

## **GUIDANCE ON APPLYING FOR A LICENCE**

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## Section 1: Overview of the Guidance

- 1.1 The Space Industry Act 2018 (the Act) regulates all spaceflight activities carried out in the United Kingdom, and associated activities. Spaceflight activities are space activities and sub-orbital activities. These terms are defined below.
- 1.2 The Act requires any person or organisation wishing to launch a launch vehicle from the UK, return a launch vehicle launched elsewhere than the UK to the UK landmass or the UK's territorial waters, operate a satellite from the UK, conduct sub-orbital activities, operate a spaceport or provide range control services, to obtain the relevant licence. It is supported by The Space Industry Regulations (the Regulations), that set out in more detail the requirements for each licence, and the Regulator's Licensing Rules, which contain procedural matters such as which application form to use to apply for a licence and what information the regulator will require in support of an application.
- 1.3 There is then a series of guidance documents designed to help explain how to comply with the Act and the Regulations. This document is one of the guidance documents.

With the coming into force of [section 1\(3\) of the Act](#), the [Outer Space Act 1986](#) no longer applies to space activities carried on in the United Kingdom, and accordingly the Outer Space Act 1986 does not apply to a person or organisation wishing to carry out spaceflight activities or operate a spaceport in the United Kingdom. The Outer Space Act 1986 **will** continue to regulate the following activities carried out overseas by UK entities: the procurement of the overseas launch of a space object; the operation of a satellite in orbit from an overseas facility by a UK entity. Extant licences granted under the Outer Space Act 1986 for the carrying out of activities from within the UK will continue to be governed under that regime. Where an application for a licence has been made under the Outer Space Act 1986, it will be assessed under that Act and – where successful – will result in the award of a licence under the Outer Space Act 1986.

### What is the purpose of this guidance document?

- 1.4 This guidance document details the application process for all licences that can be issued under the Act and explains how the regulator will review any application.

### Who is this guidance for?

- 1.5 This guidance is for any person or organisation that wishes to apply for a licence under the Act.

### Using this guidance

- 1.6 This guidance document should be read in conjunction with the [Act](#), [the Regulations](#) and [the Regulator's Licensing Rules](#). Where appropriate, the guidance contains links to each of these.
- 1.7 The guidance is not intended to cover every eventuality that may be encountered in the application process. Together with the Regulator's Licensing Rules, this guidance is designed to help applicants to submit their applications and work with the regulator to ensure the process flows efficiently.

- 1.8 If applicants have any queries, they are encouraged to contact the regulator, to seek clarification or gain further information.

#### The regulator

- 1.9 The Civil Aviation Authority (CAA) will perform the functions of the regulator under the Act. It is referred to in this guidance as ‘the regulator’. Under [section 2 of the Act](#), the regulator must carry out its functions relating to spaceflight activities with a view to securing the health and safety of members of the public and the safety of their property. This duty has primacy over the other matters that the regulator must take into account in exercising its functions.

#### Contacting the regulator

The regulator can be contacted by email to [CAASpaceflightTeam@caa.co.uk](mailto:CAASpaceflightTeam@caa.co.uk). The regulator welcomes and encourages ongoing contact from prospective applicants before they submit an application for a licence. This can be from the earliest stages of considering whether to apply for a licence.

#### Key terms

- 1.10 The Act regulates:

- space activities
- sub-orbital activities and
- associated activities

that are carried out in the UK.

- 1.11 As set out in [section 1 of the Act](#), “space activity” means

- (a) launching or procuring the launch or the return to earth of a space object or of an aircraft carrying a space object
- (b) operating a space object, or
- (c) any activity in outer space

- 1.12 “A space object” includes the component parts of a space object, its launch vehicle and the component parts of that.

- 1.13 “Sub-orbital activity” means launching, procuring the launch of, operating or procuring the return to earth of:

- (a) a rocket or other craft that is capable of operating above the stratosphere
- (b) a balloon that is capable of reaching the stratosphere carrying crew or passengers, or
- (c) an aircraft carrying such a craft

but does not include space activity. By way of clarification, the regulator proposes to use the International Standard Atmosphere (47km) as the stratopause (i.e. the upper limit of the stratosphere) for the purposes of determining whether an activity is ‘sub-orbital’.

- 1.14 Space activities and sub-orbital activities are referred to in the Act as “spaceflight activities”.

- 1.15 Associated activities include the operation of spaceports and range control functions.

- 1.16 Under the Act, any site from which a spacecraft or carrier aircraft intends to launch is considered a spaceport and must be licensed. A site at which controlled and planned landings of spacecraft are to take place is also a spaceport and must be licensed, although temporary installations at sea which are to be used **only for landings** cannot be spaceports (see [section 3\(3\)](#)).
- 1.17 Range control services are defined in [section 6](#) of the Act as:
- “(a) identifying an appropriate range for particular spaceflight activities;
  - (b) co-ordinating arrangements for the activation and operation of the range;
  - (c) obtaining all necessary information for identifying the range and for co-ordinating its activation and operation;
  - (d) ensuring that notifications are issued for the protection of persons who might be put at risk by spacecraft or carrier aircraft within the range or in the vicinity of it;
  - (e) monitoring the range, and the spacecraft or carrier aircraft for which it is provided, to ascertain
    - (i) whether the restrictions or exclusions to which the range is subject are complied with;
    - (ii) whether planned trajectories are adhered to;
  - (f) communicating any failure to comply with those restrictions or exclusions, or to adhere to those trajectories, for the purpose of enabling any appropriate actions to be taken in response;
  - (g) any prescribed services provided for the purposes of, or in connection with, services within any of paragraphs (a) to (f).”
- 1.18 “Spacecraft” means a space object, or a craft used for spaceflight activities. It includes satellites.
- 1.19 “Launch” is defined in the Act as including causing a craft to take off (or releasing a balloon).
- 1.20 [Regulation 2](#) defines a launch vehicle as:
- “(a) a craft to which section 1(5) of the Act applies and the component parts of that craft, or
  - (b) a space object which is a vehicle and the component parts of that vehicle,
- that is used for the purpose of the proposed spaceflight activities or the operator’s spaceflight activities, as applicable, but does not include a satellite carried by the launch vehicle;”
- 1.21 The “craft to which section 1(5) of the Act applies” referred to in part (a) of this definition are:
- a rocket or other craft that is capable of operating above the stratosphere
  - a balloon that is capable of reaching the stratosphere carrying crew or passengers
- 1.22 Part (b) of the definition covers vehicles that are capable of reaching orbit, such as those used to place a satellite payload in orbit. As explained in section 2 below, the operator of any satellite carried on board a launch vehicle does not require their own launch operator licence, but does require an orbital operator licence.

- 1.23 Where the guidance uses the term “must”, this refers to a requirement in or under the Act. If applicants / licensees fail to meet that requirement, it could result in the licence not being granted or being revoked or suspended. Where it is stated that “the regulator expects” applicants to do something, this describes a preferred approach; however, it is not a legal requirement to comply with the regulator’s expectations.

#### Offences and enforcement directions under the Act

- 1.24 Under [section 3 of the Act](#), it is a criminal offence to carry out spaceflight activities or operate a spaceport in the UK without the required licence. It is also an offence to make a false statement for the purpose of obtaining an operator licence or a spaceport licence. A person who commits an offence under this section of the Act may be liable to a fine or imprisonment for a term not exceeding 2 years, or both.
- 1.25 Under [section 7 of the Act](#), it is an offence for range control services to be provided by anyone other than the Secretary of State, or a person or organisation authorised to provide them by a range control licence. It is also an offence for a person to make a false statement for the purpose of obtaining a range control licence. A person who commits an offence under this section of the Act may be liable to a fine or imprisonment for a term not exceeding 2 years, or both.
- 1.26 In addition to offences specifically set out in the Regulations or the Act, [section 27 of the Act](#) also gives the regulator the power to issue directions that enable effective enforcement action to be taken.
- 1.27 Section 27(1) provides that the section applies “where it appears to the regulator that a person is carrying out spaceflight activities, operating a spaceport or providing range control services–
- (a) without an authorisation required by this Act,
  - (b) in contravention of the conditions of a licence under this Act, or
  - (c) in contravention of any provisions contained in or made under this Act.”
- 1.28 Under section 27(2), “the regulator may give any directions to that person that appear necessary to be in the interests of safety or for the purposes of securing compliance with–
- (a) the conditions of a licence,
  - (b) provisions contained in or made under this Act, or
  - (c) the international obligations of the United Kingdom.”
- 1.29 It is an offence for a person in receipt of a section 27 direction to fail to comply with it (see [section 31\(3\)\(a\) of the Act](#)). The regulator could also, if it wished to do so, enforce compliance by way of an injunction or equivalent (see section 31(4)).
- 1.30 There are further direction-making powers in the Act, including power for the Secretary of State to give directions under [section 28\(3\)-\(4\)](#) and [section 29\(1\)](#).

#### The full list of guidance documents issued in relation to the Act

- 1.31 The following guidance documents are available in relation to licences that can be granted under the Act (and any statutory instruments made under the Act):
- Applying for a licence under the Space Industry Act 2018

- Guidance for launch operator or return operator licence applicants and licensees
- Guidance for spaceport licence applicants and licensees
- Guidance for range control licence applicants and licensees
- Guidance for orbital operator licence applicants and licensees
- Guidance for the assessment of environmental effects
- Guidance on security matters for applicants and licensees
- Guidance on the investigation of spaceflight accidents
- Guidance on appealing decisions made under the Space Industry Act 2018
- Guidance on liabilities under the Space Industry Act 2018
- Guidance for licensees under the Space Industry Act 2018



## Section 2: Types of licence under the Act and basic application requirements

2.1 The Act refers to three types of licences that can be awarded:

- operator licence
- spaceport licence
- range control licence

2.2 Following the publication of the Act, it was agreed that there should be different licensing requirements for different types of operators. For example, some organisations that would want to operate space objects (such as satellites or research vehicles) would not have a launch capability, and instead would wish to procure such capability and then operate the object once it reached orbit. While these organisations clearly do not need a licence to operate a launch vehicle, they are still required to obtain an operator licence to operate their object in space. Reflecting the various circumstances, there are now five licences available:

- **Launch operator licence:** means an operator licence within [section 3 of the Act](#) which authorises a person or organisation to carry out spaceflight activities that include launching a launch vehicle or launching a carrier aircraft and a launch vehicle. This is the type of licence needed if a person or organisation wants to launch a launch vehicle or use a carrier aircraft to assist with a launch of a launch vehicle. A person or organisation holding a launch operator licence is referred to as a spaceflight operator,<sup>1</sup> or in some circumstances, launch operator licensee.
- **Return operator licence:** means an operator licence within section 3 of the Act which is not a launch operator licence and which authorises a person or organisation to operate a launch vehicle, launched into orbit from elsewhere than the United Kingdom, in order to cause that vehicle to land in the United Kingdom. This is the type of licence needed if a person or organisation wants to return a launch vehicle, launched elsewhere than the United Kingdom, to land in the UK or within the UK's territorial waters. A person or organisation holding a return operator licence is referred to as a spaceflight operator,<sup>1</sup> or in some circumstances, return operator licensee.
- **Orbital operator licence:** means an operator licence which authorises a person or organisation to procure a launch, operate a space object or conduct other activity in outer space. The most common example of an activity that would be licensed under an orbital operator licence is operating a satellite. However, the licence may also cover any other activity in outer space, and is not limited to activities in Earth's orbit. For example, an orbital operator licence would be needed for missions in lunar orbit, lunar missions, or deep space probes. A person or organisation holding an orbital operator licence is referred to as an orbital operator licensee.

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<sup>1</sup> The term spaceflight operator is used in the Regulations to refer to both the holder of a launch operator licence and the holder of a return operator licence. Any references to spaceflight operator in the Regulations or guidance encompass both licence types, so any requirements for spaceflight operators are applicable to both launch operator licensees and return operator licensees. Where a requirement only applies to either a launch operator licensee or return operator licensee, this is clearly stated.

- **Spaceport licence:** means a licence granted under [section 3](#) of the Act authorising a person or organisation to operate a spaceport (i.e. a site from which spacecraft or carrier aircraft can be launched or a site at which controlled and planned landings of spacecraft can take place)<sup>2</sup>. Spaceports can be licensed for vertical or horizontal launches (or potentially both). A horizontal spaceport must be located at an aerodrome that is already either CAA licensed or European Aviation Safety Agency (EASA) certified, and National Aviation Security Programme (NASP) directed. A person or organisation holding a spaceport licence is referred to as a spaceport licensee.
- **Range control licence:** means a licence under [section 7](#) of the Act authorising a person or organisation to carry out range control services in relation to spaceflight activities. That includes identifying an appropriate range; coordinating the use of a range; issuing protective notifications and monitoring the range. A person or organisation holding a range control licence is referred to as a range control licensee.

### Activities that do not need a licence

- 2.3 Under [regulation 18](#), a spaceflight operator does not need a licence for the launch or return to earth of a carrier aircraft which is being used to transport a space object, launch vehicle or the component parts of either from one place to another, as long as:
- the flight following the launch does not include the launch of a space object or launch vehicle
  - the operator of the carrier aircraft has either an air operator certificate acceptable to the CAA, or the necessary approvals, authorisations or permissions for the flight required by the state in which the operator is based, and which are acceptable to the CAA

### Applying for any licence

- 2.4 Under [Section 8 of the Act](#) (Grant of a Licence), the regulator has the power to grant a licence if the regulator thinks fit. It may do so only if it is satisfied that doing so:
- will not impair the national security of the United Kingdom
  - is consistent with the international obligations of the United Kingdom
  - is not contrary to the national interest

and that:

- the applicant has the financial and technical resources to do the things authorised by the licence, and is otherwise a fit and proper person to do them
- the persons expected to do, on the applicant's behalf, any of the things authorised by the licence are fit and proper persons to do them

- 2.5 [Regulation 20](#) states that an application for a licence must be made in writing to the regulator in the specified form and accompanied by certain information specified by the regulator.
- 2.6 This applies to all licences to be granted under the Act and the information required for all types of licence applications is detailed in the [Regulator's Licensing Rules](#).

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<sup>2</sup> Temporary installations at sea which are to be used **only for landings** are not spaceports for the purposes of section 3 of the Act – [see section 3\(3\)](#).

- 2.7 Depending on the activity to be undertaken and the type of licence, there are additional requirements to be met in the following areas covered by the Act and the Regulations:
- [Section 9 “Grant of operator licences: safety”](#) – applicable to applications for all types of operator licence
  - [Section 10 “Grant of spaceport licence”](#) – applicable to applications for a spaceport licence
  - [Section 11 “Grant of licences: assessment of environmental effects”](#) – applicable to applications for launch operator and spaceport licences
  - [Section 17 “Informed consent”](#) – applicable to applications for a launch operator licence for spaceflight activities involving human occupants on board a launch vehicle
  - [Section 18 “Training, qualification and medical fitness”](#) – applicable to all licence types, apart from orbital operator licences, to varying degrees
  - [Section 19 “Safety regulations”](#) – applicable to all licence types, apart from orbital operator licences
  - [Section 23 “Security regulations”](#) – applicable to all licences, to varying degrees
  - [Section 34 “Liability of operator for injury or damage etc”](#) and [Section 36 “Obligation to indemnify government etc against claims”](#) – applicable to holders of an operator licence
  - [Section 38 “Insurance”](#) – potentially applicable to all licence types. A further consultation, along with guidance, will be published at a later date on proposed draft regulations covering insurance requirements.
- 2.8 If an application is successful and a licence is granted, the licensee must comply with the terms of the licence, any specific conditions included by the regulator on their individual licence, the Act and the Regulations and any other relevant laws. The licensee must inform the regulator if there are any significant changes to any of the information which the regulator considered in granting the licence. In addition, licensees will be expected to provide certain information to the regulator, to enable the regulator to fulfil its international obligations, for example, to supervise and monitor space activity. [Part 13](#) of the Regulations gives the regulator powers in regard to ongoing monitoring and, where necessary, enforcement.

## Commencement of the Act

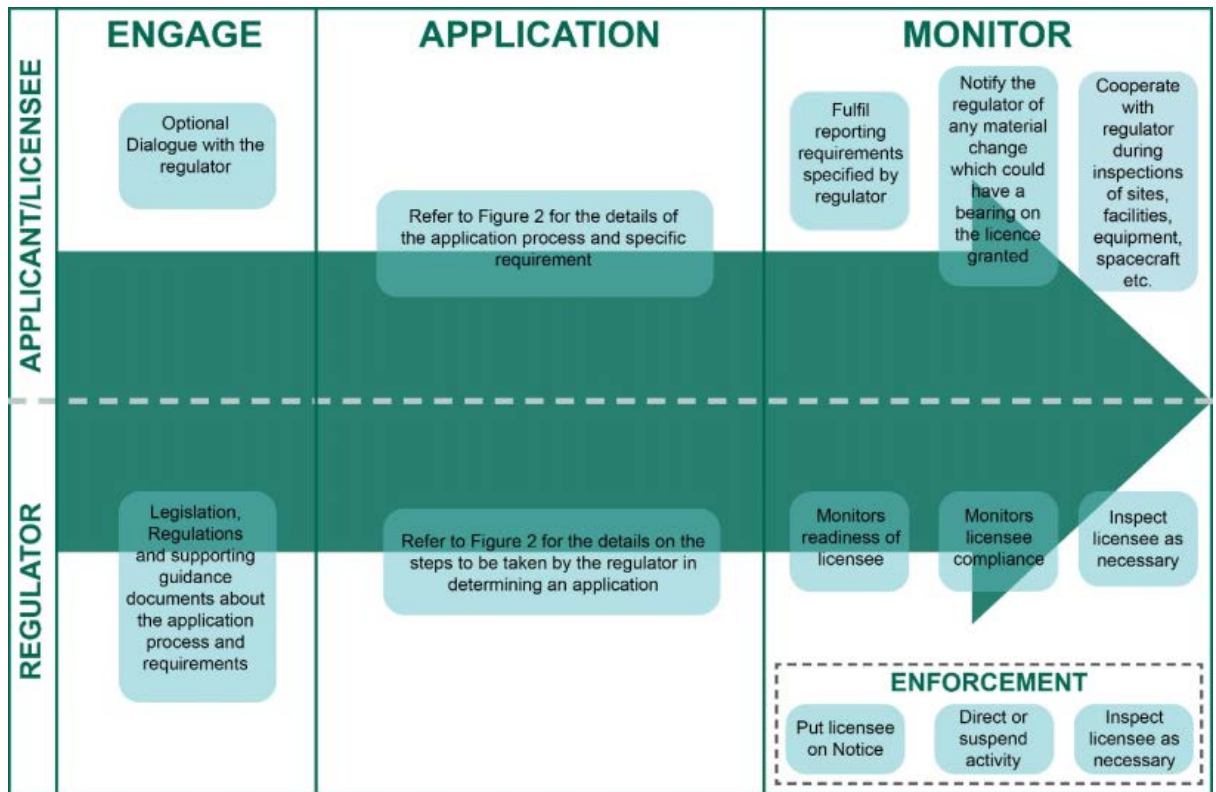
- 2.9 As a temporary measure, the Commencement Regulations will be used to commence certain key provisions of the Space Industry Act partially. The effect of such partial commencement would be to ensure that:
- the licensing of space activities involving an orbital launch vehicle with human occupants will not initially be possible
  - the licensing of spaceflight activities involving hypersonic (or any other experimental) transport from A to B will not initially be possible
  - the licensing of a procurement of an overseas launch carried out under the Outer Space Act continues to be done under that Act
- 2.10 No additional legislation has been drafted regarding Point A to Point B sub-orbital spaceflight operations and orbital and interstellar spaceflight operations with human occupants. It is not currently intended to license these activities. These are technically complex and difficult to regulate activities, and by their very nature will require global collaboration on common standards to a much higher threshold than is achievable with current technologies.

### Section 3: Overview of regulator's approach

3.1 To provide a consistent, fair and proportionate approach to fulfilling its duties under the Act, the regulator has developed a straightforward model consisting of four elements:

- **pre-application engagement**, where prospective applicants can (and are encouraged to) engage with the regulator before submitting an application for a licence under the Act. This engagement can help confirm what licence the applicant might need and what information the applicant will need to provide.
- **application**, where applicants submit an application and required information to the regulator (the required information varies depending on the licence type). The regulator will then assess the licence application against a series of criteria, including safety, financial, legal and technical criteria. The assessment will lead to one of the following outcomes: (a) the regulator granting a licence, with or without imposing conditions; (b) the regulator requesting further information to enable it to determine the application; or (c) the application being declined. This core application process is detailed in section 4 of this guidance and section 5 summarises the information required in support of an application and the matters the regulator must be satisfied of to grant a licence.
- **monitoring**, where the licensee is required to provide certain information to the regulator, to enable the regulator to fulfil its legal and international obligations to supervise and monitor spaceflight activities and associated activities. This includes some regular reporting requirements to help the regulator monitor compliance with relevant legal obligations, the licence and some requirements related to specific activities, such as updating details of a mission or payload, or notifying the regulator if there are changes to any of the information which the regulator considered in granting the licence. Depending on the licence type, the regulator may also carry out site visits and inspections. More details of the monitoring and other duties after a licence has been granted are in the document [Guidance on duties for all licensees under the Space Industry Act 2018 including monitoring and enforcement by the regulator](#).
- **enforcement**, where the regulator has the power to take appropriate action if, via its monitoring or other means, the regulator identifies non-compliance with the licence issued, or any relevant requirements under the Act or regulations made under the Act.

**Figure 1: Overview of the regulator's approach**



- 3.2 The aim of this model is to offer relevant support to prospective applicants, so that the application process itself can be as smooth as possible, and then to maintain a constructive dialogue with licensees, with a view to minimising the need for enforcement activity. This is within the overarching context of the regulator's primary duty, to exercise its functions with a view to securing public safety.

## Section 4: The application process

- 4.1 The application process is set out in regulations 20-27 with further details in the Regulator's Licensing Rules. It is a standard process for all applications and consists of four core stages and one optional stage.

### Stage 0: Pre-application engagement

- 4.2 As set out in section 3 of this guidance, the regulator welcomes and encourages ongoing contact from prospective applicants before they submit an application for a licence. This can be from the earliest stages of considering whether to apply for a licence, and can help confirm whether a licence is required for the proposed activities and what information the applicant will need to submit. Pre-application engagement can also enable the regulator to learn if there are any special circumstances related to the proposed activities.
- 4.3 There is further information on pre-application engagement in the guidance documents relating to each of the licence types.
- 4.4 There is no obligation to engage with the regulator before submitting an application, and if an applicant decides not to engage, this will in no way affect the regulator's consideration of a submitted application.
- 4.5 Prospective applicants must note that any guidance they receive from the regulator before they submit a licence application, such as answers to queries about how to fill out the application form for the licence or the detail of information to be provided in connection with the application, are **not** part of the regulator's decision-making process relating to granting or refusing the application for the licence. The aim of any informal guidance of this kind is to facilitate the preparation of the application and of information required in connection with the application. The process for obtaining a licence starts at the point when the regulator receives the application and the information in connection with it (see regulation 20 and the Regulator's Licensing Rules). The regulator will only begin to consider an application once it has received the written application and the required information (see regulations 21 and 22).
- 4.6 All applicants are expected to obtain their own technical and legal advice prior to, and throughout the licensing process, as well as to ensure that they are familiar with the requirements under the Act, the Regulations and any other relevant legal obligations that an applicant and potential licensee may be party to.
- 4.7 To arrange a discussion with the regulator, please contact [CAASpaceflightTeam@caa.co.uk](mailto:CAASpaceflightTeam@caa.co.uk).

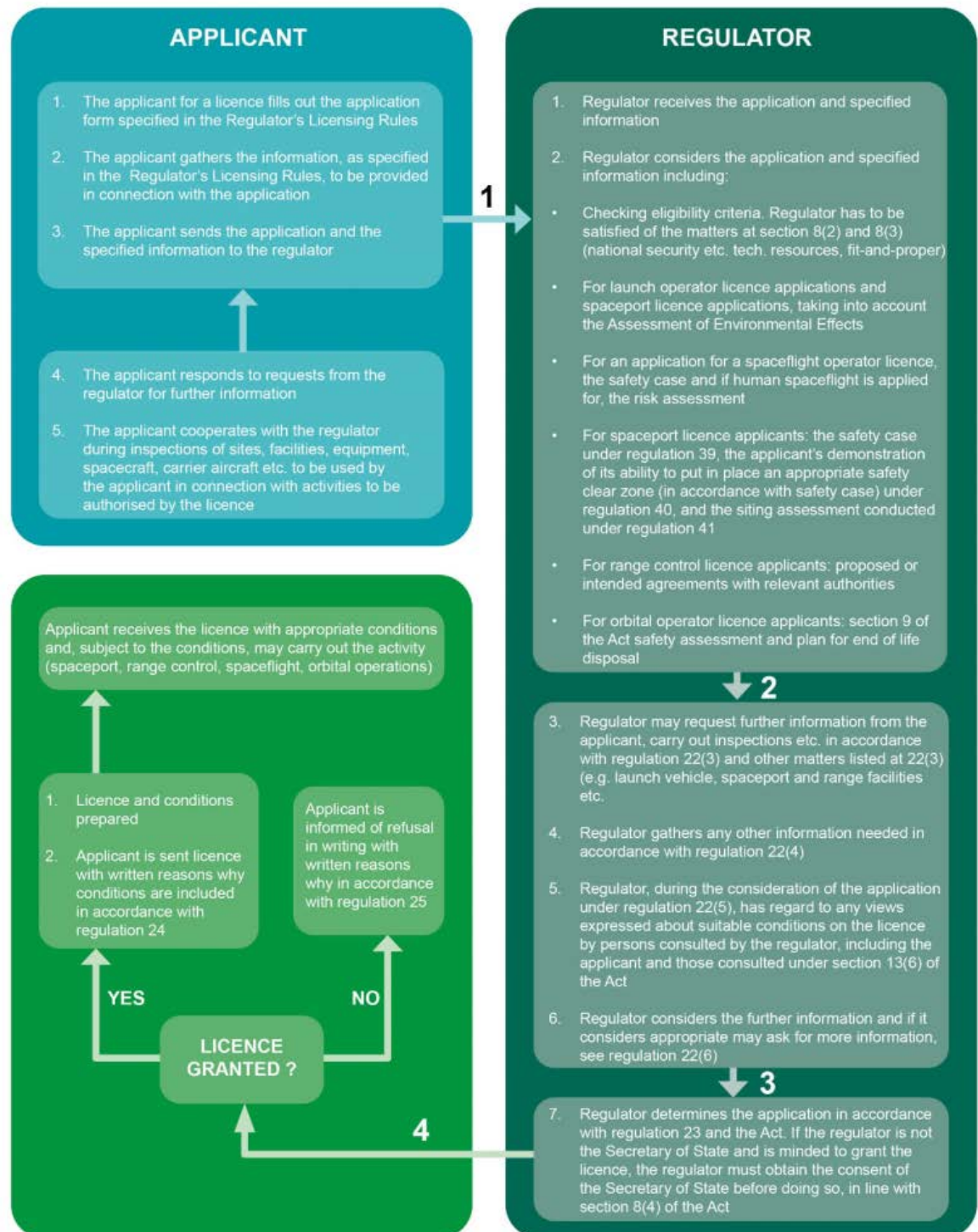
### Stage 1: Submitting the application

- 4.8 This is the first mandatory stage of the process. Applicants must complete the appropriate form(s) and submit the additional required information in writing to the regulator. A full list of the required information for each licence type can be found in the Regulator's Licensing Rules.
- 4.9 Figure 2 shows the application process.



Figure 2: the application process

## APPLYING FOR A LICENCE UNDER THE SPACE INDUSTRY ACT 2018 AND REGULATIONS



- 4.10 Application forms can be completed online<sup>3</sup>, submitted by email to [CAASpaceflightTeam@caa.co.uk](mailto:CAASpaceflightTeam@caa.co.uk) (preferred), or posted to:

CAA Spaceflight Team  
Safety and Airspace Regulation Group (SARG)  
Aviation House  
Beehive Ring Road  
Crawley  
West Sussex  
RH6 0YR  
United Kingdom

- 4.11 If applicants wish to attach or submit large files in support of their application, they should contact the regulator. The regulator has a secure online transfer facility for this purpose.

## Stage 2: Regulator considers the application

- 4.12 On receiving an application, the regulator will assign a case worker to the applicant to act as an overall point of contact, if one has not already been assigned during any pre-application engagement.
- 4.13 The regulator will review the application and the information and assess it against the provisions in the Act and requirements in the Regulations and the Regulator's Licensing Rules.
- 4.14 Given the quantity of information required and the time needed to assess that information, applications should be submitted well in advance of any planned date for when it is intended spaceflight activities or associated activities will take place. In general, the length of the period of assessment will reflect the complexity of the application.
- 4.15 As set out in regulation 22, the regulator is obliged to gather any other information it needs to be satisfied that the applicant is eligible to be a licensee for that particular type of licence and has met all relevant criteria and requirements.
- 4.16 After reviewing the application and the information submitted with the application to assist in considering the application, the regulator may:
- request additional information from the applicant
  - inspect sites, facilities, equipment, spacecraft, carrier aircraft and other vehicles to be used by the applicant in connection with activities to be authorised by the licence
  - obtain information, whether by inspecting documents, interviewing individuals or otherwise
  - prepare written reports of inspections and findings or written records of interviews
  - obtain technical assessments (e.g. including from independent third parties with whom the regulator has appropriate disclosure protocols)
  - consult any person acting on behalf of a country which is a party to a relevant agreement

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<sup>3</sup> The correct link will be confirmed at a later date.



- ask the Space Accident Investigation Authority, or any other national or international body investigating spaceflight accidents for the purposes of accident prevention, about any safety recommendations relevant to the activities to be authorised by the licence
- 4.17 The regulator will work with the applicant to arrange any interviews, site visits, demonstrations and inspections as necessary.
- 4.18 While considering the application, the regulator must also have regard to licence conditions which may be imposed by the regulator if the licence is granted. The regulator must also have regard to any views about proposed licence conditions expressed by persons who have to be consulted under [section 13\(6\) of the Act](#), and any other persons consulted by the regulator, including the applicant.
- 4.19 If, during this process, an applicant ceases communicating with the regulator; does not comply fully with any requirements which the regulator specifies, or fails to answer the regulator within any time period that has been specified, the regulator has discretion to:
- refuse to proceed with the application or
  - determine the application

### Stage 3: Regulator determines the application

- 4.20 The regulator will determine the application (i.e. determines whether a licence can be granted and any conditions on the licence), having regard to the information the applicant has submitted and any other relevant information the regulator has gathered.
- For **all licences**, the regulator must be satisfied that the criteria set out in [sections 8 \(2\) and \(3\)](#) of the Act are met before it can grant a licence
  - For **operator licences**, the regulator must also be satisfied that the safety criteria set out in or under [section 9](#) of the Act are met
  - For **spaceport licences**, the regulator must also be satisfied that the safety criteria set out in or under [section 10](#) of the Act are met
  - For **launch operator licences and spaceport licences**, the regulator must take into account an assessment of environmental effects (under [section 11](#)) in deciding whether to grant the licence and what conditions should be attached to the licence<sup>4</sup>
- 4.21 The regulator's overriding consideration is public safety, which is defined in [section 2\(6\) of the Act](#) as meaning the health and safety of members of the public and safety of their property. "Members of the public" are defined in relation to spaceports at [chapter 3 of Part 5](#) of the Regulations. However, the regulator must also exercise its functions (including determining an application for a licence) under the Act in the way that it thinks best calculated to take into account:
- the interests of persons carried by spacecraft or carrier aircraft
  - the requirements of persons carrying out spaceflight activities
  - the interests of any other persons in relation to the use of land, sea and airspace
  - the requirements of persons with interests in property carried by spacecraft
  - any environmental objectives set by the Secretary of State

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<sup>4</sup> For further details of the matters of which the regulator must be satisfied before granting a licence, see section 5 of this guidance and the summary at paragraphs 5.1 and 5.2.

- the interests of national security
  - any international obligations of the United Kingdom
  - any space debris mitigation guidelines issued by an international organisation in which the government of the United Kingdom is represented
- 4.22 In following these principles, the regulator will have regard to accepted best practice and the various industry or international standards associated with the operation of spacecraft, spaceports or ranges (e.g. international best practice associated with operational practices in space such as space debris mitigation guidelines).
- 4.23 The regulator may grant the licence for a specified period. The regulator may also grant the licence for one or more specific spaceflight activities.
- 4.24 The regulator can place conditions which it thinks appropriate on individual licences. These will be tailored to the circumstances of the licensee. [Schedule 1 of the Act](#) provides examples of the kinds of conditions that the regulator may include.
- 4.25 Under [section 8\(4\) of the Act](#), if the regulator is not the Secretary of State, the regulator may grant a licence only with the consent of the Secretary of State.

#### Stage 4: Regulator informs the applicant of its decision

- 4.26 If the regulator decides to grant the licence, the regulator will inform the applicant in writing. The notification of the decision to grant a licence will normally take the form of sending the licence itself; the licence itself may be in either electronic format or a paper version. The licence will set out any conditions that the regulator thinks appropriate to include, and will provide written reasons for including those conditions.
- 4.27 The licence is effective immediately from the date of the grant of the licence, or as otherwise stated in a condition on the licence.

#### Refusal of a licence

- 4.28 If the regulator refuses an application for a licence, the regulator must inform the applicant in writing of the decision and give the applicant written reasons for the refusal.
- 4.29 Under [section 60 and Schedule 10 of the Act](#), applicants are entitled to appeal against the regulator's decision to refuse an application for a licence or to grant a licence subject to conditions. The [Space Industry \(Appeals\) Regulations](#) apply in such cases. For further details, see the separate document [Guidance on appealing decisions made under the Space Industry Act 2018](#).

#### Voluntary withdrawal of an application

- 4.30 An applicant can withdraw an application for a licence by giving notice to the regulator at any time before the regulator determines the application.
- 4.31 The regulator would not expect a similar application to be resubmitted to it by the same applicant soon after the withdrawal of an application, unless the applicant can provide

reasonable justification for this action. The regulator expects that the justification will be attached to the application form.

## Section 5: Matters that the regulator must be satisfied with in order to grant a licence

- 5.1 This section provides guidance on the common matters that the regulator must be satisfied with in relation to granting all types of licence. These common matters are summarised in subsections (2) and (3) of [section 8](#) of the Act. Applicants must provide information to the regulator about these matters. Further details of the information that must be supplied for this purpose can be found in the [Regulator's Licensing Rules](#).
- 5.2 For each licence type, some additional information is also required. In particular:
- For an application for a **launch or return operator licence**, the regulator must be satisfied with the safety case. In addition, where the licensed activities would involve human occupants on board the launch vehicle, the regulator must be satisfied with the risk assessment (see [section 9 of the Act](#)).
  - For an application for an **orbital operator licence**, the regulator must be satisfied that the applicant has taken all reasonable steps to ensure that risks to the health, safety and property of persons who are not acting in a prescribed role or capacity are acceptable and as low as reasonably practicable. (see [section 9\(4\) of the Act](#))
  - For an application for a **spaceport licence**, the regulator must be satisfied with the safety case, the applicant's ability to put in place a safety clear zone and the siting assessment ([section 10 of the Act](#) and [regulations 39 to 41](#)).
  - For applications for a **launch operator licence or a spaceport licence**, the regulator may not grant an application for a licence unless the applicant has submitted an assessment of environmental effects; the regulator must take into account such an assessment in deciding whether to grant the licence and what conditions should be attached to such a licence.

This additional information is summarised, by licence type, in the [Regulator's Licensing Rules](#) and there are then further details in the relevant guidance documents for each licence type.

- 5.3 It must be noted that, under [section 8\(1\) of the Act](#), the regulator has a general discretion whether to grant a licence. This means that even where the matters mentioned in paragraphs 5.1 and 5.2 above are satisfied, the regulator may, in accordance with the duties and supplementary powers of the regulator and in particular [sections 2\(2\) and 2\(3\) of the Act](#) exercise its discretion not to grant the licence. (e.g. in line with any environmental objectives set by the Secretary of State).

### Eligibility criteria

- 5.4 [Regulations 5 and 6](#) set out eligibility criteria that all applicants for a licence must meet.
- 5.5 The eligibility criteria apply both to the (prospective) licensee and to any individual the (prospective) licensee proposes to appoint to undertake a prescribed role. If the eligibility criteria are not met, the regulator will be unable to grant a licence to an applicant or accept certain individuals appointed to a prescribed role.
- 5.6 When completing the application form, the applicant must confirm that the proposed licensee and all persons named as taking on a prescribed role meet the eligibility criteria. The regulator

will carry out an independent check of relevant records before assessing the application further.

## Prescribed roles

- 5.7 Prescribed roles are roles that have been identified as essential to fulfilling the requirements of a licence issued under the Act. Applicants must nominate suitably competent and qualified individuals for each prescribed role.
- 5.8 Regulations 7-11 set out the prescribed roles for each licence, along with the responsibilities for each role. The table below summarises which roles are required for each licence type.
- 5.9 Applicants can normally nominate the same person to take on more than one prescribed role, as long as that person is sufficiently competent to fulfil all the roles; however, a spaceflight operator authorised to conduct launches may not appoint the same individual to undertake the role of safety manager and launch director.

**Table 1: Prescribed roles by licence type**

Licence type	Prescribed roles required						
	Accountable manager	Safety manager	Security manager	Training manager	Launch director	Range operations manager	Range safety manager
<b>Spaceflight operator - Launch</b>	Y	Y	Y	Y	Y		
<b>Spaceflight operator - Return</b>	Y	Y	Only if the activity may give rise to an issue of national security <sup>5</sup>				
<b>Orbital operator</b>	Y		Only if the activity may give rise to an issue of national security				
<b>Spaceport</b>	Y	Y	Y	Y			
<b>Range control</b>	Y		Y	Y		Y	Y

- 5.10 Applicants must demonstrate that anyone nominated to undertake a prescribed role meets the eligibility criteria and is competent and suitably qualified to fulfil the responsibilities of the prescribed roles. For more details of the information required, see the Regulator's Licensing Rules.

## Requirements related to UK national security, international obligations and UK national interest

- 5.11 As stated above, under section 8(2) of the Act, before granting a licence, the regulator will need to be satisfied that granting a licence to the applicant:
- will not impair the national security of the United Kingdom
  - is consistent with the international obligations of the United Kingdom, and
  - is not contrary to the national interest

<sup>5</sup> This requirement for return operator licences is not set out in the Regulations currently subject to consultation. It is intended that the Regulations will be amended to clarify this before they come into effect.

- 5.12 In this case, an international obligation may refer, for example, to the Technology Safeguards Agreement between the UK and US governments, the Hague Code of Conduct and the Missile Technology Control Regime.
- 5.13 To assess this, the regulator will make enquiries as necessary with other Government departments, agencies and statutory bodies, including those bodies responsible for trade controls and national security. In deciding what (if any) conditions to include in a licence, the regulator must consult (amongst others) the Secretary of State, the Defence Safety Authority and the Office for Nuclear Regulation.
- 5.14 As part of the licence application, applicants must provide information about their business structure and in particular any foreign ownership or the participation of foreign entities. More details of the specific information required is set out in the Regulator's Licensing Rules.
- 5.15 If an applicant intends to bring equipment or material into the UK for use in its space activities, for which an export licence is required by the country from which the equipment is coming, (e.g. in the case of the USA, an export licence granted by the US Government to export equipment etc. from the US to the UK), the applicant must supply the regulator with a copy of the export licence,<sup>6</sup> or information relating to the progress of an application for an export licence. Under Schedule 1 to the Regulations, such information must be included in the safety case for launch operator and spaceport licence applications.
- 5.16 Individuals appointed by the applicant to certain prescribed roles, such as security manager, will also be required to undergo security checks.

The UK is a signatory to the [UN Outer Space Treaty](#) and has adopted many of the related conventions, principles and UN General Assembly resolutions. In existing statutory law, the Outer Space Act 1986 embodies many of the principles and obligations of the UN Treaty and applicants will be expected not to carry out any activity that may affect the ability of the UK to fulfil its obligations under the Treaty.

### **Applicant to have adequate financial resources**

- 5.17 Under [section 8\(3\) of the Act](#), the regulator may not grant a licence unless it is satisfied that the applicant has the financial and technical resources to do the things authorised by the licence. Applicants are therefore required to demonstrate to the regulator that they have the financial resources and insurance arrangements to undertake the activities for which they seek a licence.
- 5.18 Full details of the financial information required for this purpose is set out in Table A of the Regulator's Licensing Rules.

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<sup>6</sup> For example, in the United States, articles specifically designed or otherwise intended for military end-use are subject to the US International Traffic in Arms Regulations (ITAR) and described in the United States Munitions List (USML) or the Missile Technology Control Regime (MTCR) Annex. Other items not specifically listed in the USML, but with the capability to be used for either civilian or military purposes, are considered "dual use" and controlled under the US Export Administration Regulations (EAR).

- 5.19 In terms of insurance, a further consultation, along with guidance, will be published at a later date on proposed draft regulations covering insurance requirements under [section 38](#) of the Act.

### Applicant to have adequate technical resources

- 5.20 Applicants must demonstrate they have sufficient technical capabilities and resources to carry out the planned activities adequately. This may include demonstrating that they employ, or have access to technically competent people with the requisite skills, experience and qualifications.
- 5.21 The requirements for demonstrating technical resources are specific to each licence type and to the proposed activities: for example, applicants for a launch operator licence or spaceport licence are required, among other things, to prepare a safety case, which contains a large volume of technical information. Although the kinds of evidence sought will depend on the type of licence applied for, the regulator is likely to carry out visits and inspections of sites, facilities and equipment, to establish that the applicant's technical resources are adequate.
- 5.22 [Table A of the Regulator's Licensing Rules](#) provides a full list of the information required for all licences.

### Applicant to be a fit and proper person

- 5.23 [Section 8\(3\)\(a\) of the Act](#) requires that, to be granted a licence, the applicant must, in addition to demonstrating it has adequate financial and technical resources, be otherwise a fit and proper person to do the things authorised by the licence. [Section 8\(3\)\(b\) of the Act](#) likewise requires that persons who are expected to do, on the applicant's behalf, any of the things authorised by the licence, are fit and proper persons to do them.
- 5.24 To be satisfied that the applicant – whether a person or organisation – is fit and proper, the regulator will take into account the following factors, as far as they can be ascertained and are relevant:
- (a) whether the person has qualifications relevant to the position held and the responsibilities that are to be discharged in that position
  - (b) whether that person is adequately trained or will undergoing suitable training by the time the licence is granted
  - (c) the level of competence of that person, particularly in relation to previous experience in a similar role or in an equivalent industry
  - (d) whether any reasonable evidence exists that the person is not a fit and proper person due to a verifiable lack of honesty, integrity or other behaviour that gives reason to doubt that the person will be able to do the things authorised by the licence
- 5.25 The regulator will initially use information supplied by the applicant on the application form, or sent with the application form, to assess if a person is fit and proper. The regulator may also carry out further enquiries or interviews to the extent necessary to be satisfied that an applicant is a fit and proper person.

Persons acting on the licence on the applicant's behalf, to be fit and proper persons

- 5.26 In a similar way to an applicant, [section 8\(3\)\(b\) of the Act](#) requires that persons who are expected to do, on the applicant's behalf, any of the things authorised by the licence, are fit and proper persons to do them. This includes the persons appointed by the licensee to undertake a role prescribed at [Part 3, Chapter 1](#) of the regulations. The same 'fit and proper' factors and process set out at paragraphs 5.23 and 5.24 (above) will be taken into account by the regulator when determining that individuals are fit and proper.

#### Use of agents

- 5.27 As set out in row 8 of Table B of the [Regulator's Licensing Rules](#), applicants are required to provide certain information concerning any proposal to appoint an agent to carry out spaceflight activities on their behalf. This requirement is derived from [section 3\(4\) of the Act](#):

"A person does not require an operator licence to carry out, as employee or agent of another person, spaceflight activities that are authorised by an operator licence granted to that other person."

- 5.28 [Section 7\(3\) of the Act](#) contains a mirror provision in relation to the provision of range control services authorised by a range control licence.

- 5.29 The information to be supplied under the Regulator's Licensing Rules is:

- identity information regarding any such agent, as set out in section 1 of Table A of the Regulator's Licensing Rules, and
- any documents which evidence the capability of such an agent to carry out those activities

- 5.30 The documents that provide evidence of the capability of an agent to carry out the spaceflight activities or provide range control services on behalf of an applicant or licensee must:

- provide a detailed description of the spaceflight activities that the agent will carry out or the range control services the agent will provide
- include a written agency agreement with the licensee which includes:
  - an authorisation for the agent to carry out the agreed spaceflight activities/provide the agreed range control services, and
  - a schedule of the terms on which the agent will carry out the agreed spaceflight activities/provide the agreed range control services on behalf of the licensee

- 5.31 Prior to the issuing of any licences/commencement of licensing by the regulator, the regulator will publish a schedule of minimum required terms to be included in a written agency agreement which the licensee must include in any agency agreement with its agents.

- 5.32 Any operator licence or range control licence granted by the regulator will include the condition that the licensee will only use an agent to perform licensed activities if it has entered into agency agreement with the agent that includes the minimum required terms published by the regulator; that the licensee will ensure their agent complies with those terms and that the licensee will cease to use the services of their agent should the agent fail to comply with those terms.



## Evidence of training

- 5.33 Under [Section 18 of the Act](#), licensees are required to have suitably qualified people in specified roles relating to spaceflight activities. [Regulation 59](#) lists these specified roles:
- the training manager
  - the launch director
  - the flight termination personnel
  - the flight crew and remote pilots
  - the engineer
  - the range operations manager
  - the range safety manager
- 5.34 Applicants or licensees must demonstrate that they have suitably trained personnel in all specified roles, and that they have made provision for providing adequate training. To demonstrate this, applicants or licensees are required to apply to the regulator for:
- approval of those sections of the training manual which relate to relevant individuals (the “relevant sections”)
  - approval of the training manager
- 5.35 Applicants for orbital operator or return operator licences are not required to appoint a training manager. The requirement in [regulation 69\(1\)\(b\)](#) to apply to the regulator for approval of relevant sections of the training manual does not apply if a return operator is not appointing any relevant individuals. However, such an operator is required to compile a training manual which complies with the requirements in [Part 2 of Schedule 3](#).
- 5.36 Further details on the requirements around training are set out in section 6 of this guidance document, which also includes:
- information about the training that must be provided to any spaceflight participants
  - details of the medical fitness requirements for specified roles and for spaceflight participants

## Assessment of environmental effects

- 5.37 Applicants for a launch operator or spaceport licence must submit an assessment of environmental effects. For details of what is required, see the separate [guidance on completing an assessment of environmental effects](#).

## Section 6: Training and medical requirements

- 6.1 [Section 18 of the Act](#) provides that regulations may make provision with respect to the training, qualifications and medical fitness of individuals:
- taking part in, or otherwise engaged in connection with, spaceflight activities or the provision of range control services, or
  - working at sites used for or in connection with spaceflight activities or the provision of range control services
- 6.2 Subsection 18(4) of the Act states that licensees must not allow an unqualified individual:
- to take part in, or to be otherwise engaged in connection with, activities authorised by the licence, or providing services that must be authorised by a licence, in a specified role or capacity
  - to work in a specified role or capacity at a site used for or in connection with the activities or services to which the licence relates

The specified roles and capacities are listed at [regulations 59 and 60](#); collectively, these individuals are referred to as “relevant individuals”.

- 6.3 As none of the specified roles are required by applicants for an orbital operator or return operator licences, there are no specific training requirements for these licence types.
- 6.4 Some of the persons acting in specified roles and capacities, such as the launch director, must also fulfil the eligibility criteria set out at [Chapter 1 of Part 3](#) of the Regulations.
- 6.5 Not all roles and capacities will be applicable to every licensee. For example, a launch operator licensee would not be required to train flight crew or spaceflight participants if it does not intend to undertake suborbital human spaceflights. Likewise, if it is not intended to use a flight safety system to ensure the safety of a launch, or if the flight safety system relies on autonomous means of flight termination on the launch vehicle, there would be no requirement for flight termination personnel.
- 6.6 An individual is “unqualified” if he or she does not fulfil specified criteria with respect to training, qualifications and medical fitness. The detailed training requirements for each of these roles are set out in [Schedule 3](#) of the Regulations.
- 6.7 The regulatory requirements for medical fitness of individuals are set out at [Chapter 5 of Part 7](#) of the Regulations and are also further described later on in this guidance.

### Responsibilities of the licensee

- 6.8 The responsibilities of launch operator, spaceport and range control licensees in relation to training and medical fitness are set out in detail at [regulation 61](#). Essentially, these licensees are responsible for ensuring that two categories of persons have been appropriately trained, are competent and are medically fit. These are:
- the “relevant individuals” performing a specified role or acting in a specified capacity, and
  - other individuals who participate in the licensed activities but do not perform a specified role or have a specified capacity

NB. The policy intention is to widen the scope of persons who are not “relevant individuals” to also include those other individuals who participate, or are otherwise engaged in connection with, the licensed activities. These types of individuals would ultimately include for example, persons acting as rescue and fire-fighting staff used by, but not employed by, a spaceport licensee.

- 6.9 Training regulations, for the most part, concentrate on requirements for the licensee and the various relevant individuals. Other individuals, acting for the licensee but not performing a specified role or capacity, may play an important part in a licensee’s activities, but are not formally required to be qualified by the Regulations. Many of these individuals may have qualifications or need to meet other criteria, established in non-spaceflight legislation, in order to do their job.

**Example:** a spaceport or launch operator licensee is likely to need to make suitable provision to comply with existing legislation concerning the safety of other employees (such as propellant loaders or transporters):

- using and controlling substances hazardous to health ([COSHH](#))
- working with dangerous substances and explosive atmospheres ([DSEAR](#))

- 6.10 For both categories of individuals mentioned in paragraph 6.8, the relevant licensees are responsible for:
- establishing and maintaining a training programme
  - preparing and maintaining a training manual
- 6.11 The licensee must be satisfied that all these individuals meet the various conditions set out in regulation 61 concerning an individual:
- receiving or participating in training
  - being competent and having his or her competency assessed (including when certain qualifications, skills and experience are needed)
  - being medically fit
- 6.12 The licensee must have a training management system which sets out clearly defined lines of responsibility; contains a means of measuring and verifying the effectiveness of the training programme and provides for monitoring the provision of any training services or equipment by a third-party contractor.

## Training resources

- 6.13 The licensee must ensure that it has adequate personnel, facilities and equipment to satisfy its training obligations. In order to do this a licensee may enter into arrangements with a third party to provide personnel, facilities or equipment for use in the licensee’s training programme. A licensee can also contract a third party to perform any part of its training programme or carry out medical assessments and medical examinations. If such arrangements are entered into, the licensee must retain control over the content of any service provided and how it is delivered, and control over what equipment or facilities are provided and their condition.

## Training manager and approval of the training manager

- 6.14 The training manager is a pivotal person in a licensee's organisation. For the types of licence that require training of relevant individuals (launch operator and range control), the training manager will be responsible for organising and managing the training of the relevant individuals and be responsible for confirming that an individual's training has been completed. Where relevant individuals are not specified for the type of licence (spaceport licensees), the training manager is responsible for the other general training functions as set out in [regulation 66](#).
- 6.15 The individual appointed by the licensee to be the training manager must be an employee of the licensee and be formally approved by the regulator by the time that the licence comes into effect.
- 6.16 Regulations concerning the training manager, the functions of the training manager, applying for approval of the appointment for the training manager, and when an approval ceases to be valid or may be revoked are set out at [Chapter 2 of Part 7](#) of the Regulations.

## Training manual and approval of the training manual

- 6.17 In addition to seeking the approval of the training manager, a licensee or applicant for a licence is responsible for compiling a training manual and submitting the manual to the regulator. The regulator is only responsible for approving the relevant parts of the training manual, i.e. those sections of the training manual that relate to "relevant individuals". The relevant sections of the training manual do not need to be approved as part of applying for a licence; however, they must be approved before the licensed activity can commence, if that activity involves relevant individuals. Where a licensee or applicant sends the regulator the complete manual, the relevant sections must be listed or marked by the licensee or applicant. The regulations concerning the training manual and approval and changes to the training manual are set out at [Chapter 3 of Part 7](#) of the Regulations.
- 6.18 Once the relevant parts of training manual have been approved, the licensee must make the manual (or those sections of the manual which are relevant to their duties) available to its staff and to any person contracted to provide training services to the licensee. A licensee must also, where appropriate, provide copies of relevant sections of the manual to students admitted to its training programme. The licensee must ensure that each copy of the training manual is kept up to date.

## Purpose and contents of the training manual

- 6.19 The main purpose of the training manual is to provide a fully comprehensive description of the training the licensee or applicant for a licence will provide for the relevant individuals. This is information that the regulator will use, along with site visits, to confirm that the training is likely to be adequate and is being properly managed, before approving the training as part of the licence.
- 6.20 Once a licence has been granted, and the relevant parts of the training manual have been approved, the training manual forms the detailed basis for the licensee, its staff and any third party contractors to conduct and record the training and produce a consistent training output of the required standard.

6.21 Within the training manual, the licensee or applicant must provide information and instructions to be followed by the licensee's training staff and other persons who need to have this information once the licence has been granted. The required information includes:

- the training policy of the licensee and the responsibilities of the training manager and instructors
- information on the training programme including syllabus and content for each course
- the locations where training will be carried out and the facilities and equipment that should be used
- the entry requirements for individuals for each role and the procedures to be adopted for determining that an individual has met the required standard of competency and recording that fact
- the standards, objectives and training and testing goals for each course of training and recurrent training
- the measures being taken to assess the performance of training instructors and to review the adequacy and suitability of the training being provided
- a section setting out the measures the licensee is taking to satisfy the medical regulatory requirements etc

The full list of matters to be contained in the training manual is set out at Part 2 of Schedule 3 of the Regulations.<sup>7</sup>

#### Changes to the training manual

6.22 Certain items in the contents of a training manual can only be changed with the approval of the regulator. A list of these items is set out at regulation 71(2). The licensee must apply to the regulator for the approval of the changes and must inform the regulator in writing as soon as possible of any significant change in any of the information provided to the regulator related to that application.

#### Training programme

6.23 A licensee should establish and maintain a training programme in line with the training manual. The requirements for the training programme are set out at Chapter 4 of Part 7 of the Regulations.

6.24 The training programme should consist of a combination of practical and theoretical training:

- for all relevant individuals employed by the licensee who will perform a specified role
- for all relevant individuals who are contracted to provide services for the licensee and will also perform a specified role

6.25 Where the licensee's activities will involve human spaceflight, the programme must include training for all individuals who will be on board a launch vehicle or carrier aircraft whilst in flight (flight crew and spaceflight participants).

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<sup>7</sup> For the avoidance of doubt, Part 2 of Schedule 3 should be read as applying to applications for a spaceport licence where the points are relevant. This will be clarified in the Regulations after the current consultation is complete.

- 6.26 The training programme should also provide the basis for appropriate training for individuals who participate in the licensed activities but do not perform a specified role or act in a specified capacity i.e. persons who are not “relevant individuals”.
- 6.27 The objective of the training programme is to ensure that all employees, contractors and spaceflight participants who take part in it are adequately qualified, trained, and medically fit to perform their assigned duties or otherwise participate in the licensed activities. To achieve that objective, the training programme must include:
- details of initial, proficiency and readiness training as required for relevant individuals (regulation 72)
  - safety instruction for individuals who do not perform a specified role
  - how the applicant/licensee will use assessments to determine:
    - what training is required by relevant individuals
    - whether individuals on a course of training have received and successfully completed all the necessary elements of that training – i.e. a “training assessment”
    - if an individual is competent to perform their functions in relation to the licensed activities – i.e. a “competence assessment”
- 6.28 The three levels of training – initial, proficiency and readiness – have been established to allow a licensee the necessary flexibility to provide differing levels of training in accordance with the needs of a particular individual, groups of persons or the needs of any particular mission.

**Example:** the initial level of training is a basic entry level of training that enables individuals across the licensee’s organisation to become familiar with the organisation and methods of working; the safety rules and procedures applying to the activities, and the regulations that apply to the licensee and its licensed activities.

The initial level of training would be suited to all persons working for or joining the licensee’s organisation and may be a brief and generic period of training, possibly incorporating self-study and elements of computer-based training. Although “relevant individuals” will also complete this training, it is expected the vast majority of trainees will be not be “relevant individuals” but persons employed or working in non-specified roles and capacities.

Similarly, for spaceflight participants, the licensee may want to only provide an overview of its organisation, safety rules and regulations at this stage, before going into a deeper examination of those subjects during subsequent proficiency and readiness training as applicable. During these later stages of training, the focus will be on the actual things a participant will need to know and do in order to safely take part in the activity.

**Table 2 – Levels of training**

Level of training	Description of training	Persons who are to be trained
Initial	<ul style="list-style-type: none"> <li>• Licensee’s organisation and methods of working</li> </ul>	All individuals

	<ul style="list-style-type: none"> <li>• Safety rules and procedures applying to the activities</li> <li>• The regulations that apply to the licensee and its licensed activities.</li> </ul>	
<b>Proficiency</b>	<ul style="list-style-type: none"> <li>• Specified training for the role (Part 3 of Schedule 3)</li> <li>• Training to ensure individuals are able to perform the duties associated with that role and otherwise take part in the licensed activities</li> </ul>	Relevant individuals performing a specified role, e.g. Launch Director, Flight Termination Personnel, Crew etc.
<b>Readiness</b>	<p>Mission specific-training for all participants in a mission to ensure that individuals:</p> <ul style="list-style-type: none"> <li>• understand the objectives for the mission</li> <li>• have rehearsed the role which they are to perform in the mission and demonstrate adequate performance in that role</li> </ul>	All individuals who are to participate in a particular mission

6.29 Due to the short period of time that spaceflight participants will participate in any licensed suborbital human spaceflight activity, the training programme for these individuals may be limited and tailored to training in withstanding the stresses of the suborbital activity and the functions they must perform, or may be called upon to perform, during the flight.

6.30 Detailed training requirements for crew and spaceflight participants are provided in Part 3 to Schedule 3 of the Regulations.

### Training assessments and equipment

6.31 An important part of qualifying relevant individuals for their role or capacity is determining that the training has been effective and that an individual is competent to carry out their function. The requirements for competence assessments by the licensee are set out at regulation 73. The regulation covers:

- the conduct of competence assessments and actions to be taken if a person has failed a competence assessment
- the methods by which assessment may be undertaken for flight crew and remote pilots, including the use of simulated training devices and aircraft
- restrictions on simulating launch vehicle emergencies during an actual spaceflight, and
- a requirement for the licensee to carry out a mission simulation before a launch, which as nearly as possible reproduces the intended spaceflight, spaceport and range control activities which would be carried out on the mission. This requirement applies to launch operator, spaceport and range control licensees. While each could conduct its own simulation, it would appear beneficial for the relevant licensees to work together to carry out a simulation

6.32 Because of the variety of types of launch, their respective varied levels of complexity and possibly prolonged intervals between successive launches, the regulator has not established standardised intervals between which competence assessments must be carried out. This function is to be conducted at intervals determined by the training manager and set out in the training manual.

## Training equipment

- 6.33 A licensee's obligations regarding training equipment are set out at regulation 74. The licensee must ensure that it has access to sufficient training equipment to enable it to provide practical training where required as part of its training programme. Training equipment used for this purpose ("a simulated training device") may include devices which are capable of simulating a launch vehicle, or any equipment or facilities which are used in the course of carrying out one or more of the licensed activities.
- 6.34 There are requirements for the fidelity of simulated training devices. Any difference between the simulated training device and the actual launch vehicle, equipment or facilities which it is simulating must be identified and described as part of the training programme.
- 6.35 Where the licensee's activities will involve human spaceflight, the licensee may also use devices designed to reproduce the effects of spaceflight on the human body, such as the effects of acceleration, disorientation, loss of pressurisation or other adverse physical effects connected with spaceflight.
- 6.36 The licensee must establish and maintain a system for monitoring any simulated training device or other device which is used in its training programme. The licensee is obliged to identify any changes in the capability or configuration of any such device and ensure that such changes do not reduce the effectiveness of any training or assessment for which that device is used.

## Part 1 of Schedule 3 – specified criteria

- 6.37 Part 1 of Schedule 3 of the Regulations contains the criteria for each specified role (e.g. launch director, flight termination personnel etc.). For each role, Part 1 of the Schedule sets out requirements for the subject areas in which an individual must demonstrate understanding, knowledge or ability, or have completed training, in order to be qualified as competent for the role.

## Part 2 of Schedule 3 – training manual

- 6.38 Part 2 of Schedule 3 of the Regulations contains detailed requirements for the contents of the training manual, including a section setting out the measures the licensee is taking to satisfy the medical requirements set out in Chapter 5 of Part 7 (and discussed further below in this guidance).

## Part 3 of Schedule 3 – training for specified roles and capacities

- 6.39 Part 3 of Schedule 3 of the Regulations contains specific training requirements for crew, remote pilots and spaceflight participants. It builds on the flight crew and remote pilot qualification criteria set out at Part 1. Such training includes training on withstanding the stresses of spaceflight; crew coordination; human error; identifying dangerous goods and the procedures to be used on board the suborbital launch vehicle.

## Medical fitness

- 6.40 Licensees must ensure that no-one participates in licensed activities if they are not fit to do so. This applies to everyone working on the licensed activities, including those who are not



performing a specified role (for example, ground operations staff, persons handling hazardous materials or who have a role in assembling, checking or handling propellants pre-and-post flight). The arrangements for assessing fitness should be made through the licensee's usual occupational health advisory service(s), in accordance with health and safety best practice.

- 6.41 However, there are additional duties in relation to the medical fitness of crew members (including remote pilots) and spaceflight participants. The obligations of the licensee in ensuring the medical fitness of these persons are set out at [regulation 75](#). The following guidance is specific to the medical fitness of crew members and spaceflight participants and is therefore only applicable to launch operator licences.

## Definitions

- 6.42 The following definitions, set out in regulation 75, are applicable to this area of regulation.

- 6.43 "Approved aeromedical examiner" (AME) means an individual who:

- is qualified and holds a valid licence to practise medicine from the General Medical Council
- has qualifications in aviation or space medicine, and
- has been approved by the CAA for the purposes of carrying out medical assessments or medical examinations for the purposes of the Regulations

- 6.44 "Approved medical assessor" means an individual employed by the CAA who:

- is qualified and holds a valid licence to practise medicine from the General Medical Council
- has qualifications in aviation or space medicine, and
- has been authorised by the CAA for the purposes of making a medical assessment or being consulted

- 6.45 "Medical assessment" means the conclusion on the medical fitness of an individual based on evaluation of that individual's medical history, medical examinations and medical tests.

- 6.46 "Medical examination" means a physical inspection, palpation, percussion, auscultation or other means of investigation, especially for determining medical fitness or diagnosing disease.

## Obligations of the licensee

- 6.47 A licensee has four general obligations in relation to the medical fitness of individuals who take part in either the spaceflight activities (flying on board the launch vehicle) or in the licensee's activities in some other role or capacity.

- 6.48 The licensee must ensure that all the crew (and any remote pilots) that are to take part in the licensee's spaceflight activities hold a valid medical certificate. The kinds of medical certificates that are needed are described later in this guidance and can only be issued by approved aeromedical examiners (AMEs) and approved medical assessors. A licensee may choose to have medical examinations and medical assessments carried out by an AME in support of this obligation, or may establish requirements for the crew and remote pilots who already hold valid medical certificates to complete self-declarations of fitness.

- 6.49 Licensees must ensure that none of the crew has suffered a decrease in fitness due to illness or injury since the date of the issue of their medical certificate. Relevant decreases in fitness are those which might affect the ability of the crew members to:
- withstand the physical and mental rigours of spaceflight
  - perform any safety-critical functions reliably during the spaceflight activities
  - carry out any emergency procedures which may be required during the spaceflight activities, including evacuating the launch vehicle
- 6.50 Licensees must ensure that no person takes part in spaceflight activities, either as a crew member or a spaceflight participant, if that person is not medically fit to fly.
- 6.51 Fourthly, the licensee must ensure that no person participates in the licensed activities if they are not fit to do so. This is a general requirement related to a person's medical fitness to carry out particular roles and functions. It does not require a medical certificate to be issued.

**Example:** A launch operator licensee will need to appoint a wide range of persons to perform critical functions during a launch or launch preparation; these persons must be sufficiently medically fit to carry out the function(s) they are tasked with. A licensee is obliged to establish procedures that identify when such a person has (or may have) become medically unfit; these may include a reporting system for employees to report when they believe that they are no longer fit to perform their duties. Such reporting systems and procedures are common in many industries but are particularly important for launch operations.

- 6.52 For crew members (and, if necessary, remote pilots), the licensee must use approved AMEs and approved medical assessors to carry out the appropriate examinations and assessments. The CAA medical department will issue ongoing guidance as necessary, based on aeromedical best practice and developments in space medicine.

#### Flight crew, remote pilots' and other crew member's medical certificates

- 6.53 The approved AME used by the licensee must use the criteria set out in regulation 76 to determine whether a crew member or remote pilot is medically fit to participate in the spaceflight activities. These criteria are, for the most part, based on existing aviation medical certification standards and are summarised in the table below.

**Table 3: Medical certificates required for flight crew and remote pilots**

	Class 1 certificate (as per EU Aircrew Regulation) <sup>8</sup>	Class 2 certificate (as per EU Aircrew Regulation) <sup>9</sup>	Any medical requirements imposed by the regulator in conditions on the spaceflight operator's licence
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<sup>8</sup> Class 1 certificate for single pilot commercial air transport operations carrying passengers set out in section 2 of Sub-Part B of Annex IV to the EU Aircrew Regulation <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32011R1178&from=EN>

<sup>9</sup> Class 2 certificates set out in section 2 of Sub-Part B of Annex IV to the EU Aircrew Regulation

Members of the flight crew (except balloon pilots)	Y		Y
Balloon pilots		Y	Y
Remote pilots	Y		Y
Cabin crew (non flight crew members)		Y	

6.54 Alternatively, the individual concerned can be assessed by an approved medical assessor. The assessor must then be satisfied that the individual's condition:

- will not compromise the safety of any spaceflight activities in which the individual will be participating or of any other individual on board the launch vehicle, and
- will not prevent the individual from performing the tasks assigned to them by the licensee

6.55 The latter course, of being assessed by an approved medical assessor, may be used in situations where an individual does not fully meet the unrestricted medical requirements of the EU Aircrew regulation. The medical assessor may recommend conditions on the certificate, or confirmation of medical fitness, in circumstances where those conditions already apply via a pre-existing medical certificate. Such condition could include operational restrictions, the provision of particular safety equipment or medical-monitoring procedures.

6.56 In determining whether an individual is medically fit for the spaceflight activity, the approved AME must take into account any operational or environmental conditions which:

- the spaceflight operator has identified as being likely to apply in relation to the spaceflight activities in which the individual would be participating or acting as a crew member, and
- are relevant to the individual's state of fitness

Such operational and environmental conditions could result in one individual being more susceptible than another; particularly where these relate to cumulative effects or age-related risks or are more pronounced due to an individual's medical history.

6.57 An AME can only issue a medical certificate if they have carried out a medical examination and assessed the individual's medical history. The AME must be satisfied that the crew member or remote pilot is medically fit to participate in the proposed spaceflight activities and will be able to carry out the duties assigned to them.

6.58 Though the assessment can be conducted by an approved medical assessor, the approved AME is the person who is ultimately responsible for issuing a medical certificate or otherwise confirming that an individual is medically fit to fly and determining what, if any, additional conditions the individual must be subject to.

### Spaceflight participant medical fitness

6.59 The licensee also has a responsibility for confirming the medical fitness of any spaceflight participants. Spaceflight participants do not need to meet the requirements for a formal

aviation medical certificate in the same way that crew members do, but they must nevertheless be confirmed as being medically fit to fly by an approved AME.

- 6.60 As with crew members, an approved AME may only confirm that a spaceflight participant is medically fit to fly, if:
- the AME has carried out a medical examination of the applicant and an assessment of that individual's medical history, and
  - following that assessment and examination, the AME is satisfied that the individual concerned is medically fit:
    - to participate in the spaceflight activities proposed, and
    - to carry out any duties that they are expected to do in relation to those activities
- 6.61 In making this determination, the AME must take into account any operational or environmental conditions the licensee identifies as being likely to apply to the spaceflight activities in which the individual will be participating. These will depend on the licensee's specific type of spaceflight activities and the conditions that will be encountered during the flight.
- 6.62 The examination and assessment must be completed before the spaceflight participant is carried aboard the licensee's launch vehicle. It is up to the licensee to decide the actual length of time between making the examination and assessments and the individual boarding the launch vehicle, taking into account any applicable regulation or guidance issued by the regulator. Licensees must also establish a procedure to ensure that, on the day of the flight, no spaceflight participant has suffered a decrease in medical fitness due to illness or injury.

#### Crew and spaceflight participant fitness immediately prior to flight

- 6.63 At the licensee's discretion and taking into account any regulation or guidance from the regulator, the licensee may decide that the immediate pre-flight procedures include a declaration of continued fitness, or a brief medical examination or assessment. If adopted, such a final check procedure must be completed before members of the flight crew and other crew members perform any duty on board a launch vehicle during spaceflight.

#### Validity of medical certificates

- 6.64 All medical certificates are granted for a set period, which will be shown on the certificate. When the period of validity ends, members of flight crew, remote pilots and other crew members will need to be medically re-examined or assessed. The results of these assessments and examinations must be taken into account when assigning flight crew and other crew members.

#### Spaceflight participants with disabilities

- 6.65 When in all other respects it has been determined that a spaceflight participant is medically fit to participate in the spaceflight activity, a licensee may make suitable arrangements for spaceflight participants with reduced mobility or disability to take part in a flight if:
- doing so would not compromise the safety of the flight and
  - the person with reduced mobility or disability, and any equipment they need in relation to that disability, would not impede or obstruct any flight crew, crew member or

spaceflight participant in carrying out their functions, including executing emergency procedures or entering or leaving the spacecraft

#### Fitness for training activities

- 6.66 The training programme for crew and participants may include exposure to high-G, microgravity or any other physical experience or ambulatory requirement that can be replicated on the ground or during an aeroplane flight. The licensee must determine the level of medical fitness required for these activities, under the advice of their AME and/or guidance material from the regulator.

#### Review and appeal of decisions on fitness

- 6.67 A decision to refuse a medical certificate may be grounds for an appeal under the appeals regulations made under the Act. Despite the grant of a medical certificate, it remains the licensee's prerogative to decide on who operates as a pilot during their spaceflight activities. A licensee will have its own policies and procedures (particularly regarding examination or assessment before any particular flight) that can exclude pilots who may be developing, or have developed, a condition that is not compatible with the specific kind of spaceflight activity.

#### Illness, injury and related conditions

- 6.68 Due to the harsh conditions and stresses on the human body, individuals must not act as a member of crew on a launch vehicle, or as a remote pilot, if they know or suspect that their physical or mental condition renders them temporarily or permanently unfit to perform their role and responsibilities. Regulation 77(1) sets out some of the conditions that might render a crew member or remote pilot unfit.
- 6.69 The illnesses, injuries and conditions listed at regulation 77(3) are relevant to any individual who holds a medical certificate granted in accordance with the regulations for medical fitness. If an individual has any of the illnesses, injuries or conditions listed, they must inform the licensee's approved AME as soon as possible about the condition and seek medical advice. Once an individual has recovered from the injury or illness, or the condition no longer applies, the individual must undergo a medical assessment by the licensee's approved AME to confirm whether they are fit to take part in spaceflight activities. The AME must consult a CAA-approved medical assessor in relation to that assessment and may only determine that the individual is fit if the approved medical assessor agrees.

#### Information for AMEs and medical assessors

- 6.70 As part of the process for applying for a licence under the Act and Regulations, applicants for a launch operator licence must submit a risk assessment to the regulator for any human spaceflight aspect of their proposed activity. This risk assessment is described in section 6 of the Guidance for launch operator and return operator licence applicants and licensees and at Chapter 3 of Part 4 of the Regulations.
- 6.71 The regulator expects the applicant or licensee to share the risk assessment (and any other related information, such as the safety operations manual or training manual) with their intended approved AME and approved medical assessor. The regulator expects that, when sharing the risk assessment with the AME, the applicant or licensee's evidence will also share

the relevant evidence that it will be able to meet the additional safety requirements for launch vehicles with human occupants set out at [Chapter 5 of Part 8](#) of the Regulations. An AME or medical assessor should study this information carefully, and if necessary question the applicant or licensee, so that the physiological aspects are fully understood.

#### Approval, training and continual professional development for AMEs and medical assessors

6.72 Medical assessment for flight crew, other crew members and spaceflight participants must be undertaken by an approved AME or an approved medical assessor, authorised and overseen by the CAA to perform medical examinations or assessments for the purposes of spaceflight activities. Such AMEs and medical assessors will already hold the relevant authorisation for aircrew medicals and assessments and, in order to be approved by the CAA, will be expected to have relevant qualifications in aviation or space medicine.

6.73 In terms of specialist qualification and ongoing professional development of AMEs and medical assessors, the CAA expects to begin either providing medical courses itself, or to recognise courses provided by other organisations, which will qualify the medical practitioner to perform the requisite examinations and assessments for this specialist area.

#### Medical fitness of AMEs etc. conducting assessments for spaceflight activities

6.74 The regulator does not intend to set out any additional medical fitness requirements for AMEs, medical assessors, medical specialists or other practitioners. If these persons intend to take part in a spaceflight, each must meet the training and medical requirements for spaceflight participants set out in regulation.

#### Medical assessors

6.75 Aside from what is provided for in regulation, it is envisaged that the duties of a CAA-approved medical assessor would normally include:

- assessing or advising on individual cases and being asked to consider, or give an opinion on, specialist medical matters relating to human spaceflight
- devising medical policy and issuing guidance material for spaceflight medical matters
- authorising and overseeing authorised AMEs who conduct medical examinations and assessments for the purposes of spaceflight activities
- undertaking the medical assessment of complex and referred cases of illness or injury that have a bearing on an individual's fitness to take part in spaceflight activities

6.76 Medical assessors would normally be expected to undertake the same training and continuing professional development activities as AMEs, as well as, to the extent possible, participating in national and international forums and discussion concerning space medicine and the health of persons flying on board spacecraft.

#### Medical records

6.77 Every medical assessment or examination of an individual intending to be carried on board a launch vehicle (and any made for a remote pilot) must be recorded by the approved AME who carried it out. The result of the assessment or examination must be reported to the individual concerned and to the spaceflight operator. In addition, the AME must send copies of records of medical assessments and examinations carried out for flight crew to the CAA.

- 6.78 The licensee and AME must also make the records of other kinds of medical assessments and examinations carried out available to the CAA on request.
- 6.79 The licensee and AME must take measures to ensure that all medical records are protected as confidential information, and not disclosed otherwise than in accordance with space industry regulations.

#### Medical instructions in the licensee's training manual

- 6.80 As set out in paragraph 47 of Part 2 ("Training manual") of Schedule 3, licensees must include within their training manuals details of how they will satisfy the medical regulations. The minimum content to be included in in relation to training, qualifications and medical fitness is:
- the licensee's policy in relation to medical fitness
  - information on the responsibilities of the licensee, and the training manager in relation to medical fitness
  - information on the responsibilities of the AME and medical staff taking part in the licensee's medical programme
  - the medical requirements for any flight crew, remote pilots and spaceflight participants
  - information for approved AME, any flight crew and spaceflight participants and their medical advisers on:
    - when medical examinations and assessments will be held, and how they will be conducted
    - where medical examinations will be conducted, and what equipment and facilities are available for them
    - what medical reports will be required for the purpose of medical assessments
    - what conditions may be imposed on a certificate or confirmation of medical fitness
  - the obligations of any flight crew, remote pilots and spaceflight participants
  - a list of the medical records kept by the licensee