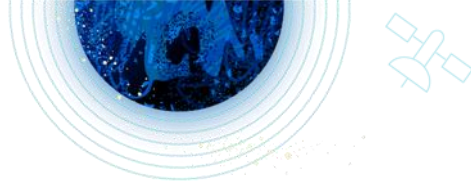


**ANO**

**2**

# Applications

Insights from our first year as the UK's space regulator



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## **Preparation & quality reduces application time**

We have seen applications that have appeared to have been rushed, with required information not included. It is essential enough time is planned for the submission to be complete and of sufficient quality to avoid applications being put on hold

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## **Use generic/typical data or Information**

Whilst we recognise that data, people and processes are often in development at the point of application, please use generic/typical data or information so the application can continue. We expect a degree of iteration during the licensing process.

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## **Consider and build in key requirements early**

Upfront focus on key requirements (e.g. engaging a competent expert to conduct the Assessment of Environmental Effects or taking account of security early in the safety case development) will likely avoid delays and save time in the long run.

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## **Feedback welcome**

We have received some good feedback which shapes ongoing development of our systems and processes. Please continue to let us know directly what works well and what needs improving.

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# Applications

Good quality documents and evidence for an application takes time

	Start			Submit application						Total Time
<b>Launch</b>	Document & evidence preparation 3-6 months	Licensing process 9-18 months			1-2 months	Planned activity	13-26 months			
<b>Spaceport</b>	Document & evidence preparation 3-6 months	Licensing process 6-18 months			1-2 months	Planned activity	10-26 months			
<b>Range</b>	Document & evidence preparation 2-4 months	Licensing process 6-18 months			1-2 months	Planned activity	9-24 months			
<b>Orbital</b>	Document & evidence preparation 2-4 months (New Operators)	Licensing process 6-12 months			1-2 months	Planned activity	9-18 months			

Licensing processing time is a guide, it could be slightly shorter or longer dependent on the complexity of the application and the quality of the submitted documents and evidence, we will always process your application as fast as possible, planning with shorter timescales is at your own risk.

# Airspace

NATS

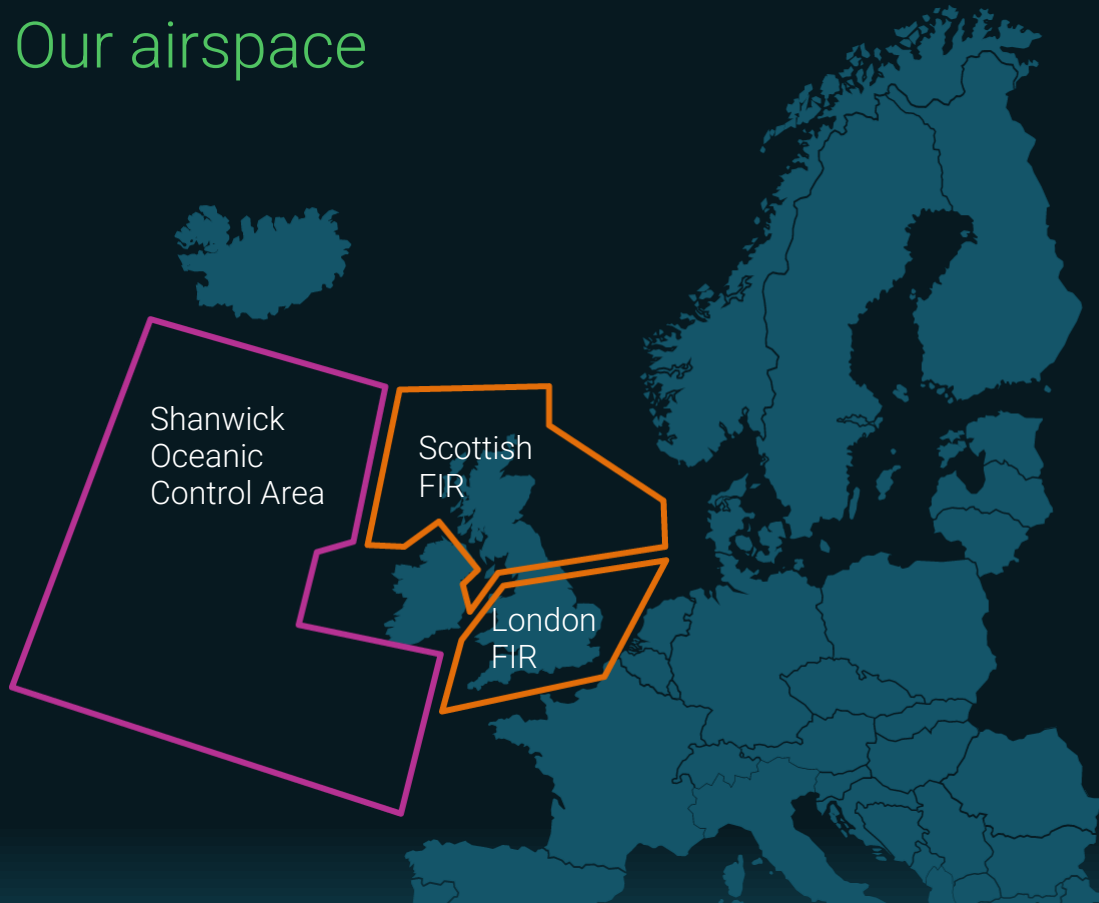


# ANSP Perspective on ACPs

Two parallel green lines that curve upwards from the bottom left towards the top right, creating a sense of motion or a stylized 'N' shape.

***NATS***

## Our airspace



### Flight Information Regions

- London & Scottish FIRs:  
1m km<sup>2</sup> – 11% of Europe's airspace  
and 25% of traffic
- Shanwick  
2.2m km<sup>2</sup> – 80% of North  
Atlantic traffic



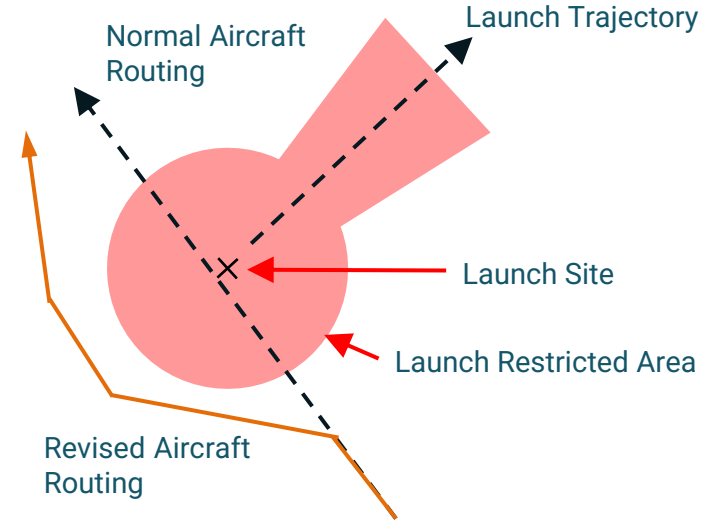
# Danger Area Responsibilities

Define and Assure Safe Restricted Area –  
Launch Operator/ Range /Spaceport

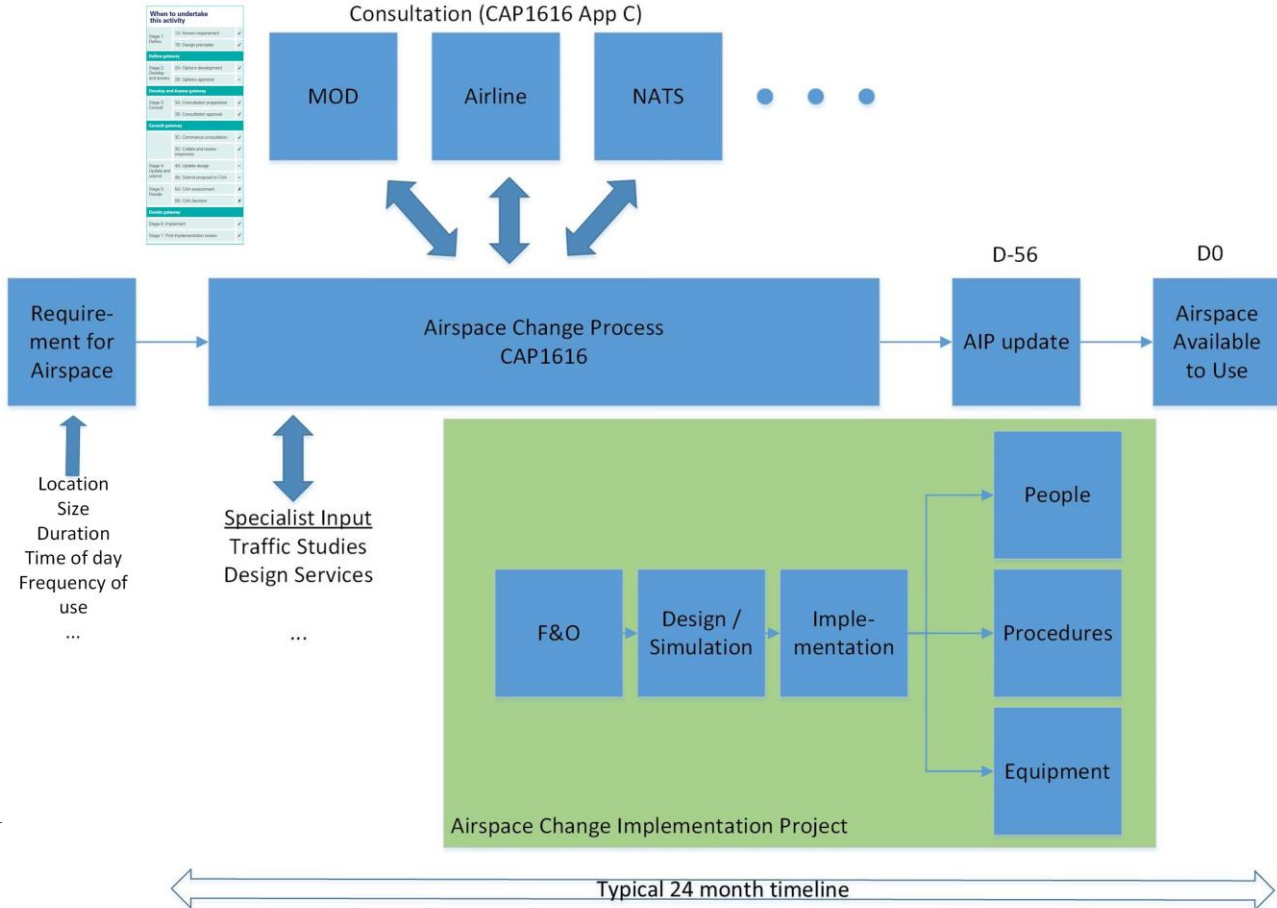
Approve Safe Restricted Area – Regulator

Range Operator – Ensure DA is clear

Route Aircraft Safely Round Restricted Area -  
NATS



# Airspace Change Process



# NATS Needs in ACP Process



Clear single vision of airspace need

ADQ Compliant co-ordinates

Declaration of airspace buffers in proposal

Realistic airspace usage prediction over time

Declaration of expected time of day for use

Understanding of Network impact

Inclusion of sufficient time for airspace notification processes

Recognition of other restricted airspace users booking needs



## Positive Ways to Engage

Single POC

Clear upfront airspace needs

Clear use of agreed terminology

Sponsor runs co-ordination meetings between all parties for clear plan and responsibilities

Short clear launch windows enables manning to support, extended repeated windows does not

Clear activation / cancellation timelines round nogo points for launch

# Airspace Impact of Launches

## Drivers for Range size and usage

What being Launched?

- Size – Microsat < 500kg
- Composition – Carbon Fibre, Metal
- Maturity – Launcher pedigree
- Orbital vs Sub-Orbital

Range Size?

Lateral and Vertical dimensions

Where?

- Launch Site
- Orbital slot for “prime satellite”



When?

- Time of Day
- / Launch Window Flexibility

Duration?

- Launch length
- (e.g. Rocket vs Balloon 1<sup>st</sup> stage)

Cadence?

- How often
- (Daily/Weekly/Monthly)

Return?

- Reusable Vehicle/Booster Stages/
- Passenger Flight

## Effects on Existing Airspace Users

Flight Delays

Additional track miles

Fuel

Aircraft Crew Time

En-Route Charges

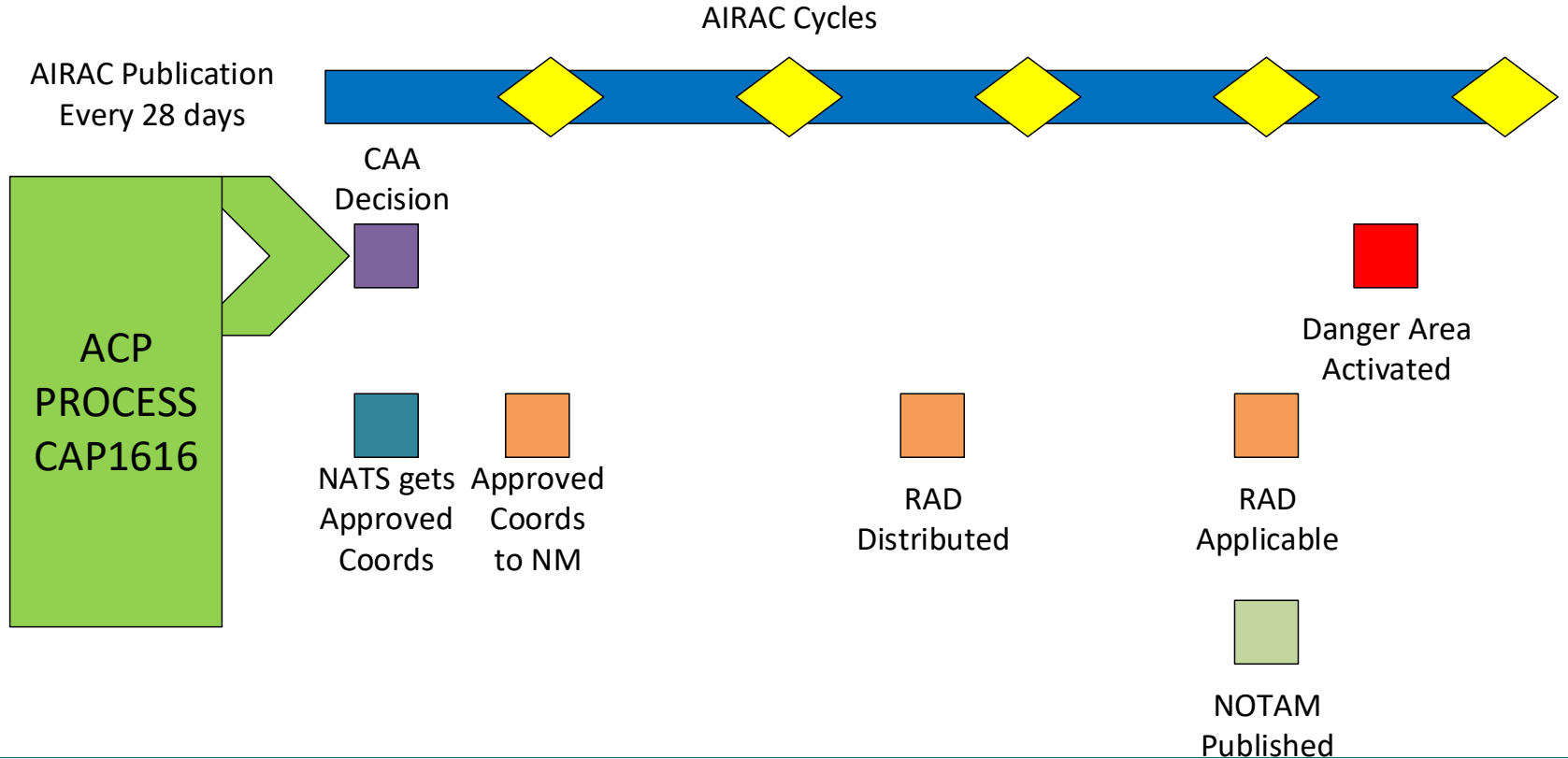
Potential lost revenue from cancellations

Cost of Danger Area implementation

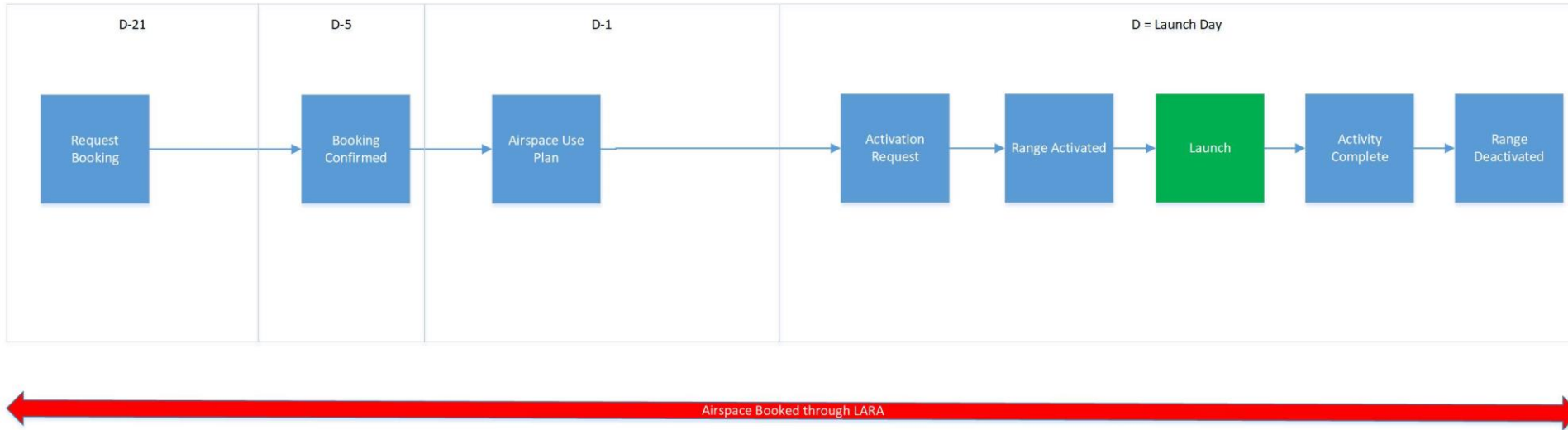
ATC Workload

ATC Staffing

# What we do once Airspace Approved



# Range Airspace Management



# Benefits Permanent vs Temporary



## Temporary

Significant upfront work for **each** and **every** launch

Wider range of potential launch points

Possible to tune for vehicle

New LOA each time

Individual Airspace Approvals

## Permanent

more upfront work

Ability to then book airspace without ACP

Shorter lead time once approve, more operational flexibility

Fixed launch location

Standard LOA

Single Airspace Approval

## Key Points



Allow time for ACP process

Talk to stakeholders early

NATS and MOD will be stakeholders for all these ACPs

ACP process only applies to UK Airspace

ICAO NER-PT produced guidance on how to engage on the North Atlantic Ocean

Book launch windows early

Prioritisation of activation will consider other bookings. E,g military exercises

Thank you

***NATS***

## What we do



Operation of two air traffic control centres to manage UK airspace



Provide air traffic control services at 13 UK based airport towers and Gibraltar



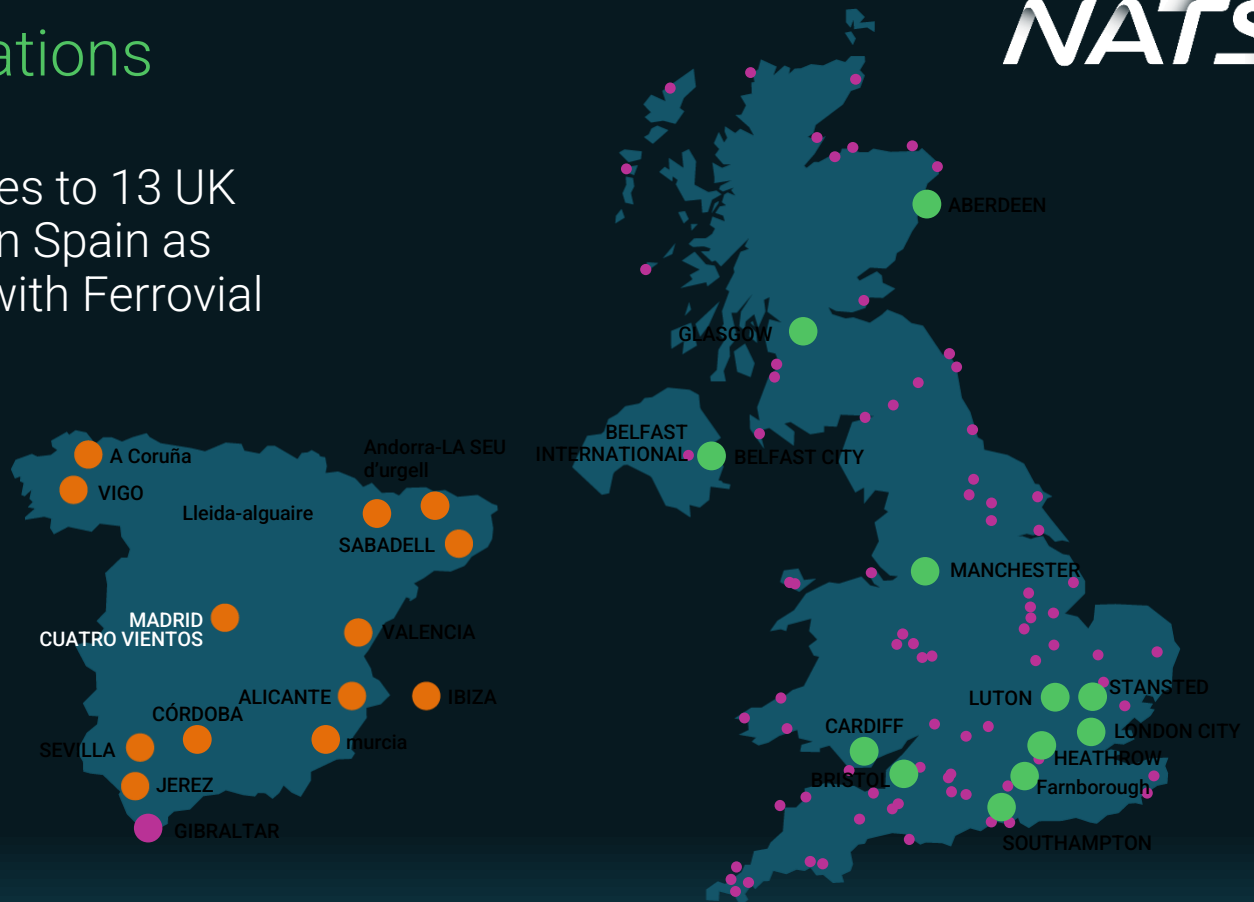
Provide aviation services to airlines, ANSPs, governments and the military in over 20+ countries



## ATC Service Locations

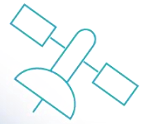
We provide ATC services to 13 UK Towers, Gibraltar and in Spain as part of a joint venture with Ferrovial

- Operated by NATS
- Operated by FerroNATS
- Operated by Aquila



# Marine Licensing

MMO





Marine  
Management  
Organisation

# UK Space Industry Forum

## 8 July 2022

**Paul Stephenson**

Marine Licensing Senior Case Manager

**Mark Qureshi**

Marine Licensing Case Manager

Marine Management Organisation (MMO)



...ambitious for our seas and coasts



## Who are MMO?

The Marine Management Organisation (MMO) is a non-departmental public body (NDPB) established under the Marine and Coastal Access Act 2009. It came into force in April 2010, as an amalgamation of previous consenting regimes.

The MMO inherited the work of the Marine and Fisheries Agency (MFA) and acquired several important new roles/functions from Department for Transport (DfT) and Department for Business, Energy and Industrial Strategy (BEIS).

## Why MMO?

Established to make a significant contribution to sustainable development in the marine area and to promote the UK government's vision for clean, healthy, safe, productive and biologically diverse oceans and seas.

# Six key services – outcome focussed & outward facing

**Ensuring sustainable marine development -  
Marine Licensing and Planning**



**Managing sustainable fishing opportunities -  
Fisheries Management Team**



**Protecting marine habitats & wildlife - Marine Conservation Team**



**Administering marine support funds –  
Fisheries and Seafood Scheme**



**Delivering regulatory support & assurance**

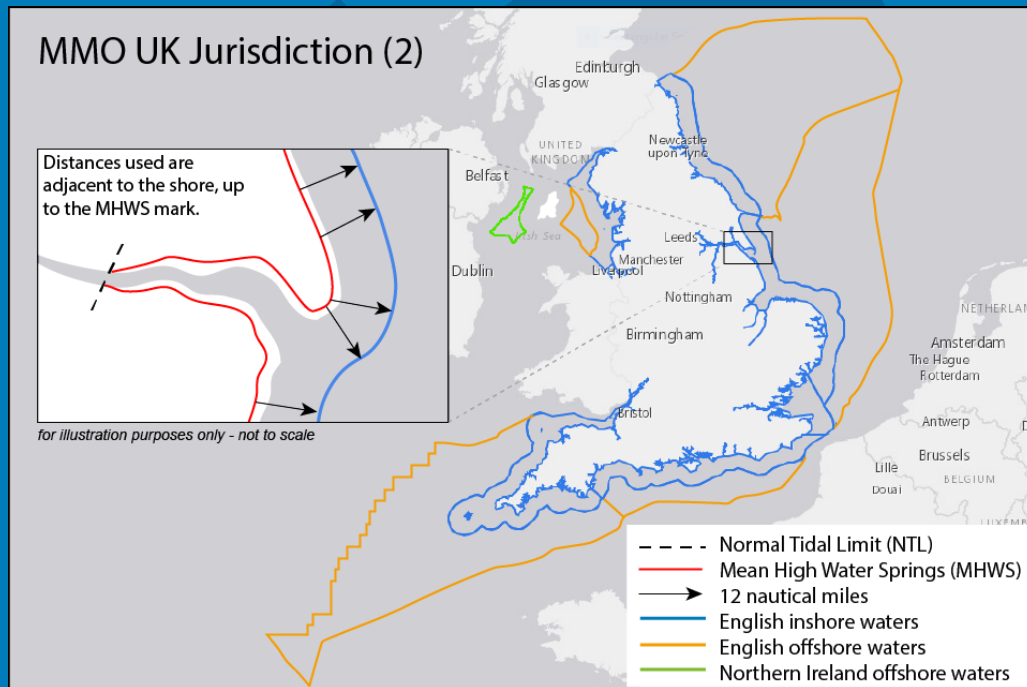


**Supporting global marine protection**



...ambitious for our seas and coasts

# MMO jurisdiction - English waters



Any area submerged at Mean High Water Spring (MHWS) tide up to the Exclusive Economic Zone (EEZ) and the UK sector of the continental shelf 200nm).

This comprises:

1. The inshore area (MHWS – territorial limit); and
2. The offshore area (territorial limit – EEZ/200nm)

# MMO - people

Almost 450 people

Headquarters are in Newcastle upon Tyne

14 local offices around the English coast

6 Marine Areas:

North East

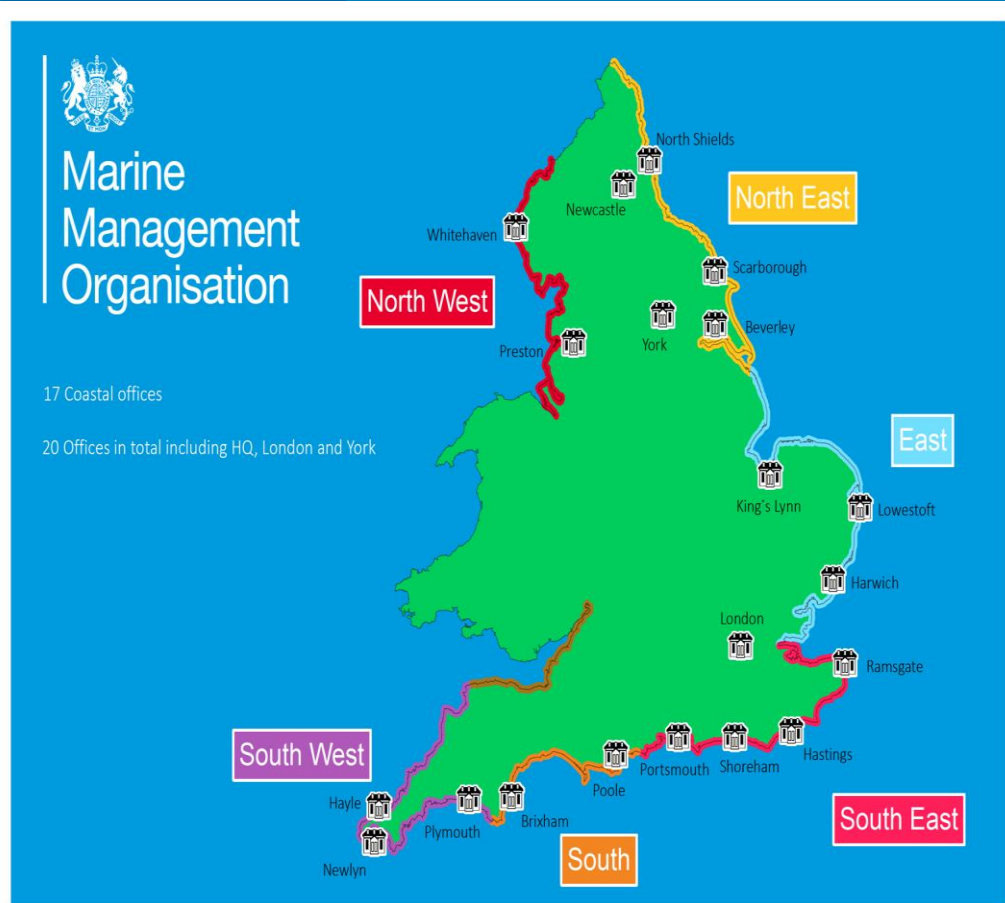
North West

East

South East

South

South West



# What is a Marine Licence?

- The marine equivalent of planning permission on land (i.e. **development control** in terrestrial planning)
- Came into force in April 2011, an amalgamation of previous consenting regimes
- MMO is the **appropriate licensing authority** for licensable activities in English waters
- Marine licensing regime is broad and captures most activities
- A legal document containing conditions which are monitored and enforced post consent to allow for sustainable development of a project

## Why Marine Licensing?

- It is an amalgamation of dated legislation, providing a more streamlined process that removed the need for developers to gain multiple licenses.
- It aims to ensure that activities in the marine area are undertaken in a sustainable manner
- Various treaty and EU obligations (now transposed into UK Law) are implemented through the marine licensing regime
- Marine Licensing team services are chargeable (cost recovery); 13 week KPI





# The legislation

**Section 69 of MCAA 2009:** In determining an application for a marine licence the appropriate licensing authority must have regard to;

- (a) the need to protect the **environment**,
- (b) the need to protect human **health**,
- (c) the need to **prevent interference** with legitimate uses of the sea,
- **And such other matters as the authority thinks relevant.**

This means we can consult widely (depending on the application in question).

- In accordance with **UK marine policy statement** or **marine plan**
- Marine Conservation Zones
- Habitats Regulations (SAC, SPA; Ramsar sites)
- Water Framework Directive
- Family of consultees (Natural England, Env Agency, Local Planning Authorities, Harbour Authorities)
- Cefas – our scientific advisors

# Licensable activities



Coastal development



Nuclear power  
infrastructure



Aggregate dredging



Coastal Defences



Renewable Energy



Ports and Marinas



# Examples



Source: Thames Water

Thames Tideway Tunnel



Hinkley Point C



MMO Self Service



London Gateway



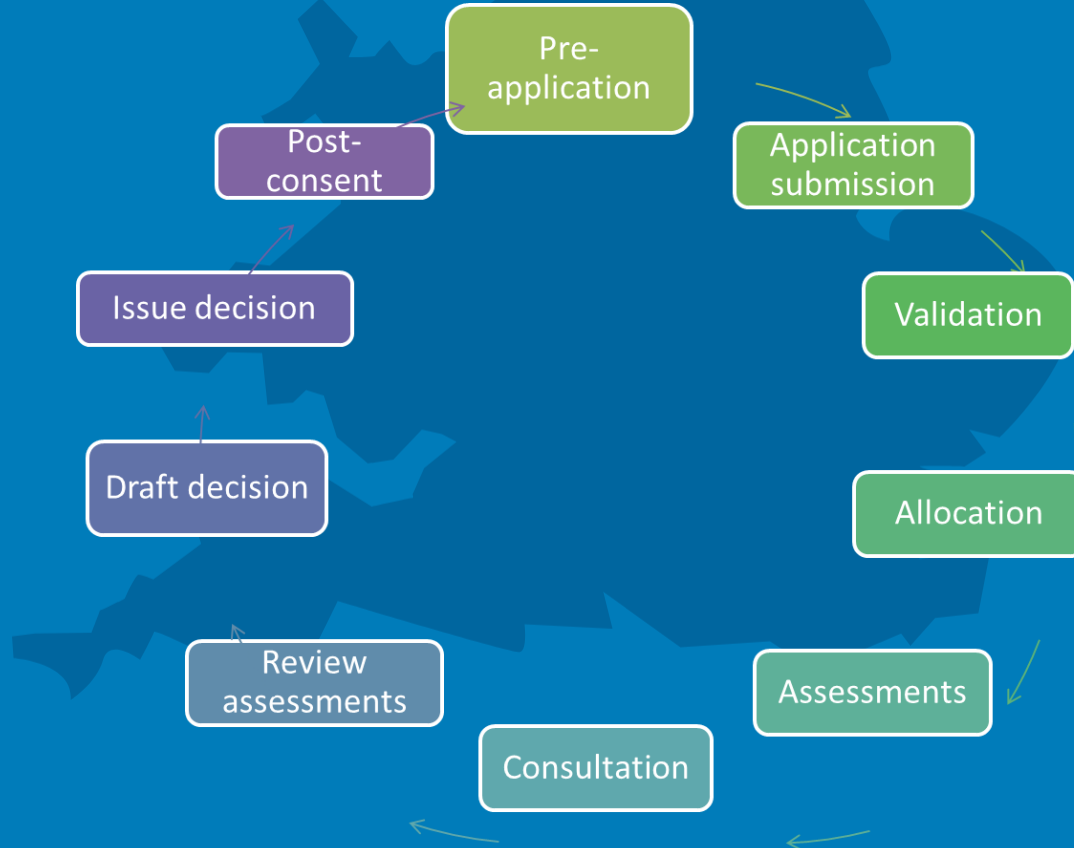
Bridge Preservation in Hull



G7 Conference 2021- Cornwall

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# Marine Licensing Process





Marine  
Management  
Organisation

# Marine Licensing: Rocket Launches

**Mark Qureshi**  
**Marine Licensing Case Manager**



# Why do we licence rocket launch activities?

S66 (1) of Marine and Coastal Access Act item 3: ***deposit of a substance or object anywhere in the sea or on/under the sea bed from a vehicle, vessel, aircraft, marine structure or floating container which was loaded with the substance or object in any part of the UK***

We are licensing deposit activities

Not just restricted to UK waters

We need to engage with International authorities and organisations

OSPAR Commission; IMO: Other Sovereign States

# Marine Licensing: Rocket Launches

Virgin Orbit – live application

Expected issues for rocket launches:

- Sonic boom – noise
- Jettisoned material – Navigation (Navigation Risk Assessment - MCA)
- Suitability for disposal (Environmental - sensitive location? Cefas, JNCC)

Fee band expected to be Band C (Uncapped @£122 hourly, plus Cefas @ £94.50 hourly)

Marine and Coastal Access Act states any marine licence must not be contrary to International law

Existing and new stakeholders – we are reaching out to other Sovereign States

We are collaborating closely with CAA – to avoid duplication

MMO are an enabling organisation – aiming to work closely with Space Industry



Marine  
Management  
Organisation

# Thank You

**...ambitious for our seas and coasts**

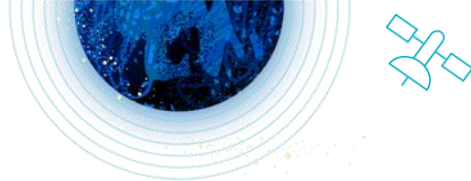


# AEE update



# Feedback

Discussion at the last meeting raised several number of issues



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## **More guidance needed**

More information would be helpful when preparing the AEE.

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## **Lack of clarity**

The form the AEE should take for the purpose of public consultation wasn't clear. Concern that this will cause delays to the overall licensing timeline.

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## **Duplication**

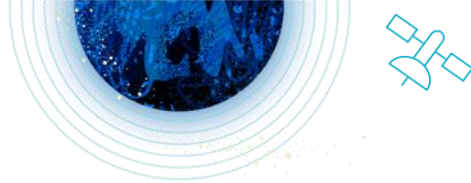
There is potential duplication of requirements between the AEE and the requirements of the marine licence.

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## **Scope**

There is a need to understand what the AEE scope is for my specific application e.g. distinction between scope of launch and spaceport AEE's.

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# Actions

Work is underway to address your feedback

## 1. What we've done

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**Improved pre-app** Added two part pre-application workshop

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**Process improvement** Enhanced initial screen to ensure AEE meets minimum requirements

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**Published more information** Initial screen checklist and guidance on public consultation guidance



## 2. We're working on

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**Improved pre-app** Full review of pre-application process

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**Process improvement** Review timelines of AEE assessment with wider licensing process

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**Update information and publish** Updated pre-application guidance  
Detailed environmental checklist  
Review and update AEE guidance

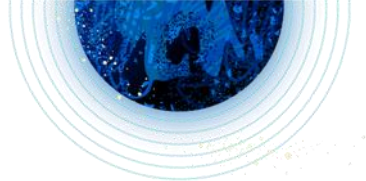
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# Outcomes

How will this affect my application?

I'm about to submit a pre-application	I can use the guidance published to add further detail to my pre-application form before submitting and...
I have already submitted a pre-application	I have the option to book an additional AEE workshop to improve the accuracy of my AEE before submitting and...
I'm preparing to submit an application	I can use the initial checklist guidance and public consultation guidance to review my application before submitting it to check it meets the minimum information requirements and...
I have already submitted an application	My application will be assessed to ensure it meets the minimum AEE information requirements before moving into to full assessment to prevent delays and...
My application is in full assessment	If relevant my application will also be sent for a marine licence and my AEE documentation will be reviewed to ensure it meets the standards required for public consultation

# Longer-term actions



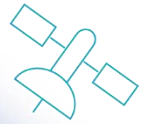
SSRC is a key route to feedback potential longer-term changes needed on the AEE

The statutory guidance for the AEE creates significant requirements for launch and spaceport applicants to fulfil, but is this the most effective way to understand and take account of the environmental impact of launch activities from the UK

The SSRC is tasked with recommending changes in relation to UK commercial spaceflight legislation. It is the maintains dialogue and engagement between the government and the sector.

# Launch Liability & Insurance

DfT



# SSRC Workshop on Launch liability and Insurance – 14 June 2022

Considered two proposals – benefits of an upper cap on liability and insurance and dual country licensing

## **Proposal 1 - Upper flat rate cap**

Key outcomes:

- The launch industry value certainty that a planned launch will be insurable – as this facilitates informed investment decisions and pricing for payload customers.
- The MIR approach is competitive compared to just setting a flat rate, but determinations come too late in the licensing process to provide quantifiable certainty on insurance costs.
- Agreement that there is benefit identifying and setting an upper flat rate that strikes a balance of enabling UK to have a competitive offer whilst maintaining appropriate risk sharing with HMG.
- That we should also develop proposals for a class-based approach – rather than a single upper cap.

*Questions for SPLOG – what is the level of priority we should assign to taking this work forward? Is there a common critical point that we should aim for?*

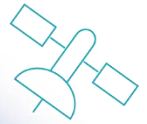
## **Proposal 2 - setting insurance and liability cap under dual country licensing**

We considered whether, in the case of dual licensing of UK launches, HMG should minimise its risk exposure by setting the UK insurance requirement and cap at the higher of the two country determinations.

Key outcomes were:

- Implications for industry were unclear
- We should discuss alignment of insurance through gov-gov discussion – such as the BiCOSA with US – and other countries where dual country licensing may arise.

# LCOLA





# LCOLA

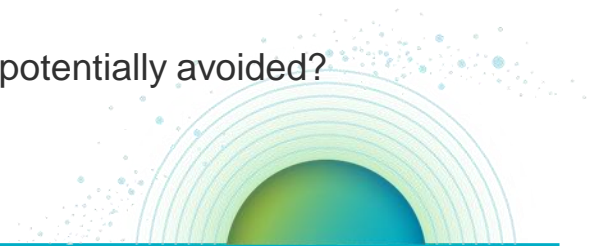
Launch Collision Avoidance Analysis is carried out by 18<sup>th</sup> US Space Command (USSPACECOM) on behalf of operators and is a screening process.

Space Industry Regulations 2021 (Regulation 101, Schedule 1) states that operators should carry out activities taking responsible steps to avoid interfering with other space activities, and to limit major accident hazards.

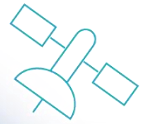
- This includes the release of any debris or components from their planned activity.

Operators need to identify the following risks:

- Is there a chance that your space object could impact a crewed spacecraft?
- Could your space object impact another operational space object?
- Could your space object collide with debris that can be tracked and potentially avoided?
- Could your space object collide with debris that cannot be tracked?



# Payload licensing



# Payload licensing in the UK

What do launch operators need to consider

## Licensed payloads

In light of the UK's obligations under the UN Treaties, the CAA requires that all payloads to be launched from the UK possess an orbital operator licence. This includes both UK nationals and foreign nationals who may be procuring the launch of their satellite from the UK.

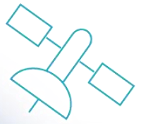
It is important to note that a launch vehicle **will not be permitted to launch if it is carrying unlicensed payloads**. We therefore encourage launch operators to discuss these payload licensing requirements with their payload providers at an early stage.

## Orbital operator licences

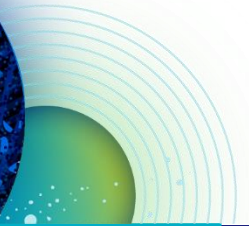
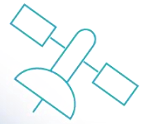
- **Full Orbital Operator Licences:** authorising both the procurement of the launch and the subsequent operation of the payload in orbit; OR
- **Procurement-Only Operator Licences:** authorising only the procurement of the launch, where the subsequent operation of the payload in orbit is to be carried out under a different jurisdiction and/or by a different person.

Minimum turnaround times for orbital operator licences are typically 6 months – although they may be significantly higher for novel or high-risk orbital missions.

# Q&A



**AOB**



**Thank you**  
[caa.co.uk/space](https://caa.co.uk/space)