

Space Launch and Orbit Group

Orbit Session

July 2022



Welcome

Agenda

Welcome

Current challenges

- Applications
- Manoeuvres

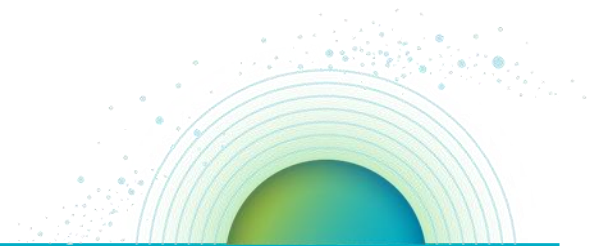
Future opportunities

- Sustainability summit – Joanne Wheeler & Hugh Lewis

Hot topics

- Ofcom
- Procurement only licences
- 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



Applications



Continuous improvement

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

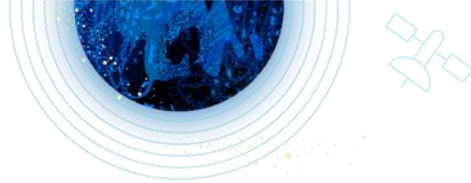
Why are we doing this?

- 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

Examples of work in the pipeline:

- Enhance the orbital licensing process, 'lessons learnt'
- Review our oversight guidance and website content
- Updating our guidance for pre-application





Applications

We have been licensing satellites for almost a year

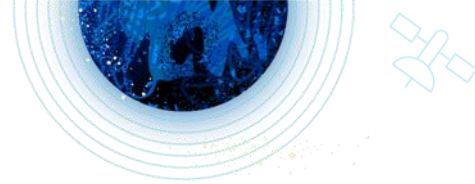
Various types of licence have been issued (or may be issued) under the OSA and SIA (or both)

- Licences issued = 145
- Applications received = 23
- Pre-applications (traffic lights) = 17

Changes to pre-application (traffic light)

- Traffic light questions will move to an online form shortly
- This will help streamline the process
- More information on the change will be published as soon as possible

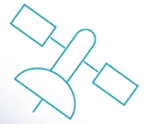
Applications

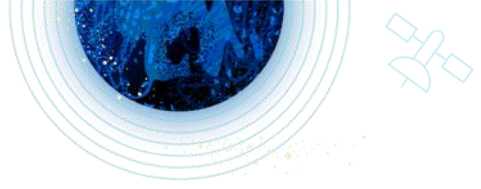


There have been some challenges during the past year

- Given the changes to orbital licensing there has been some reluctance to provide certain information or answer some questions
- The rules and regulations that apply to applicants/licensees often apply to the CAA
- Receiving timely information is key to allowing us to process your application

Manoeuvres





Manoeuvres

Clarification on the issues raised in March

Many existing licences include a condition requiring operator's to seek permission before redeploying a satellite and we intend to include this as a standard for future licences:

It is not intended to capture any nominal operations (inc. collision avoidance) that are performed on a regular and expected basis – we don't need prior notification of these activities that can include:

- minor course adjustment burns,
- opportunistic manoeuvres,
- testing of systems,
- maintenance operations and
- similar regular activities.

If you are unclear whether your intended actions require permission (e.g. where it's unclear if your intended course adjustment burn is indeed 'minor') please contact us for guidance **before** carrying out your plans.

Sustainability summit

Joanne Wheeler & Hugh Lewis



The Space Sustainability Kitemark and Initiative

Space Sustainability Kitemark

Global Leadership Opportunities for
the UK

July
2022

Space sustainability – a strategy for global leadership and access to finance

“The space ecosystem touches many aspects of daily life, abounds with commercial investment and increased commercial use cases, and plays a key role in advancing global sustainability and security priorities.

The sector is at an inflection point; leaders believe that existing frameworks are no longer sufficient to manage the full breadth of today’s most pressing issues, including space debris and the commercialization of low-Earth orbit (LEO).” McKinsey May 2022

The UK can lead the establishment of a global transparent ESG space sustainability standard. This standard and the work underpinning it must:

- provide investors and insurers with the information and confidence to:
 - understand what constitutes sustainable activities in space to enable effective investment and insurance decisions
 - access high quality granular ESG data from space
- consider the technical, economic, regulatory and global governance challenges to allow the space economy to fulfil its potential.

Space sustainability – a strategy for global leadership

UK can lead the establishment of global transparent ESG space sustainability standard

The UK has an opportunity to be the world leader in forming a Kitemark for the sustainable use of space; covering the lifecycle of a satellite.

This work can harness the existing world leading expertise across the UK industry and academia and also the experience of the recognised leading UK finance and insurance community.

- The Kitemark would be linked to the raising of investment and market access - unlocking environmental, social and governance (ESG) assets and investment.
- The Kitemark will provide transparency and confidence to investors as to what can be classed as sustainable space activities, applying effective practices.
- The Kitemark will add to the regulatory and international reputation of the UK licensing system.
- The expertise gained by the UK and knowhow generated by the Kitemark can be exchanged with other space nations, and training offered. This is especially important for new space nations or those seeking to upgrade their regulatory framework. May be particularly attractive for engagement across the Commonwealth, Five Eyes and Japan.

Mandate in Minister George Freeman's speech on 23 July at the Space Sustainability Summit

Space sustainability – a strategy for global leadership

Importance for the UK and UK industry - the “market” for the Kitemark:

- **Finance** - Investors and financial markets are increasingly requiring a compelling environmental, social and governance (ESG) plan. Investors are applying such non-financial factors to identify material risks and growth and investment opportunities. The Kitemark offers a stamp of approval recognised by regulators offering confidence to investors.
- **Market access** - Compliance with space sustainability standards allows market access and terrestrial licensing in several jurisdictions globally.
- **Attractive for Foreign Direct Investment (FDI)** - companies are increasingly seeking licences from the UK due to the UK’s current compliance with the ISO and IADC standards and thus the UK is attracting FDI companies due to its compliance with current sustainability standards. However, other countries in Europe, the Middle East and elsewhere including the US are also seeking to apply more robust space sustainability requirements to public procurement conditions and licensing requirements – therefore the UK has a window of opportunity to take a leadership position here.
- **Insurance requirements** - Insurance requirements for licensing can be linked to compliance with sustainability standards, particularly when considering liability “bands”. This offers financial incentives to manufacturers and operators to meet sustainability criteria to benefit from lower insurance requirements.
- **Levels of liability in licensing conditions** - The setting of operators’ liability limits using liability “bands” commensurate with risk and probability of loss and compliance with sustainability requirements - incentivising sustainable behaviour.
- **Reputation** - Compliance with space sustainability is increasingly important in relation to a company’s reputation and ESG planning.
- **International leadership and international diplomacy** - The Kitemark will showcase the UK’s leadership in space sustainability and, once developed, can be used in collaboration across the Commonwealth countries and Five Eyes and applied in international diplomacy at a number of levels.
- **Sustainability training and know-how** - Training and the sharing of good practice can be “exported” to other countries.

Space sustainability – importance to finance, liability, insurance and market access

Finance

Investors and financial markets are increasingly requiring a compelling environmental, social and governance (ESG) plan. Investors are applying such non-financial factors to identify material risks and growth and investment opportunities. The kitemark offers a stamp of approval recognised by regulators offering confidence to investors.

Insurance

Insurance requirements for licensing can be linked to compliance with sustainability standards, particularly when considering liability “bands”. This offers financial incentives to manufacturers and operators to meet sustainability criteria to benefit from lower insurance requirements.

Licensing Requirements

The setting of operators’ liability limits using liability “bands” commensurate with risk and probability of loss and compliance with sustainability requirements – incentivising sustainable behaviour.

Market Access

Compliance with space sustainability standards allows market access and terrestrial licensing in several jurisdictions globally.

Reputation

Compliance with space sustainability is increasingly important in relation to a company’s reputation and ESG planning.

Industry-led sustainability Kitemark

Industry-led sustainability Kitemark, devised by industry (within the Space Sustainability Initiative) to cover all aspects of the design, manufacture, launch, operation and demise of satellites, taking into account ISO and IADC standards and the Space Sustainability Rating (World Economic Forum) while providing a consolidated standard.

Recognised by the financial and insurance communities

Kitemark will offer a standard which evidences compliance with international sustainability best practice, recognised by regulators and accepted by investors.

The Kitemark will initially comprise of a BSI PAS (Publicly Available Specification) – a fast-track standard.

The Kitemark will include the below considerations. Governance of sustainability issue will also be key.

Design and manufacture	Launch	Operation	Demise
<ul style="list-style-type: none"> • Design for demise of the satellite • Advanced digital design standards • Automation and robotics in manufacture and testing • Impact on ground based science 	<ul style="list-style-type: none"> • Rocket fuel • Launch-originated debris • Reusability • Horizontal launch systems • Standardisation and global coordination of launch safety frameworks for nuclear powered space systems. 	<ul style="list-style-type: none"> • Manoeuvrability of small satellites (in LEO) • Risk assessment at platform level or aggregation over “constellation” • Trackability of small satellites • Debris aspects of close proximity operations • Propulsion • Sustainability of spectrum 	<ul style="list-style-type: none"> • Reliability of disposal systems at End of Life (EOL) • Effectiveness of drag (aerodynamic/ electrodynamic) enhancement devices

Leadership position for the United Kingdom – space sustainability Kitemark

Preliminary assessment of space sustainability standards gaps - examples							
Items highlighted in red are especially relevant for large constellations							
	Space debris mitigation	Space debris remediation (ADR)	Space traffic coordination & management	Demise	Dark skies, astronomy & radio astronomy	Spectrum	Data
Design, manufacture, integration & test	LEOP region selection for on-orbit checkout; Collision avoidance capability; Probability of disposal (increase > 0.90?); Disposal in LEO (decrease < 25 years?); Disposal at GEO (extend options); Manned spacecraft considerations Advanced digital design standards Automation and robotics in manufacture and testing	Capture technologies	SSA (trackability) (retroreflectors)	Reliability of disposal systems at End of Life (EOL) Effectiveness of drag (aerodynamic/ electrodynamic) enhancement devices	Orbit selection; Spacecraft size, geometry, attitude, and visual brightness	Sustainable use of spectrum	Accuracy of data

Leadership position for the United Kingdom

International leadership

- Proliferation of space sustainability reports and concerns, structuring of space debris mitigation and sustainability measures linked to national licensing and the raising of finance.
- The Space Sustainability Initiative offers international thought-leadership from internationally-recognised experts required for the creation of a kitemark linked to licensing and the raising of finance and unlocking environmental, social and governance assets and investment.
- The Kitemark will add to the regulatory and international reputation of the UK licensing system.

International diplomacy

- The expertise gained by the UK and knowhow generated by the kitemark can be exchanged with other space nations, and training offered. This is especially important for new space nations or those seeking to upgrade their regulatory framework.
- May be particularly attractive for engagement across the Commonwealth, Five Eyes and Japan.

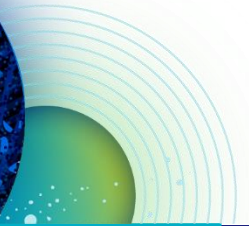
The Space Sustainability Initiative

Space Sustainability Kitemark
Global Leadership Opportunities
for the UK

Design by
UrbanR

July
2022

Procurement only licence



Legal context

The UN Treaties on Outer Space provide that:

- Member States bear responsibility for the activities of their nationals in outer space;
- 'Launching States' (i.e. Member States who launch or procure the launch of a space object (e.g. a satellite) or from whose territory or facilities a space object is launched) are internationally liable for any damages caused by their space objects in orbit, in airspace or on Earth;
- 'Launching States' must jointly determine which 'Launching State' should register a given space object.

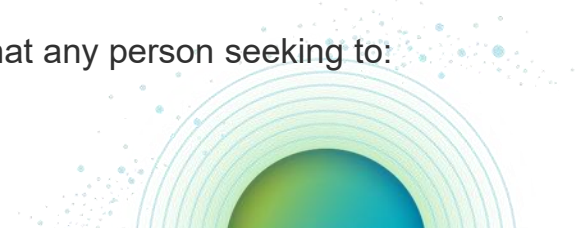
The Space Industry Act 2018

The Space Industry Act 2018 (SIA) transposes these provisions from the UN Treaties into domestic UK legislation.

To address the UK's international liability and obligations, the SIA requires that any person seeking to:

- Procure the launch of a satellite from the UK; and/or
- Operate a satellite from the UK

may only do so where authorised by an SIA Licence.



SIA procurement only licence

Who needs a procurement only licence?

SIA procurement only licences authorise the 'procurement of a launch for a space object' (e.g. a satellite) under the Space Industry Act.

They are required where:

- A given person only wishes to procure the launch of a satellite from the UK (i.e. where a different person subsequently operates that satellite under a different authorisation); or
- A given person wishes to procure the launch of a satellite from the UK but is not a UK National and intends to operate that satellite from overseas (i.e. outside of UK jurisdiction).

Procurement only licences are not required where a given person is also applying for an authorisation to operate the satellite under the SIA (if operating from the UK) OSA (if a UK National operating from overseas). In such cases both types of authorisation (procurement and operation) can be authorised through a single application and under a single Orbital Operator Licence*.

*Note that **all** satellites on-board a UK launch vehicle will require an SIA Licence (procurement only or orbital operator). Unlicensed satellites cannot be launched from the UK.

SIA procurement only licence

Applying for a procurement only licence

In considering whether to grant a licence, we must satisfy ourselves that doing so is:

- **Safe;**
- **Secure;**
- **Compliant with the UK's International Obligations;**
- **Not contrary to the UK's National Security; and**
- **Not contrary to the UK's National Interest.**



SIA procurement only licence

Applying for a procurement only licence

The CAA considers the procurement of a launch to encompass the mission phases of:

- Integration of the satellite;
- Launch of the satellite; and
- Separation of the satellite from the launch vehicle (or orbital dispenser vehicle, where applicable)

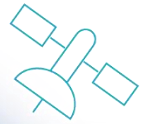
We would therefore expect applicants to demonstrate the **Safety** and **Security** of their proposed operations primarily in relation to the above phases.

In considering compliance with **International Obligations**, **National Security** and the **National Interest**, the CAA takes into account the orbital activities of the satellite. For satellites being operated in orbit from outside UK jurisdiction (e.g. foreign payload operators based overseas), we will require applicants to provide:

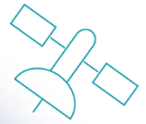
- Written confirmation from jurisdiction(s) responsible for the operations in orbit that they will register/regulate the satellite;
- Confirmation from the operator that they have a suitable End-of-Life (EoL) plan for the satellite. For LEO, the EoL plan should, as a minimum:
 - result in the de-orbiting of the satellite within the 25 year timeframe established by the IADC guidelines; and
 - have a probability rate of successful disposal of 90% or more.
- An overview of insurance arrangements (if any) in place to cover the operations in orbit*

*Note that orbital insurance cover **will not** form part of the CAA's licensing assessment. This information is only required by HMG to inform their understanding of the UK's contingent liability, as a Launching State under the UN Treaties.

Q&A



AOB



Thank you
caa.co.uk/space