

# Space licensing in the UK

Civil Aviation Authority

### Space licensing in the UK

How long will it take to get your licence or permission?

How much will it cost?

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# Introduction

# Space licensing in the UK

There are three main legal instruments in the UK that cover spaceflight activities.

- **1.** The Outer Space Act 1986 (OSA), with amendments made by the Deregulation Act 2015, applies to UK nationals and UK companies intending to launch or procure the launch of a space object or operate a space object outside the UK.

- **2.** The Space Industry Act 2018 (SIA) applies to anyone intending to carry out space activities, suborbital activities, and associated activities in the UK. Several statutory instruments have been made under the SIA:
- the <u>Space Industry Regulations 2021</u> enables the licensing and regulation of spaceflight activities, spaceports, and range control service
- the <u>Spaceflight Activities (Investigations of</u>
   <u>Spaceflight Accidents) Regulations 2021</u> establishes
   a spaceflight accident investigation body and covers
   the conduct of accident investigations
- the <u>Space Industry (Appeals) Regulations 2021</u>
   outlines the licence decisions made by the regulator
   that may be appealed by an applicant or licence holder.
   They also create the decision making body to hear
   appeals and set the procedures and timescales for them
- the <u>Regulator's Licensing Rules</u> specifies which application you should use and what information you will need to provide to enable the CAA to begin to determine a licence application or renewal

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# Space licensing in the UK (continued)

**3.** Article 96 of the Air Navigation Order 2016 as amended by the Air Navigation (Amendment)

Order 2021(ANO) applies to anyone intending to launch a rocket in the UK that is not capable of operating above the stratosphere, at an altitude of around 50 km or 31 miles.



The term legal instrument is used to refer to requirements defined by law, regulation, or other statutory instruments (SI). SIs are usually set out as orders in council, regulations, or rules. These legal instruments set out the regulatory framework that must be followed.

# **Location and nationality**

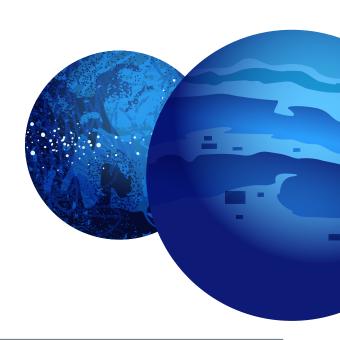
For spaceflight activities covered by the SIA or OSA the framework will depend on where the activity is planned to take place and the nationality of the individual or company carrying it out:

- the <u>Space Industry Act 2018 (SIA)</u> applies to both UK and overseas operators planning spaceflight activities in the UK
- the Outer Space Act 1986 (OSA) applies to UK operators planning spaceflight activities overseas

If you are acting as an employee or agent of an organisation that has already received authorisation to carry out spaceflight activities, you do not need to apply for a separate licence.

# Multiple activities

Related activities that fall under different frameworks, like a UK national procuring an overseas launch (licensed under the OSA) of a satellite that will be operated from the UK (licensed under the SIA), can be covered by a single licence application.



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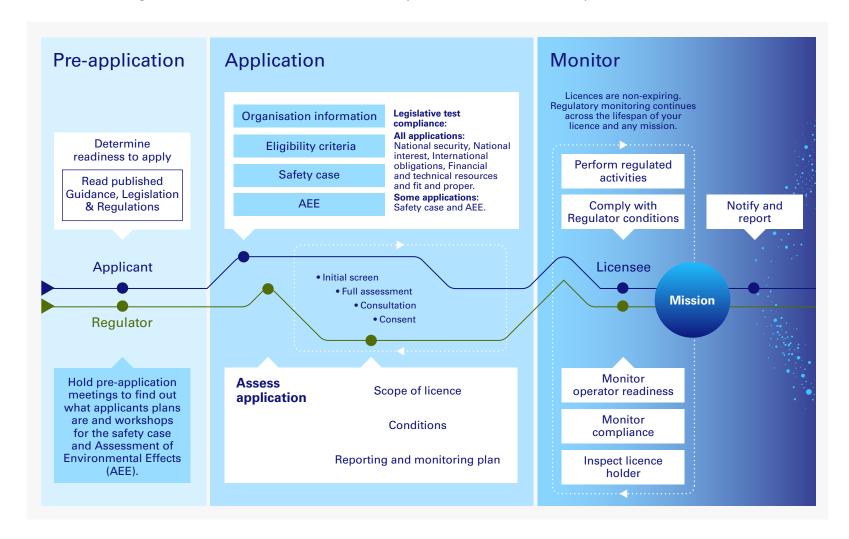
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If you are planning to apply for a space licence, this document lets you know what to expect at each stage of your application, giving you an idea of timings, who is involved, and what you need to have in place.



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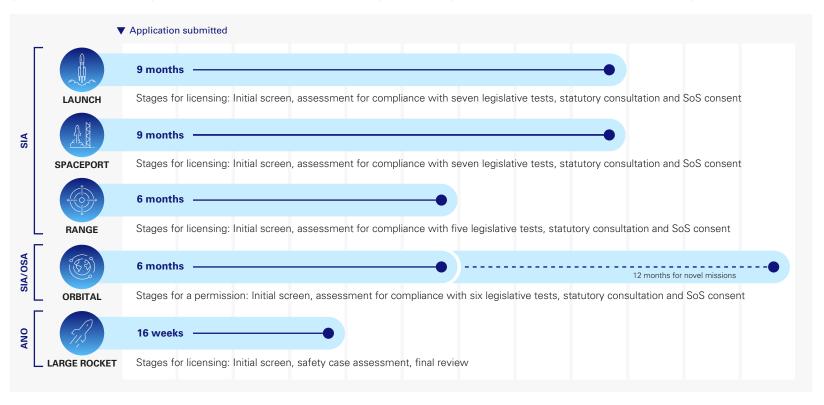


# How long will it take to get your licence or permission?

It's probably the question we get asked most often and these timings depend on the complexity of your application and the quality of the documents and evidence you provide.

If we find there are discrepancies or missing information as we review your application, we will 'stop the clock' on our assessment whilst waiting for your response.

This is the **minimum time** we take to assess your submission; from the time we accept your full application to grant of a licence or permission. Please note that airspace changes are not included in these timings!



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# How long will it take to get your licence or permission? (continued)

So, before you submit your application consider:

- have you read all our guidance?
- have you gathered all the necessary information so that your application is complete?
- does it represent your best work?



If there's no possibility that you will be able to get a licence, we'll let you know immediately.

You can rest assured that all applications will be processed as quickly as possible. However, any planning you do to shorter timelines than those stated in the table above is at your own risk.



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# How much will it cost?

There are no fees for spaceport, range, launch and return licences under the Space Industry Act 2018 and large rocket permissions under the ANO.

As part of the Government's support for the growth of the sector there is no current charging scheme for these licensing activities. Charges will be implemented in the future, moving towards full cost recovery over time.



# **Orbital operator licence applications**

For orbital operator licences under the SIA and OSA a non-refundable, non-transferable fee of £6,500 is payable upon submission. The payment of an application fee does not guarantee that a licence will be granted.

A refund scheme is in place for orbital operators applying for multiple, identical licences. You can find out more about the scheme <a href="https://www.gov.uk/government/publications/guidance-on-satellite-licence-fees">https://www.gov.uk/government/publications/guidance-on-satellite-licence-fees</a>

### Joint SIA and OSA licences

For licences issued jointly under the Outer Space Act 1986 and Space Industry Act 2018, a single charge will apply, rather than issuing separate charges under each Act.

Where separate entities are responsible for the operation of a satellite and the procurement of a launch of a satellite (and both activities fall under the SIA or OSA), each entity will require a licence, and each will be charged a separate application fee.

Licensing journey

### Who's involved

Separate submissions, licences & applications

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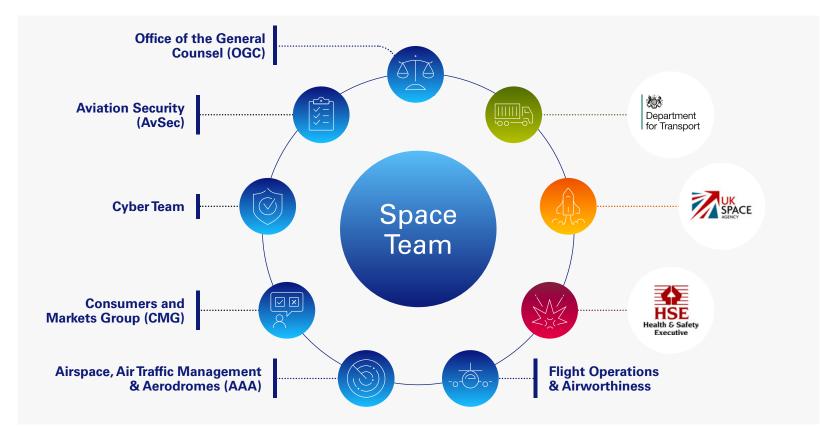


# **Licensing journey**

# Who's involved

The space team will help you manage the application process. They work with other teams in the CAA, as well as with UK agencies and other UK Government departments who all play a part in assessing your proposal.

Each proposal will have its own specific needs but here's an idea of who is likely to be involved.



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# Separate submissions, licences & applications

Some missions will need extra licences and permissions that you will have to apply for. They are covered by different legislation, regulations, and agreements and are separate to your space licence application. These critical applications could include proposals and activities that also need to be consulted on.

# **Satellite filings**

A **satellite filing** from the International Telecommunication Union (ITU), a specialised agency of the United Nations, is needed before a satellite can use the frequency spectrum and orbital resources it needs to fulfil its mission.

Ofcom, the UK's communications regulator, is the notifying administration for satellite filings to the ITU. It submits and manages filings for organisations registered in the UK, Channel Islands, Isle of Man and British Overseas Territories.

## **Marine licences**

A **marine licence** is needed to cover marine deposit activities. If your mission may affect areas of the sea off the coast of England the licence is issued by the Marine Management Organisation (MMO), an executive non-departmental public body sponsored by the UK Department for Environment, Food & Rural Affairs.

Depending on the location it could also be issued by Natural Resources Wales, Marine Scotland or the Department of Agriculture, Environment and Rural Affairs (Northern Ireland). For some spaceflight proposals the MMO or other agency may need to engage with other international authorities and states and OPSAR. Some marine licences may require consultation.

# **Health and Safety Executive**

Many of the fuels used for spacecraft are toxic, flammable, or explosive. These hazardous substances are covered by a number of existing health and safety regulations. So, you may need separate certificates or licences from the HSE depending on the detail of your proposed activity.

# Airspace changes and temporary restrictions

If your mission might affect other airspace users you may to need to apply for an airspace change, temporary restriction or Temporary Danger Area (TDA). Some proposals will need to be consulted on, and there may be fixed dates that determine when a change can be formally notified. Other national authorities may also need to be involved.

It could take longer to successfully apply for an airspace change or restriction than for the space licence itself. The process to apply for an **airspace change** is managed by the CAA's Airspace Regulation Team and is set out in more detail in **CAP1616 Airspace Change**.

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# Before you apply

If you are planning to apply for an authorisation for spaceflight activities in the UK, licensed under the <u>Space Industry Act 2018 (SIA)</u>, <u>Outer Space Act 1986 (OSA)</u> or the UK launch of a rocket that is not capable of operating above the stratosphere under Article 96 of Air Navigation Order, as amended by the <u>Air Navigation (Amendment) Order 2021</u>, we have introduced a pre-application stage to the licensing process.

# **Pre-application**

Navigating space licence regulatory frameworks can be as complex as the space industry is innovative.

# We know this can be hard to negotiate.

- We know that you don't know what you don't know.
- But you know what you want to achieve better than anyone.
- You know your mission.
- We know what you will need in place to prepare for your licence application.
- Let us play to our strengths and help you play to yours.

We want your application process to run as smoothly as possible. We want you to be able to develop proposals knowing that our space team is ready to offer advice and help find the best way through the process.

As well as meeting requirements set out in core UK legal instruments there will be separate, but related submissions, applications, and technical criteria that you will need to consider. This document includes some of them, but the specifics will depend on your ambitions.

The benefits of the pre-application stage depend on your application:

# Orbital operations under the SIA and OSA

We can offer the regulator's view of risk levels associated with your mission

Launch and return, spaceport, and range control We can advise on the detail of the SIA framework and timescales. We also offer workshops to cover the requirements of a safety case and assessment

the requirements of a safety case and assessment of environmental effects for launch and spaceport applications



Talking to us about your plans and application before submitting can save you time and money.

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# Before you apply (continued)

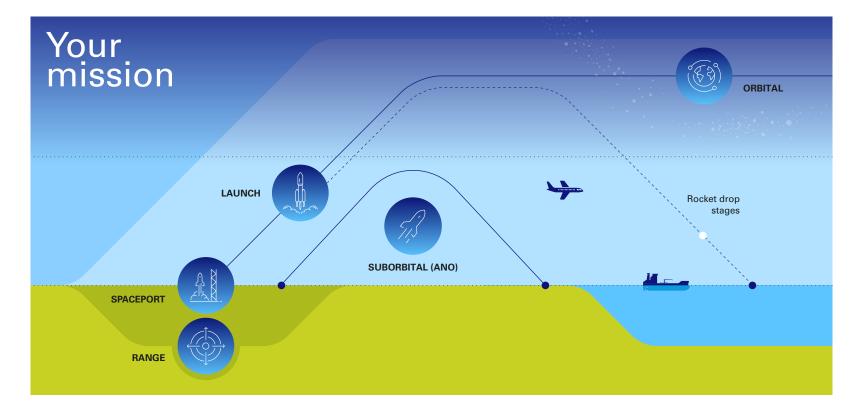
# Launch under an ANO permission

We can advise on timescales and discuss requirements you will need to meet as part of your planned application.

**Pre-application is not governed by legal instrument, so it is not a requirement.** But it is part of our remit to support the development of the space industry in the UK. Simply put it is in our interest for your application to

be as complete as possible. And working with potential proposals at an early stage helps us find ways to continually improve the space licensing process.

Our space team will never share details of project proposals with other applicants (except with your consent), but we will share the best ways to prepare for each stage of your application. The more we understand your plans and proposals the more we can help.



Licensing journey

Different licences

### Launch and return licence

Range control licence

Orbital operator licence

Spaceport licence

Large rocket permission

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# Space licences and permissions that you can apply for



# Launch and return licence

A launch and return licence is for spaceflight activities that include a launch vehicle. It can cover a single launch, or a series of launches including traditional vertically launched vehicles from a spaceport, air-launched vehicles from a carrier aircraft, and suborbital spaceplanes and balloons.

If you also plan to return a launch vehicle launched to land in the UK, you do not need to apply for a separate return operator licence.

As part of your pre-application stage, you will need to consider:

- what types of activities you expect to carry out
- where you want to launch from and return to
- how many launches you expect to perform

The Regulator's Licensing Rules (<u>CAP2221</u>) sets out what you will need for your application which will include:

- a safety case
- an Assessment of Environmental Effects (AEE)
- a draft security programme and cyber security strategy
- evidence of engagement with insurers

Guidance for launch operator and return operator licence applicants and licensees (<u>CAP2213</u>) sets out the assessments and evidence and explains the regulations which must be followed after a licence is granted. This includes regulations around safety, occurrence reporting and human spaceflight.

All the requirements are set out in the **Space Industry Regulations 2021 (SIR)** 



Your launch and return mission may also need an airspace change or notified restriction. Find out what will be involved, how long it might take and who you need to contact in the pre-application stage.

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# Space licences and permissions that you can apply for (continued)



# Range control licence

A range control licence allows a person or organisation to provide range control services in support of licensed spaceflight activities at a designated range.

A range is a zone or zones that are subject to restrictions, exclusions, or warnings. This is to make sure that they are clear of persons or things that might pose a hazard to spaceflight activities or be exposed to a hazard from the activity.

A range service provider provides a launch operator with mitigations to hazards identified in their safety case.

### These include:

- stracking of the launch vehicle
- surveillance of hazard areas
- notifications, to other airspace users or mariners to ensure others are aware of the launch operation
- co-ordination between stakeholders and other licence holders
- identification of hazard areas or flight limit lines

Range control services are subject to a **technical resources assessment** to check you have:

- identified the range control services to be covered by the licence
- the right people, processes and equipment to provide the specified range control services
- made appropriate arrangements for coordination with other licence holders or stakeholders

The regulations focus on the outcomes to be achieved and do not specify one fixed model for delivering range control services.

Guidance for range control licence applicants and licensees (CAP2211) sets out the assessments and evidence and explains the regulations which must be followed once a licence is granted.



The information you must provide when applying for a range control licence is set out in Table A and Table F of the Regulator's Licensing Rules.

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# Space licences and permissions that you can apply for (continued)



# Orbital operator licence

An orbital operator licence allows a person or organisation to:

- procure the launch of a space object into orbit
- operate a space object in orbit
- conduct other activity in outer space

This licence covers any activity in outer space and is not limited to activities in Earth's orbit.

Unlike launch operator licences, there is usually no requirement to provide a safety case as part of your application but if your mission is complex, for example active debris removal, in-orbit servicing or manufacturing, we may ask for one.

For any application you will be expected to demonstrate how you will work to ensure your operations are safe and that risks are as low as reasonably practicable (ALARP).

• If you are intending to carry out activities from within the UK, you will need to apply under the Space Industry Act 2018 (SIA).

 If you are intending to carry out activities from outside the UK, you will need to apply under the Outer Space Act 1986 (OSA).

If you are a UK Crown Dependency or Overseas Territory intending to carry out space activities, please contact us.

You will need to submit your application and supporting evidence at least six months ahead of when you would like your licence to be issued. If your activity is novel or complex a minimum of 12 months will be required.



Confirm if your proposed activity is considered novel or complex in pre-application.

Guidance for orbital operator applicants and licensees (<u>CAP2210</u>) sets out the assessments and evidence and explains the regulations which must be followed once a licence is granted under the SIA.

Our guidance for licence applicants (CAP2224) sets out the requirements for licences granted under the OSA.

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# Space licences and permissions that you can apply for (continued)



# **Spaceport licence**

A spaceport licence is for the operation of a spaceport and covers the infrastructure, equipment and services for vertical or horizontal launches.

You can apply for a spaceport licence without knowing the full details of your launch vehicles. Our space team can discuss this with you as part of your pre-application stage.

The Regulator's Licensing Rules (<u>CAP2221</u>) sets out what you will need for your application which will include:

- a safety case
- a siting assessment
- an AEE
- a draft security programme and cyber security strategy

Guidance for spaceport licence applicants and licensees (CAP2212) sets out the assessments and evidence and explains the regulations which must be followed once a licence is granted.



Your spaceport operation may need an <u>airspace change</u> or notified restriction. Find out what will be involved, how long it might take and who you need to contact in the pre-application stage.



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# Space licences and permissions that you can apply for (continued)

# Large rocket permission

Large rockets have a total specific impulse of 10,240 Newton-seconds (Ns) or greater and are not capable of exceeding the stratosphere, so rockets operating under an ANO permission are suborbital.



For ANO permissions the stratosphere is considered to be approximately 50 km altitude.

Launch of a rocket capable of operating above the stratosphere is regulated under the Space Industry Act 2018 and requires a licence.

As part of your application, you will need to:

- send us a safety case demonstrating that the risks to public safety and property, from your activities are as low as reasonably practicable (ALARP)
- show that you have adequate insurance in place for your launch

A permission granted under the ANO only allows for a single launch to take place. Your permission will also have conditions you will need to comply with, either pre-launch, in flight or post-launch or both.

### Your launch location

In addition to a launch permission, you may be required to launch within segregated airspace. The UK has several established Danger Areas that may be able to accommodate a large rocket launch. If you are you are not using an existing Danger Area, you may need to apply for a TDA.

The airspace change process for a TDA takes a minimum of six months so early submission is recommended. Any large rocket permission will be conditional on airspace approval.

Guidance to applicants for large rocket permissions under the ANO (<u>CAP2194</u>) contains information on what you will need to send us when applying for a permission.

### **Smaller rockets**

Launching a rocket with a total combined impulse of greater than 160Ns but less than 10,240Ns does not need a specific permission from us but, you will need to meet the requirements set out in the general conditions of Article 96 (3), (4), (5) and (6) of the ANO 2016 and notify our Airspace Regulation team before your planned launch date.

No permission is needed for the launch of rockets with a total combined impulse of up to 160 Ns (model rockets).

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# The application process

Once we've received your application a case manager will be assigned as your primary point of contact throughout the application journey and will be in contact with you through each and every step.

We will make sure we have regular meetings or calls with you as we work through your application.

We treat all the information that you send us as part of your application as confidential.

Below is the process we follow for licences granted under the SIA and permissions granted under the ANO. Licences granted under the OSA follow a similar approach with a different timeline.

### 1. Initial screen

Here you will discover whether you've supplied the correct details needed to apply for a launch, spaceport, range and/or orbital licence or large rocket permission.

Specialist members of the CAA space team will review the documents that relate to their area of expertise. This stage is a key gateway in the process, with the decision made about your application based on the information you provide.

# Initial screen Full assessment Statutory consultation SoS Consent ANO PROCESS APPLICATION STAGES Initial screen Safety case assessment Final Review Grant of permission

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# The application processes (continued)

When our review is complete, you'll be invited to a meeting within 6 weeks of submitting the information we need. During the meeting, you will receive one of three responses:

# A) Green light to progress your application to full assessment:

All information and items needed has been provided, and we have no requests for further information.

# B) We will request further information:

Some information is missing of or more detail is required in specified areas (we'll let you know what these are.

# C) Pause or reject:

Pause – what you've submitted is not suitable or sufficient (again, we'll let you know why)

You will have 28 days to respond to any negative outcome during the initial screening. If you do not act within 6 months, you may have to start the process again with a pre-application.

**Reject** – your application cannot meet the legislative requirements for a licence to be granted.

# 2. Full assessment (up to 16 weeks)

This is the phase during which we'll gather evidence and decide whether the requirements of each Legislative Tests are met by your proposal.



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# The application processes (continued)

During this phase, when your case manager has further questions for you, the 'clock' will stop on your application until you provide the information needed.



As part of the full assessment, we will draft any conditions applicable to your licensable activity.

If your application satisfies all requirements, your case manager will present the conclusions to our space leadership team. Our Head of UK Space Regulation makes the final decision on approving any licence application.

# 3. Statutory consultation

Once we've completed our assessment we check if the licence conditions are contrary to the interests of Government Departments and other agencies. The consultation will take four weeks.



Consultees include the Department for Transport (DfT) and the Office for Nuclear Regulation.

# 4. To grant a licence under the SIA or OSA the CAA needs Secretary of State (SoS) Consent

For launch and return, range and spaceport licences we seek consent from the DfT SoS. For orbital licences consent is delegated from the Department for Science, Innovation and Technology (DSIT) to the UKSA.

### 5. Grant of a licence

Spaceport, launch and range operator licences granted under the SIA do not expire. The duration of an orbital licence granted under the SIA or OSA will be set out in the licence. Large rocket permissions granted under the ANO only allow a single launch to take place.

Once granted, your case manager will send you your licence or permission with conditions. We aim to publish licences on our website within six weeks of being granted.

We only publish spaceport operator, launch and return operator and range control services licences.



Details of satellites licensed and registered by the UK are published on our website in the UK Registers.

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# **Legislative tests**

There are five legislative tests that must be passed as part of any application for a **space licence**.

Applications for a **launch and return**, **spaceport** and **orbital licence** also require a safety assessment.

**Launch and return** or **spaceport** licences also require an environmental effects assessment which involves a public consultation.



Look at the Regulator's Licensing Rules to find out what information you'll need to provide with your application!

# Each test has separate requirements involving, UK Government departments and other UK agencies.



# 1. National security

Assessed by the UKSA with involvement from MOD, NPSA, NCSC etc.



# 2. International obligations

For example, ITAR protection, international overflight, outer space treaties.



# 3. National interest

Assessed by the DfT/UKSA.

For example, issues of liabilities, sanctions



# 4. Financial and technical resources

Assurance that operator can meet any liabilities and safety and security are not at risk due to financial distress.

Technical resources are considered under safety for launch and spaceport.



Qualifications and interviews etc with key personnel.



# 6. Safety assessment

Safety case regime for launch and spaceport and safety test for orbital.



# 7. Environment

Applicable for launch and spaceport

'Taken into account' in our decision making.

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# Test 1



The national security test looks at how your proposal will affect UK national security concerns. These may include influence from third parties, access to technology and intelligence, reconnaissance, and surveillance issues.

The test involves a questionnaire which is reviewed by the UK Space Agency (UKSA). Depending on the detail of your proposal UKSA will work with the National Cyber Security Centre (NCSC), National Protective Security Authority (NPSA) and Ministry of Defence (MOD) as part of the assessment.

# Test 2



This test will help identify your international obligations and what principles and agreements you will need to follow. Depending on your proposal these may include:

- UN Space Law Treaties
- International Traffic in Arms Regulations (ITAR)
- The UK US Technology Safeguards Agreement (TSA) and Trade Agreements Act (TAA)
- Overflight agreements between the UK government and other states
- Inter-Agency Space Debris Coordination Committee (IADC) Space debris mitigation guidelines
- The OSPAR Convention, which regulates dumping at sea; sets up regional action plans for the prevention and management of marine litter in the North-East Atlantic; and establishes Marine Protected Areas

It will confirm the requirements that you will need to meet and highlight other related international obligations that may be governed by separate regulations and agreements.

The aim of the international test is to make sure that all the right arrangements are in place for the CAA to be able to report licensed activity to the relevant organisations.

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# Test 3



The national interest test looks at your proposal to identify any potential impact the national interest and issues of liability or risk of sanctions. These include impacts on:

- the economy
- reputation
- security
- international relations
- and physical, political, and cultural identity

Our space team will review your proposal and liaise with the Government. The test assessment is led by the DfT for launch, spaceport and range licences and the DSIT for orbital licences.

# Test 4



The financial test reviews your financial resources to look at the potential impact on safety risks or Government's liabilities.

Our space team will work with specialists from the CAA's Consumers & Market Group to check that:

- your business plan and financial information includes robust forecasted earnings, sources of funding for the size and scope of your proposed activities
- you will be able to secure appropriate insurance for your proposed activities
- •any areas of financial risk have been covered

For a range application we also carry out an assessment to determine that you have the technical resources in place in terms of people and equipment and you have made adequate arrangements to identify and manage security threats.



For launch and spaceport licences we consider the technical resources as part of the safety assessment.

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# Test 5



# Fit and proper persons

The fit and proper persons test is to see that you have the right people to do the things included in your proposal. It will include reviewing the ability, experience and qualifications of your team, which may be based on comparable roles in relevant industries.

The test will also check that key personnel understand their roles and responsibilities and that adequate training has been considered.



Our space team will complete the assessment that will include qualification checks, criminal record checks and interviews with key personnel.

# Test 6



# Safety assessment

For the safety assessment you will need to present a safety case to show that you have identified risks and have a plan in place to reduce them to a level that is 'as low as reasonably practicable' (ALARP). There's no legislation or algorithm that defines ALARP. But it is an important principle to work to as part of your safety case. More information is available in <a href="Principles and guidelines for the spaceflight regulator in assessing ALARP and acceptable risk (CAP2220)">Principles and guidelines for the spaceflight regulator in assessing ALARP and acceptable risk (CAP2220)</a>. The safety aspects of your proposal will be reviewed by specialists from our assessment team.

# **Safety Case**

Your safety case will need to set out a clear case and be supported by evidence. Depending on your proposed activity it may need to demonstrate that you have:

- taken measures to prevent and mitigate risks
- managed risks to ALARP level
- systematically identified major accident hazards, physical risks and cyber security risks using robust methodologies
- made adequate arrangements for co-operation and co-ordination between your operation and other licence holders

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# Test 7



This test looks at the potential environmental impacts of your proposal and checks that plans are in place to avoid, mitigate or offset them.

If you are applying for a launch operator or spaceport licence, you will need to complete an AEE which will need to be prepared by a competent expert and be made available for public consultation. We will take your AEE into account when deciding whether to approve your licence application.

Your AEE must identify and describe the potential effects of your proposed activity on:

- population and human health
- biodiversity
- air quality
- noise
- water
- climate
- land, soils and peat
- landscape and visual impact
- material assets
- cultural heritage
- marine environment

It must also cover any possible effects that could occur because of an accident or disaster.

More information to help you understand what will need to be included is available in guidance for the assessment of environmental effects (CAP2215).

The initial screening checklist (CAP2381) is not guidance on how to write an AEE but describes how we consider whether the minimum information has been provided and if your AEE is suitable for public consultation.



Use a competent expert with experience in public consultation. The responses to the consultation are taken into account as part of our review of your AEE. Guidance for the public consultation approach for the AEE (CAP2352)

Licensing journey

Different licences

Legislative tests

What happens next?

# What happens next?

Once you have been granted your licence or permission you become a:

**Licence holder** with a legal duty to comply with the Space Industry Act, Space Industry Regulations, Outer Space Act and the terms and conditions of your licence.

**Permission holder** with a legal duty to comply with the Air Navigation Order and the conditions of your permission.

Any licence or permission we grant will include terms and conditions with which you must comply. Conditions are statements or requirements relating to your activities either pre-launch, in flight or post-launch (or all such times).

Here at the CAA our role is to monitor spaceflight activities (launch and orbital), spaceport operation, and the provision of range control services and associated activities.

We have a duty ensure you that you comply with the terms of your licence on an ongoing basis and are responsible for helping to protect public safety and national security.

You will need to send us evidence of your compliance with the terms and conditions of your licence or permission, and we'll carry out inspections of your sites before and after launch or mission activity.







You can find more information and all our guidance on our website **Space | Civil Aviation Authority** or you can **contact us**